



The Gas Professionals

Integrated Report 2021 Year Ended March 31, 2021





Key Points for Reading
“Nippon Sanso Holdings
Integrated Report 2021”

POINT 01

How has the Nippon Sanso Holdings Group changed after transitioning to a holding company structure in October 2020. What does the Group aim to achieve going forward? Four directors talk about their aspirations for the future and their respective missions for driving further growth as a global company.

➡ P.2 Directors’ Commitment

POINT 02

As stated in the Group Vision, we are committed to increasing industrial productivity, enhancing human well-being, and contributing to a more sustainable future through the provision of innovative gas solutions. We will promote our business through an organizational structure aimed at strengthening the comprehensive capabilities of the Group with authority delegated to our four geographic hubs and the Thermos business.

➡ P.34 The Nippon Sanso Holdings Group’s Value Creation Story

POINT 03

Nippon Sanso Holdings is promoting sustainability in its management to promote well-being for people and contribute to a more sustainable future for society and the earth. We explain the Group’s stance on sustainability, which aims to deliver both social value and economic value by helping to resolve environmental and social issues through our businesses.

➡ P.56 Co-Creation: Sustainability Strategy

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 International Integrated Reporting Council (IIRC)’s *International IR 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 2021 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.

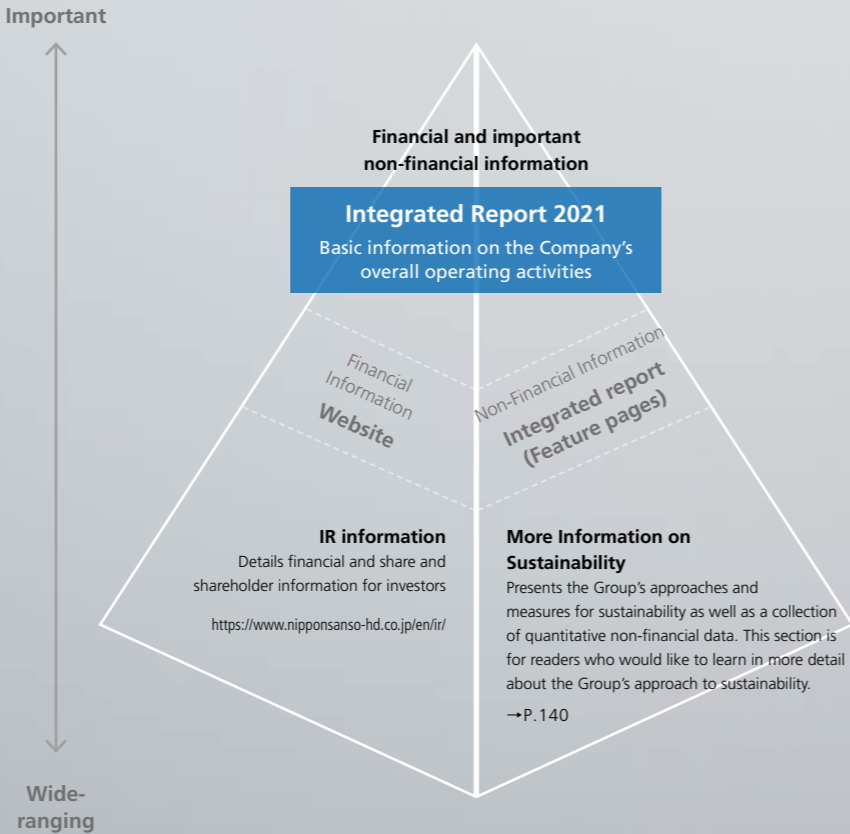
EXPRESSION STANDARD

- 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 FYE2021, ended March 31, 2021, although some FYE2022 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 2021 version of the integrated report, we have provided “More Information on Sustainability” to communicate detailed non-financial information in a more unified and integrated manner, rather than simply posting it on our corporate website as we have up until now. The section covers sustainability approaches and measures implemented by the Nippon Sanso Holdings Group. For the latest financial information, please refer to the investor relations (IR) information page on our corporate website as before.



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A profile portrait of Toshihiko Hamada, an older man with white hair, wearing a dark suit, white shirt, and a red tie with a small pattern. He is looking towards the right.

Having transitioned to a holding company structure, the Company aims to contribute to the earth, society, and people with engaged, motivated employees working as "The Gas Professionals." Keeping a broad, open perspective on new trends and new people, we will venture into new territory and make new proposals, and continue to evaluate them correctly. With this approach, our aspiration is to create a better society for the future that is sustainable and comfortable.

Toshihiko Hamada

Representative Director, President CEO

Open-Minded

A profile portrait of Kenji Nagata, a middle-aged man with dark hair, wearing a dark pinstriped suit, white shirt, and a green tie with a small pattern. He is looking towards the right.

As "The Gas Professionals," we will deliver the full potential of industrial gases, contributing to a wide range of industries and helping to resolve social issues.

As the leading manufacturer of industrial gases in Japan, and as "The Gas Professionals," we will proudly contribute to the development of Japan's society and economy through industrial gases as we strive to increase the corporate value of Nippon Sanso Holdings Corporation.

Kenji NagataMember of the Board,
Representative Director and President,
Taiyo Nippon Sanso Corporation

覚悟をもって

Our Determination

Directors' Commitment

Through its Group Vision, the Nippon Sanso Holdings Group aims to realize the well-being of all our stakeholders, including our customers, shareholders and investors, and our teammates and their families. As "The Gas Professionals," we will work to be our customers' preferred gas supplier, gaining the trust of stakeholders through highly transparent communication and by upholding our responsibilities.

At Matheson Tri-Gas, Inc., we will work to realize the Group Vision by working together as a team to deliver on our commitments.

Thomas Scott Kallman

Member of the Board,
Chairman and CEO, Matheson Tri-Gas, Inc.

Accountability

We are "The Gas Professionals," and that is the way that others have come to view us. We deliver quality products and services in a safe and uninterrupted way. My ambition is for Nippon Sanso Holdings over the next 10 years to develop into an outstanding global group which can hold its own against major competitors in terms of both growth and profitability. As the director responsible for the European business, a core operating region for the Group, I will use my experience to promote safety, compliance, and diversity and inclusion. Achieving our goals will not be easy, and it will require strong leadership and overcoming hurdles, but that it is what makes it so worthwhile.

Eduardo Gil Elejoste

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

RELIABLE

1

SECTION

WHO WE ARE

About the Nippon Sanso Holdings Group

The Nippon Sanso Holdings Group has grown in step with the development of industry. Today, our corporate group has operations in 30 countries and regions around the world. We will concentrate our accumulated technological capabilities, customer base, knowledge, and experience as we strive to play an essential role in the development of a wide range of industries and the realization of an abundant society.



Characteristics of the Nippon Sanso Holdings Group

Our Direction

The Nippon Sanso Holdings Group, with Operations in 30 Countries and Regions around the World

The Nippon Sanso Holdings Group operates in four geographic hubs: Japan, the United States, Europe, and Asia and Oceania. In addition, the Thermos Business supplies THERMOS brand products to over 120 countries worldwide.

In October 2020, we transitioned to a holding company structure, shifting away from a Japan-centric business management structure in order to build a competitive Group operation structure as a global supplier of industrial gases.

The Group’s Key Concept

In its industrial gases business, the Group provides reliable supplies of industrial gases 24 hours a day to a wide range of industries, such as steelmaking, chemicals, automotive, shipbuilding, machinery, medicine, food, beverages, and electronics. As “The Gas Professionals,” we believe that the safe and reliable delivery of industrial gases contributes to the development of these industries and solutions to problems facing society.

In the Thermos Business, we aim to offer comfortable and environment-friendly lifestyles for people and society through insulation technology. This concept is the starting point of our product development.

We are committed to realizing a brighter future through our business.

Special Features of Nippon Sanso Holdings’ Structure

Industrial Gases Business Model of Production at the Site of Consumption

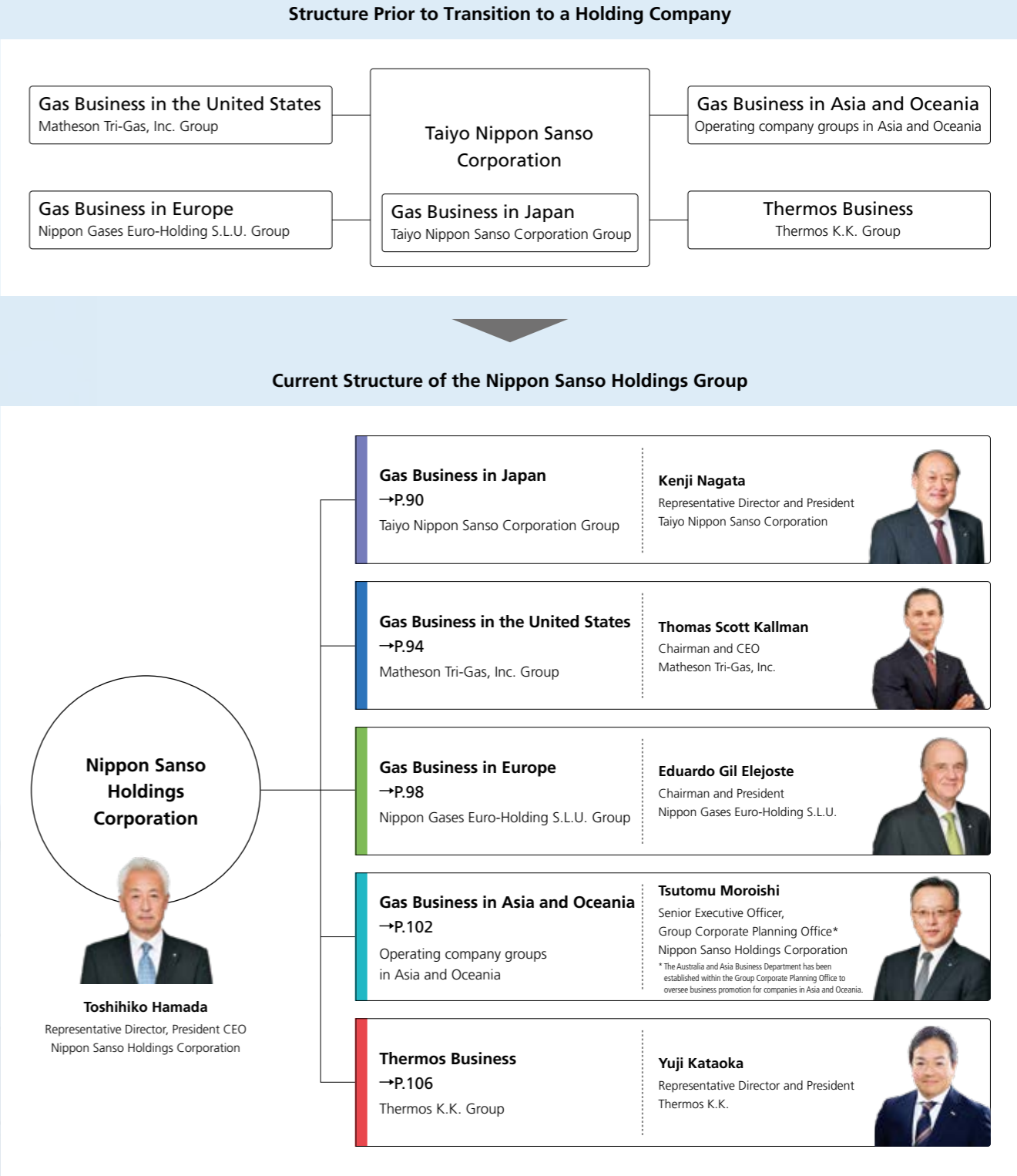
Our main industrial gases products are separation gases such as oxygen, nitrogen, and argon. Customers require different types of gas depending on their applications and different modes of supply depending on the required quantities. Therefore, to transport and supply industrial gases safely, reliably, and efficiently, the general approach is to build a supply network in which the site of production and consumption are contained in a certain geographical area. In this way, the industrial gases business model is based on production at the site of consumption.

A Holding Company Structure to Organize the Operating Companies at Each Global Geographic Hub

Our regional operating companies have a deep understanding of their local business environment and market characteristics. They are closely positioned to our customers, and giving each operating company greater authority helps to achieve fast, agile management and business operation by increasing decision-making speed. Under this operation framework, the holding company executes cross-regional measures to realize the comprehensive capabilities of the Group and allocates resources appropriately to operating companies to enable them to perform their respective roles.

Business Operation Structure Comprising a Global Network of Four Geographic Hubs and the Thermos Business

Nippon Sanso Holdings has formulated 12 new policies (→P.176) as a pure holding company. Based on these policies, the Nippon Sanso Holdings Group will build a structure for integrating management with the operating companies through the proposal of strategies, enforcement of compliance, and enhancement of the risk management structure covering the entire Group. The holding company will also realize the Group’s comprehensive capabilities by incorporating best practices in each region.



Characteristics of the Nippon Sanso Holdings Group

Growing into a Global Corporate Group

Developing Businesses in Japan and Overseas

In the industrial gases business, the Group has aggressively conducted M&A, acquiring part of the European business of Praxair, Inc. (December 2018) and the U.S. HyCO business of Linde AG (February 2019). Currently, the Group has a structure with four geographic hubs in Japan, the United States, Europe, and Asia and Oceania. The Thermos Business has also built production and sales networks in Japan and overseas.

Gas Business in
the United States
4,401 employees

Thermos Business
1,333 employees

Gas Business in
Europe
2,912 employees

Gas Business in
Japan
6,008 employees

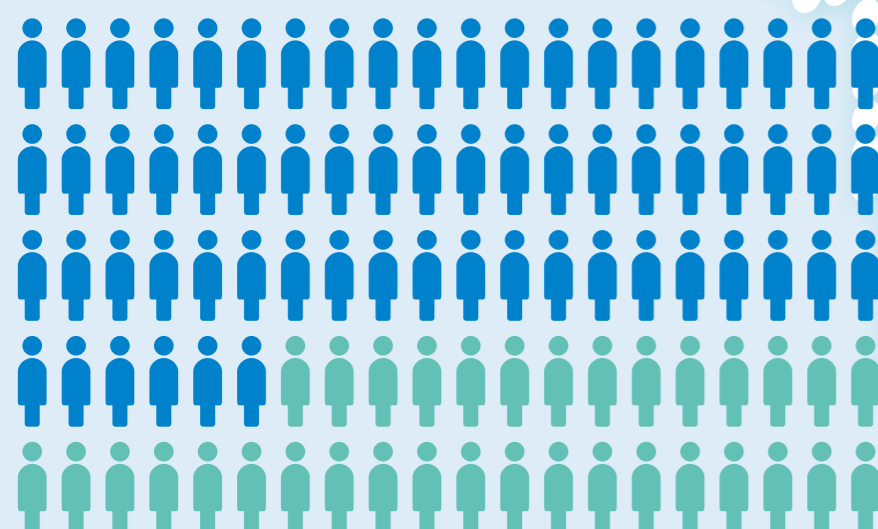
Gas Business in
Asia and Oceania
4,377 employees

Other*
326 employees

* Employees who are assigned to the Group's Corporate Administration Division or Engineering Division and cannot be classified under a specific segment.

Consolidated number of employees

19,357*



OVERSEAS
12,758 employees

65.9%

JAPAN
6,599 employees

34.1%

Revenue

¥818.2

 billion

Operating profit (IFRS)

¥88.8

 billion

Overseas revenue ratio

56.1%

Countries and regions
of operation

30

Overseas affiliated
companies

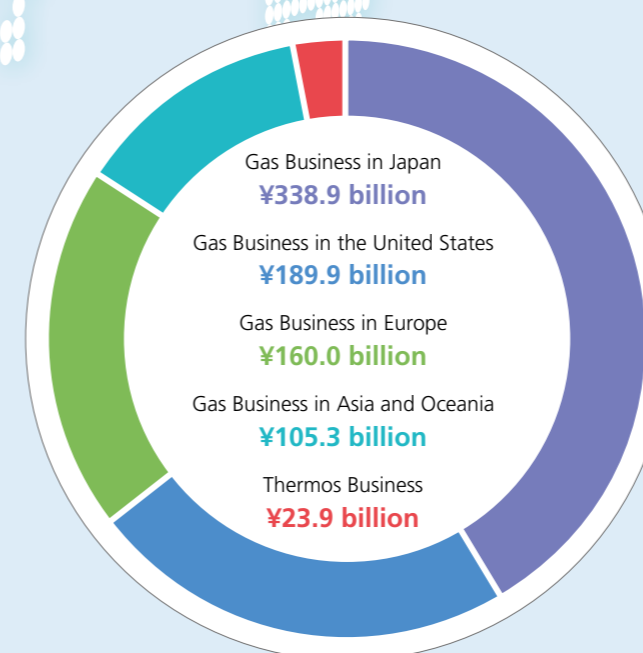
167

Industrial gases global
market share ranking

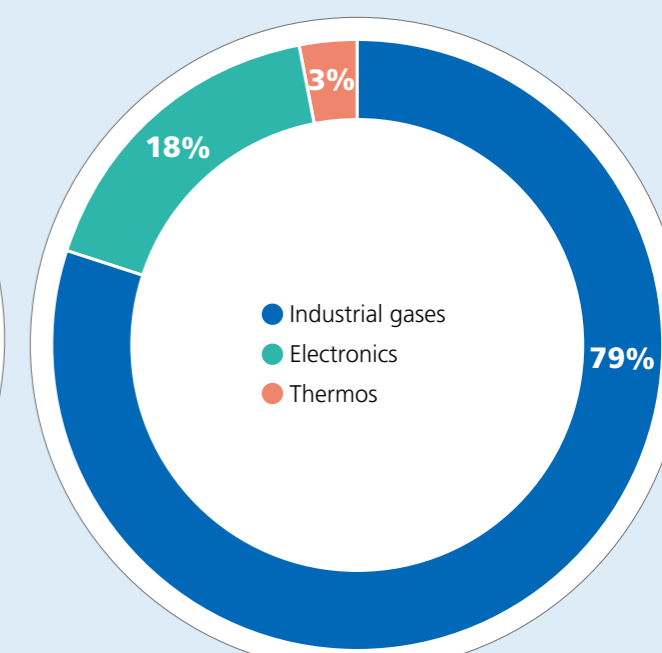
4th

Domestic affiliated companies

139



Revenue by Segment



Revenue by Business

* The consolidated number of employees is the figure for all Group companies as of March 31, 2021.

The aggregation method is different from that used in the non-financial information section (→P.137, P.181) later in the report.

Characteristics of the Nippon Sanso Holdings Group

Expanding Globally as “The Gas Professionals” through Aggressive Capital Investment and M&A

Since its foundation as Nippon Sanso Ltd. in 1910, Nippon Sanso Holdings has been contributing to the development of Japanese industry. In the 1980s, having established itself as the leading manufacturer in the Japanese market, the Company searched for further growth potential in overseas markets. Starting with investments in Singapore and the United States, the Company continued to expand in Asia, including China. In the 2000s, after a series of aggressive M&A in the United States and other countries, the Company expanded into Europe in 2018. The Group’s geographic area of operations has now grown to include 30 countries and regions.

1910

The Dawn of Japan’s Industrialization

The Company’s founder, Takehiko Yamaguchi, identified the social importance and future potential of producing and supplying oxygen separated from air within Japan. Korekiyo Takahashi, then deputy governor of the Bank of Japan (and later prime minister), showed interest in Mr. Yamaguchi’s ideas, and decided along with other officers of the Bank of Japan to make an investment to establish Nippon Sanso Ltd.

- 1918**
Established Toyo Sanso K.K.
- 1935**
Succeeded in producing Japan’s first air separation unit (ASU) for manufacturing oxygen
- 1946**
Established Taiyo Sanso Co., Ltd.
- 1964**
Opened the first on-site plant to realize reliable, high-volume gas supplies
- 1970s**
Started early on development of electronic materials gases needed for semiconductor manufacturing, establishing a position in the electronics market

1978

Expansion into New Business Fields outside of Industrial Gases

The Company applied vacuum-insulation technology and special brazing technologies for building low-temperature liquid gas storage tanks, successfully commercializing the world’s first stainless steel vacuum-insulated bottle in 1978. This was the birth of the THERMOS brand, whose products are loved throughout the world today.

- 1978**
Commercialized the world’s first stainless steel vacuum-insulated bottle

1980

Expansion into Overseas Markets

As the Company continued its journey as a leading domestic manufacturer, it started to invest in overseas markets with a view to further business expansion. In the 1990s, the Company expanded into China, Thailand, the Philippines, Taiwan, and Vietnam, and in the 2000s, India, Indonesia, and Myanmar.

- 1982**
Established National Oxygen Private Ltd. in Singapore
- 1995**
Merged Taiyo Sanso Co., Ltd. and Toyo Sanso K.K. to launch Taiyo Toyo Sanso Co., Ltd.
- 1999**
Merged U.S. Matheson Gas Products, Inc. and Tri-Gas Inc., to launch current Matheson Tri-Gas, Inc.

2004

Opening Up of New Fields with Advanced Technologies

Having succeeded in developing original ultra-high-purity oxygen cryogenic separation technology, in 2004 the Company started manufacturing the Water-¹⁸O stable isotope, which is used as a material for testing reagents used in positron emission tomography (PET) tests that help with early detection of cancer. As the only manufacturer of this product in Japan, the Company supplies it to various medical institutions.

- 2004**
Started production of Water-¹⁸O, an ingredient for reagents used in PET diagnostics
- Merged Nippon Sanso, Ltd. and Taiyo Toyo Sanso Co., Ltd. to form Taiyo Nippon Sanso Corporation

2008

Acceleration of Global Expansion

Expansion into overseas markets that began in the 1980s accelerated in the 2000s. In 2018, the Company acquired part of the European business of U.S. industrial gases supplier Praxair, Inc. (now Linde plc), making a full-scale business expansion into Europe. With this, the overseas revenue ratio climbed above 50%, and the Group succeeded in building a global business network.

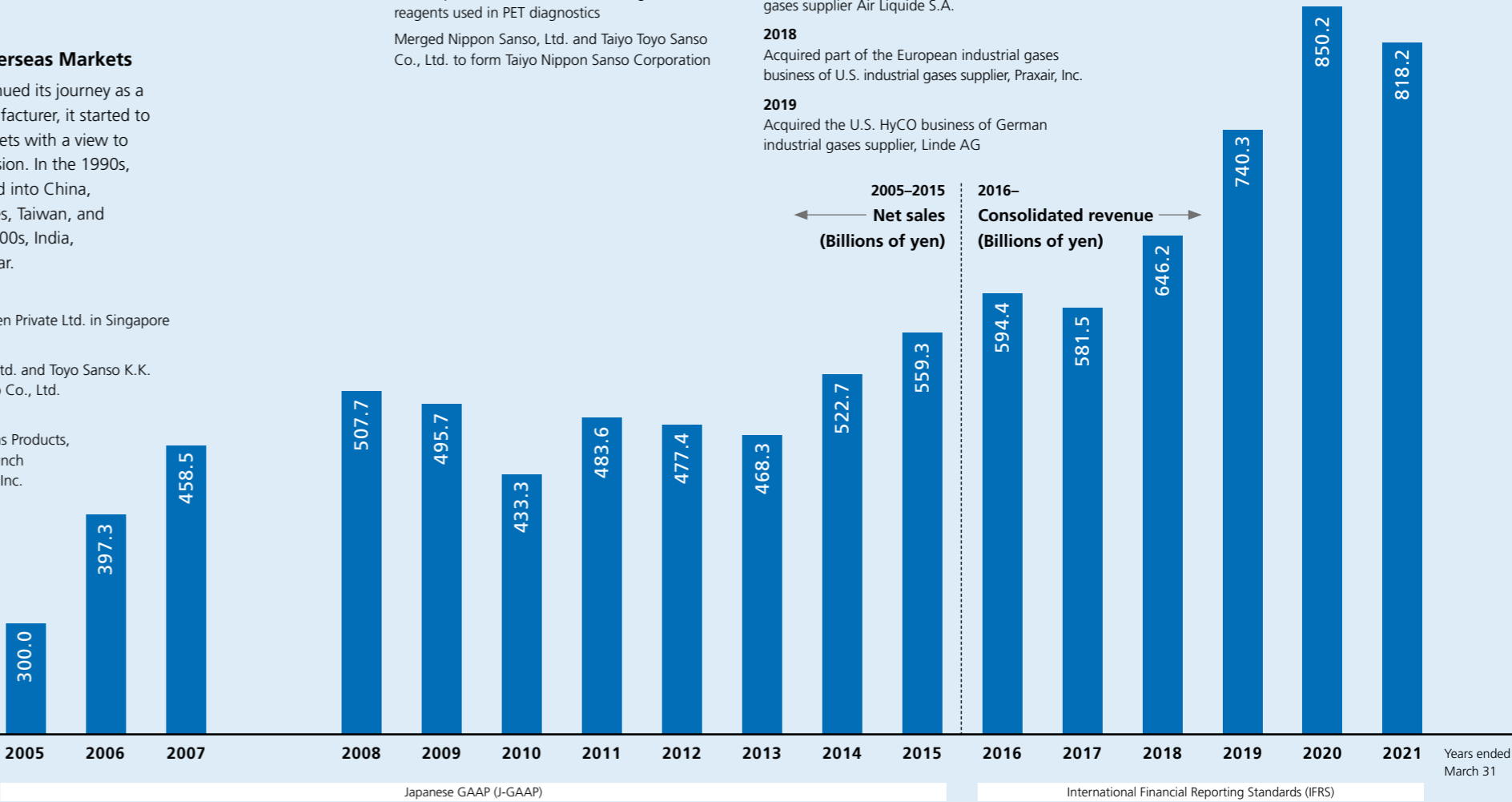
- 2008**
Established Dalian Changxing Island Taiyo Nippon Sanso Gas Co., Ltd. in China
- 2012**
Acquired Singapore-based industrial gases and welding equipment manufacturer Leeden Limited
- 2015**
Acquired Australian liquefied petroleum gas (LP gas) and industrial gases distributor Renegade Gas Pty Ltd with a view to expanding into the industrial gases market in Australia
- 2016**
Acquired part of the U.S. industrial gases business and relevant business assets of French industrial gases supplier Air Liquide S.A.
- 2018**
Acquired part of the European industrial gases business of U.S. industrial gases supplier, Praxair, Inc.
- 2019**
Acquired the U.S. HyCO business of German industrial gases supplier, Linde AG

2020

Use of Our Global Business Network to Achieve Further Growth

On October 1, 2020, the Company transitioned to a pure holding company structure and changed its name to Nippon Sanso Holdings Corporation. The Company will strive for further growth with a structure comprising a global network of four geographic hubs and the Thermos Business.

- 2020**
Transitioned to a holding company and changed the company name. The former name, "Taiyo Nippon Sanso Corporation," was transferred to a newly established operating company in Japan.



Aspiration for the Nippon Sanso Holdings Group
Our Core Philosophy

We believe that the understanding and practical implementation of the Nippon Sanso Holdings Group's Philosophy and Vision by each individual employee will realize our aspiration of being "The Gas Professionals."

The Gas Professionals

Group Philosophy

Proactive. Innovative. Collaborative.
Making life better through gas technology.

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.

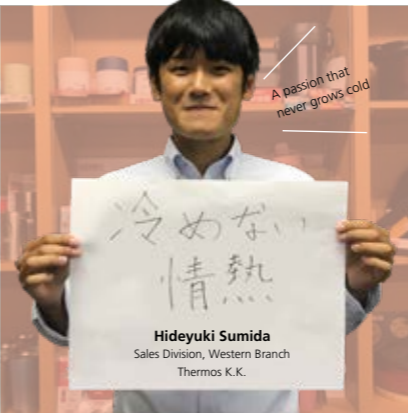
Background to the Group Philosophy and Vision Formulation, and Forward Development

With the transition to a holding company structure in October 2020, the Group Philosophy and Group Vision were revised to reflect the Group's purpose. To promote shared understanding with the Group's employees working around the world, the Philosophy and Vision were drafted in English using clearer, more succinct expressions.

Now, guided by this Philosophy and Vision, we aim to further realize the Group's comprehensive capabilities. To this end, we will promote active communication within the Group, seeking to provide as much value as possible to our customers and all other stakeholders.

WHO WE ARE

Aspiration for the Nippon Sanso Holdings Group



Thinking about the Future

We asked team members from each of our four geographic hubs and the Thermos business to write a brief statement about their commitment to other Group employees around the world.



CEO Message



Toshihiko Hamada

Representative Director, President CEO

We Aspire to Be a Corporate Group That Is Open to a Wide Range of Opportunities and Is Motivated by New Challenges.

Introduction

I would like first to express my deepest sorrow for all those who have lost their lives in the global COVID-19 pandemic. I also offer my sincerest condolences to those who are currently ill and my prayers for their speedy recovery. Moreover, I would like to express my profound respect and gratitude to all those who are striving each day to prevent the spread of the virus, working earnestly to provide medical care all around the world.

I was appointed representative direct and president CEO in June 2021. I joined the Company in 1981 (Nippon Sanso Ltd. at that time), and in 2002 I was appointed executive vice president of Matheson Tri-Gas, Inc. I worked in the United States until 2005.

The COVID-19 pandemic has brought sudden changes to the lifestyles of people around the world. Moreover, we are now also facing a host of social issues such as climate change and food shortages. When the world undergoes dramatic changes, we must consider how to respond. I would like us to remain focused on this challenge and contribute to building a brighter future.

Management Structure

In October 2020, Nippon Sanso Holdings transitioned to a holding company structure. Under our former structure, our operating company in Japan (Taiyo Nippon Sanso Corporation at the time) managed our operations in the United States, Europe, and Asia and Oceania, as well as the Thermos business, while focusing mainly on Japan. With the transition to a holding company

structure, the relationship between Taiyo Nippon Sanso Corporation and the operating companies in each geographic hub, along with the Thermos group, has now changed from a parent subsidiary to a sibling relationship. With Nippon Sanso Holdings as the holding company, the Group's businesses are structured into four groups: the Taiyo Nippon Sanso Corporation group in Japan, the Matheson Tri-Gas, Inc. group in the United States, the Nippon Gases Euro-Holding S.L.U. group in Europe, and the Thermos K.K. group for the Thermos business. In Asia and Oceania, each company in the area is under the direct management of the holding company. Furthermore, the three top executives of the respective gas operating companies in Japan, the United States, and Europe are members of the Board of Directors.

Our transition to this structure has 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. During the pandemic, the spread of infection differed from region to region. Furthermore, in our business, the product is manufactured at the site of consumption. In light of these factors, we decided that giving discretion over decision-making to our operating companies, which have deep local knowledge, would lead to faster, more efficient management.

Since the early 1980s, the Nippon Sanso Holdings Group has expanded out from Japan across the world, actively undertaking capital investment and M&A. In December 2018, we

acquired part of the European business of Praxair, Inc., and all of the employees at the time, including management, joined our Group. We have retained the existing business operating structure and established a business platform that enables flexible management decision-making appropriate to the business environment. Over the past few years, there have been just five retirements, all due to reaching mandatory retirement age. This low attrition rate is another sign that the post-merger integration has been progressing smoothly.

Separate from the Board of Directors, at the business execution level, we hold monthly business reporting meetings with each regional operating company and Thermos K.K. In the Asia and Oceania region business, the Oceania and Asia Management Division within the Corporate Planning Office keeps in close communication with local offices. Rather than just delegating authority, we have also prepared a structure for communicating our intention throughout the entire Group, and the executives in charge of each business are responsible for explaining and carrying it out.



At the 17th Ordinary General Meeting of Shareholders, held on June 18, 2021, Ms. Miri Hara was appointed as a new outside director, bringing the number of outside directors to three. In addition, to further enhance the function of the Board of Directors, we have established the post of Chairman of the Board. We expect these actions to further strengthen the Company's corporate governance.

Impact of COVID-19

Looking back on FYE2021, the impact of COVID-19 on the Company's business activities has been enormous.

On the other hand, I am confident in the resilience of the industrial gases business and of our customers. Looking at year-on-year revenue changes, in the first quarter we saw a decrease, but subsequently our revenue gradually recovered, and by the fourth quarter it had rebounded to an increase of 4%. As "The Gas Professionals," the Nippon Sanso Holdings Group strove to ensure reliable supplies of industrial gases, and we made a great effort toward helping the users and the economy in general to recover from the pandemic.

Looking at the business environment for FYE2022, there are still uncertainties regarding the progress rate on COVID-19 vaccinations and their efficacy as a countermeasure against the virus, making it difficult to foresee the economic trends going forward. On the other hand, the economy has been recovering gradually since the second half of FYE2021, and some business fields are also expected to display strong growth. In FYE2022, we are forecasting revenue of ¥865.0 billion (up 5.7% year on year) and operating profit of ¥96.5 billion (up 8.6% year on year).

Making Life Better

At this point, I would like to talk about the Group Philosophy. Our industrial gases business serves customers in a diverse range of industries, including steelmaking, chemicals, automotive, shipbuilding, machinery, medicine, food, beverages, and electronics. I believe that our role as "The Gas Professionals" stated in our Group Philosophy is to provide a safe and reliable supply of industrial gases to these customers along with gas solutions.

"The Gas Professionals" is a core concept that informs our efforts to expand business correctly with correct judgment. The industrial gases that we handle are closely connected to various fields.

Therefore, I believe that as we expand our business centered on industrial gases, we can contribute to increasing industrial productivity, enhancing human well-being, and realizing a more sustainable future.

I think that this applies not only to the industrial gases business but also to the stainless steel vacuum-insulated bottles that are the core product of the Thermos Business. The birth of this business goes back to 1978, when the Company became the first in the world to commercialize unbreakable vacuum-insulated bottles made of stainless steel. This product was developed by applying vacuum-insulation technology and special brazing technologies cultivated in the industrial gases business. It is an environment-friendly product that does not require any other energy such as electricity or gas to keep contents hot or cold. At the same time, we are working to reduce environmental impact throughout the entire product life cycle, aiming to create a society that achieves both abundance and environmental sustainability. Vacuum-insulated bottles are an excellent example of environmental preservation through energy saving. As a pioneer in the field, Thermos K.K. continues to flexibly combine its carefully nurtured insulation technologies with its unique lifestyle comfort concept to create discerning products for inspired lifestyles. Part of the Thermos K.K. group's philosophy is expressed as "Making life better." This aspiration is a common value for the Nippon Sanso Holdings Group, including the Thermos Business.

Toward the Realization of a Carbon-Neutral Society

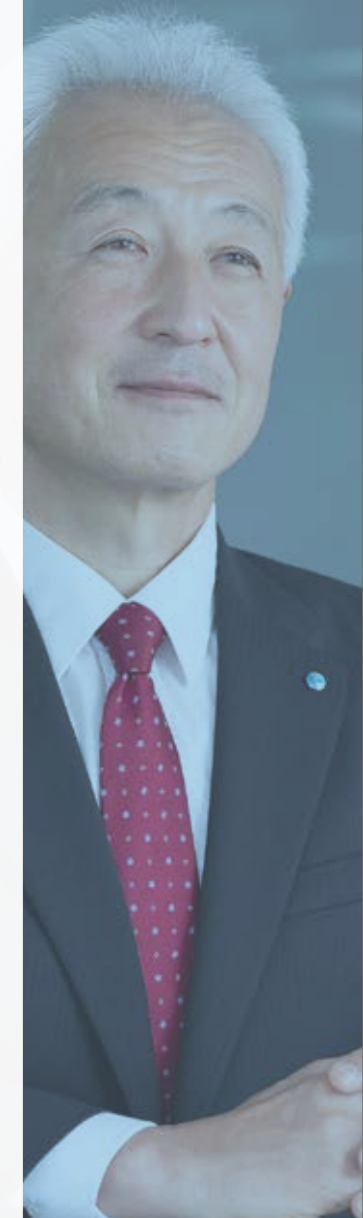
One urgent key issue to be addressed for "Making life better" is responding to carbon neutrality. Realizing a carbon-neutral society by 2050 will require a great deal of knowledge and effort on the part of everyone, including our Company. Up until now, we and the other industrial gases suppliers have advanced our carbon gas handling technologies through our involvement in the refining (manufacture)

and supply of greenhouse gases (GHGs), particularly CO₂, in the form of carbon gas (liquid carbon dioxide and dry ice).

Moreover, in Europe, which is advancing strategies to achieve carbon neutrality, the Nippon Gases Euro-Holding S.L.U. group is leading our efforts to form a coordinated organization that also includes the Matheson Tri-Gas, Inc. group in the United States and the Taiyo Nippon Sanso Corporation group in Japan. This organization is currently examining the Group's business strategies for realizing a carbon-neutral society. We are exploring short- and medium-term initiatives that the Group could take to achieve the target of carbon neutrality by 2050 (→P.70).

Recently, hydrogen gas has been drawing attention as an environment-friendly energy source. In terms of technologies for supplying and handling hydrogen gas, the Group is working on the development and sale of hydrogen stations (fixed and mobile types) in the field of supply infrastructure for hydrogen, which is the fuel for fuel cell vehicles (FCVs). In addition, the Company acquired the U.S. HyCO business of Linde AG in February 2019. This business involves separating hydrogen and carbon monoxide from natural gas and other sources, then supplying them to oil refineries and chemical industries through the on-site method. By combining this with our technology and knowledge related to carbon capture, utilization, and storage (CCUS), we believe that we can manufacture large quantities of economical blue hydrogen*, which will enable us to contribute to the early realization of a hydrogen society. Moreover, another carbon-free energy source that has been drawing attention is ammonia. We also need to look at developing technologies for using it efficiently. As "The Gas Professionals," we will use a multifaceted approach, listening attentively to customer feedback with an entrepreneurial spirit, aiming to co-create with our partners.

* Hydrogen made from fossil fuels such as natural gas in which the CO₂ emitted during production can be recovered using CCUS. It can be considered a CO₂ emission-free form of hydrogen generation.



Sharing Best Practices and Realizing Optimal Distribution of Resources across Four Geographic Hubs Globally

In its industrial gases business, the Group has technologies for the manufacture and supply of gases, as well as various basic technologies that it has developed over many years. These include plant and engineering technologies ranging from plant design to manufacture and maintenance, gas handling technologies to ensure continued safe and reliable supplies of industrial gases, and gas application technologies for making use of industrial gases in various fields. These technologies enable us to handle all aspects of industrial gases. Furthermore, we are developing customer service systems for these technologies in our four geographic hubs: Japan, the United States, Europe, and Asia and Oceania.

The electronics business is one that will drive the Group's further growth. Operations have been centered mainly in Japan, North America, and East Asia; however, with the addition of

In addition, helium gas is also used in various fields such as medicine, semiconductors, aerospace, and nuclear reactors. To provide a reliable supply of helium to its customers globally, the Group has internal supply arrangements, from securing mining interests and raw materials to allocating them to meet demand in a wide range of fields around the world. These are jointly handled by the Group Helium Strategy Department within the Corporate Planning Office of Nippon Sanso Holdings Corporation and the Helium Gas Team of Matheson Tri-Gas, Inc. in the United States.

Through the delegation of authority, we will actively make use of the technologies, knowledge, and experience of each operating company, fully leveraging their individual capabilities to realize optimal resource allocation for the Group.

DX, R&D, and Human Resources Strategies

One example of digital transformation (DX) among the Group's current businesses is the introduction of automation for air separation unit (ASU) operations. In the United States, product automated systems for ordering and vehicle deployment have been built, enabling us to manage a wide-area supply network remotely with a small number of people. Meanwhile, in Japan, we are working to build a supply network with the smallest labor force possible, while complying with relevant laws and regulations. We centralize the management of data such as inventory volume, usage volume, and gas analysis results, sharing the information with manufacturing bases and associating it with production and transportation plans in a system that can supply gas semi-automatically. Moreover, for semiconductor manufacturers with global manufacturing bases, we will immediately share important information related to the production, analysis, and supply of electronic materials gases with our customers across supply regions. This will improve quality and productivity and should also enable us to respond quickly to customers as a single Group. Going forward, I would like to see the entire Group make proactive use of DX for supply chain optimization.

In regard to R&D, I expect that we will establish a priority order for issues to be addressed in our next medium-term management plan, which is currently being formulated; however, our initiatives to realize a carbon-neutral society will likely assume a much higher level of priority than before. The technology and knowledge that we have cultivated will enable us to approach issues from various aspects, and by cooperating on co-creation with partner companies, we aim to contribute to the realization of a better society. In terms of the division of roles within the Group, basic R&D fields are handled in Japan, while other areas are responsible for the development of new gas application technologies, engineering technologies, and solutions development.

Next, what I require from the Group's human resources is that they take a global perspective. I myself was involved for over 10 years in the business management of Matheson Tri-Gas, Inc. in the United States. When I returned temporarily to Japan, I often found myself reflecting that things would be approached differently in the United States. If we can recognize the different approaches that are taken in the United States, Europe, Japan, and so forth, then I believe that we can achieve communication without fixating on the differences between each of their ways of doing business, and this will also encourage innovation. I hope that we will eventually make global personnel exchanges commonplace, and in a few years realize diversity within Nippon Sanso Holdings. Ideally, I would like to see an increase in the number of people who are able to operate in the context of each country and are able to make judgments, offer opinions, and engage in communications with local sensitivity.

In Conclusion

The Company remains aware of the importance of internal reserves for enhancing, growing, and strengthening its corporate structure, while striving to give returns to shareholders in accordance with a dividend policy that considers stable dividends and links to performance. In line with this policy, we have decided to increase the

year-end dividend for FYE2021 by ¥2 year on year, to ¥16 per share. Together with the interim dividend of ¥14, the total annual dividend will be ¥30 per share. For FYE2022, we plan to pay an annual dividend of ¥32 per share. We would like to ask all our shareholders and investors for their continued support and guidance.

As we in the Nippon Sanso Holdings Group provide customers throughout the world with a safe and reliable supply of the products and services that they need, we aim to realize our Group Vision to "enhance human well-being and contribute to a more sustainable future." Through our business, we will work with our customers and stakeholders to ensure that we are good corporate citizens. My goal is to be the kind of corporate group in which each individual employee is open to a wide range of opportunities and is motivated by new challenges, inspired by the concept of "The Gas Professionals."

September 2021




Europe, we will now cover an even broader market. To enable this, we will coordinate with our operating companies in each region to realize centralized management of information, such as local business environments and sales activities, the status of customers' production activities, and R&D trends, in order to provide flexible operations and user services globally.

CFO Message



Alan David Draper
Executive Officer,
Group Finance and Accounting Office, and CFO

We Consider the Group’s Financial Soundness and Sustainability to Be Our Top Priorities and Will Therefore Aim to Reduce Interest-Bearing Debt and Increase ROCE.

Introduction

As Chief Financial Officer (CFO) of Nippon Sanso Holdings Corporation, my main priority is to ensure the financial health and sustainability of the Group. My approach to accomplishing this is two-fold. First, I focus on financial fundamentals, which include clear and accurate reporting in our securities filings, maintaining a strong internal control environment, ensuring adequate financing and working capital management, and providing appropriate communication to our shareholders. In addition to ensuring a solid financial foundation, as the second part of my two-fold approach I support long-term strategic improvements such as the deployment of best practices, advancement of continuous productivity initiatives, analyzing / prioritizing capital expenditures, increasing return on capital employed (ROCE), reducing interest-bearing debt, and contributing to a more sustainable future.

To touch briefly on my background, after working as a certified public accountant (CPA), from 1993 to 1996, within an Accounting and Auditing firm, I worked for over twenty years in various financial positions at Praxair, Inc. in the United States. During these years, in addition to finance, I was also periodically responsible for Information Technology, Procurement, Productivity, Operational Excellence, and Compliance. In 2017, I was reassigned overseas and appointed as CFO of Praxair Europe based in Madrid, Spain. With the acquisition of Praxair Europe by then Taiyo Nippon Sanso Corporation in December 2018, I remained on as CFO of the European business and became a member of the Taiyo Nippon Sanso Group. On October 1, 2020, I was appointed CFO of Nippon Sanso Holdings based in Tokyo, Japan.

Naturally, as CFO I employ defensive strategies such as cost reduction, but personally given my past experiences and responsibilities, I focus on productivity and waste reduction initiatives. I encourage other members of the executive team to support and drive these programs because active promotion of these initiatives across the global business increases the Company's earnings, efficiency, financial health, and share price.

Characteristics of the Company’s Employees and Contribution to the Company

During FYE2021, our nearly 20,000 dedicated employees of the Nippon Sanso Holdings Group performed selflessly and exceptionally throughout the year, despite the COVID-19 pandemic. Our team was productive and made use of their accumulated expertise in a tireless effort to ensure reliable production and supply. Our employees, across the 30 countries in which we operate, reemphasized through their outstanding work during the pandemic that they are the most important asset of our Company. During the pandemic, our Company was deemed an essential supplier in nearly every operational region. Our products support society through many market segments such as medical, pharmaceutical, food processing and packaging, electronics, petrochemical refining, and transportation. The Company's employees had a challenging but successful year in FYE2021, producing these essential products and providing them to the markets we serve.

Financial Performance and Nippon Sanso Holdings’ Strengths

By providing essential products to society, as explained above, the Nippon Sanso Holdings Group was able to end FYE2021 with solid results, despite the unusual and challenging year. Revenue for the year was down 3.8% and operating income 5.4%. However, net income increased 3.5% and free cash flow increased 2.4%, and the adjusted net debt-to-equity (D/E) ratio decreased from 1.45 to 1.15 times. This

was a tremendous accomplishment considering the weak first quarter of the fiscal year. In the first half of the year, we faced challenges given the pandemic-related government restrictions and global manufacturing slowdown. Our downside risk in the first half was limited due to the nature of our products which are indispensable in many areas of society. In the second half, the Company's results recovered significantly as our dedicated team of employees successfully enabled reliable supply and delivery to our customers as the macroeconomy improved with an industrial manufacturing rebound in key regions.

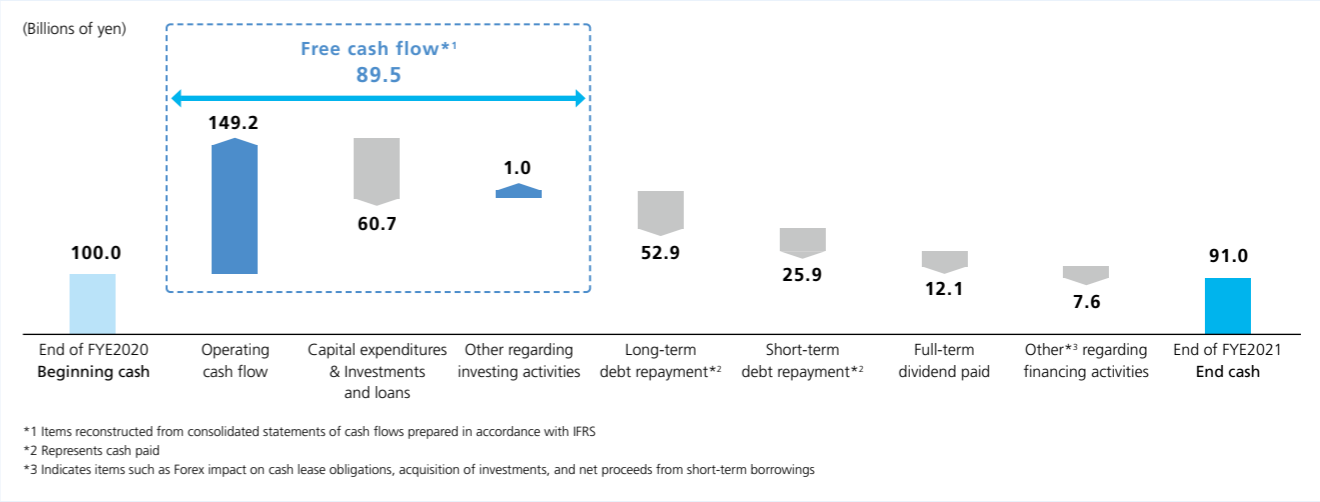
Ortus Stage 2 Overview and Major Accomplishments

Nippon Sanso Holdings’ medium-term management plan “Ortus Stage 2” covered the period from April 1, 2017 to March 31, 2021. Therefore, the closing of FYE2021 also closed the chapter of our four-year plan. The team made significant progress completing objectives set out in the plan and positioned the Company well for continued growth and success.

One of the key objectives of Ortus Stage 2 was to improve and diversify the Company's geographic footprint. We accomplished this global diversification effort through two significant acquisitions. The first acquisition was of an extremely large industrial gases business in Europe. Entering this market was a tremendous achievement considering that the Company did not have a global footprint at that time. The European company was later named Nippon Gases Europe. The second acquisition was of the HyCO business in

Cash flow (FYE2021 Full-term)

Despite the pandemic, our company generated sufficient free cash flow to distribute dividends and ensure debt reduction.



the United States. As a result of these two acquisitions, more than 50% of revenue and core operating profit is now derived from overseas businesses.

Ortus Stage 2 also included challenging objectives to increase the density and scale of supply. The Company successfully increased its supply and customer density by constructing over 10 on-site plants in the United States and Asia and Oceania during this time period. These plant start-ups have enabled a step change across the business.

Another goal of Ortus Stage 2 was to improve our supply capabilities and position in the electronics market. This was accomplished through significant capital investments and expansions for specialty gas production lines. We also focused and improved our supply chain network. Our reliability greatly increased with investments in quality labs, logistics warehouses, and storage. In summary, we expanded our total gas management capabilities, which enabled us to provide greater assistance with our customers’ internal production process requirements.

Moreover, in October 2020 the Company completed a major structural reform by converting to a holding company structure. My perspective, as CFO newly assigned to Japan, is that NSHD has embarked upon its globalization journey. The Company shifted from being a traditional Japanese company with subsidiaries in 30 countries and decision-making conducted by the Japanese domestic management team to being a strong global company headquartered in Japan. During this shift, the team delegated authorization levels embracing the philosophies and policies within the Group companies and to improve the decision-making speed. In addition, the holding company ensures the appropriate allocation of management and capital resources across the

NSHD operating entities. The global structure allows us to better identify organizational talent in geographical regions or businesses. It provides us with the opportunity to leverage their knowledge and experience across the organization and improve the collective strength of the Group companies. We are already experiencing faster decision-making, more global focus, along with commercial and productivity benefits bringing improvement to the top and bottom line. The ability to leverage the collective knowledge and experience of the global team is a large opportunity which will bring positive benefit to the Group for years to come. While there were many other achievements during Ortus Stage 2, these were of particular noteworthiness.

Shifting to the financial metrics of Ortus Stage 2, our financial performance was especially challenged since our revenue and core operating profit fell short of our targets due to matters related to COVID-19 pandemic. However, our cash flows remained strong and enabled us to reduce our interest-bearing debt level more than planned. Our adjusted net D/E ratio decreased to 1.15 times, which is below the revised target of 1.27 established after the acquisition of the two major acquisitions in Europe and the United States. In addition, we increased the dividend by 7% on an annualized basis, as approved at the General Meeting of Shareholders held on June 18, 2021.

Key Financial Ratios—Net D/E Ratio and ROCE

As indicated previously, my priority is on the financial health and sustainability of the Company. Focus is upon cash flows, debt reduction, disciplined capital investment, earnings growth, improved productivity, and sustainability. Success in these efforts

will decrease our D/E ratio and will increase our ROCE. Our debt ratios were negatively impacted as a result of the ¥680 billion financing for the two large overseas acquisitions. However, plans are in place to utilize our strong cash flows to reduce our debt level and our net D/E ratio to pre-acquisition levels of approximately 0.8 times. As a capital-intensive business, we will increase capital accountability, implement productivity programs to reduce costs in line with economic requirements, shorten lead times, and utilize global focus to enhance ROCE.

Enhancing Segment Performance and Function

Our business and profitability profiles across the four industrial gas segments and Thermos business are different due to differences such as labor laws, long-standing contractual relationships, customs, or competitive environments. In all five of our reportable segments there are opportunities to improve each business. The more deeply we investigate, the more knowledge is gained to drive performance-based objectives. For example, we are able to gain new business by sharing engineering applications across our global networks, we introduce productivity programs and projects to countries where they did not exist, and we continue to identify excellent business opportunities for improvement. As an example, good results were attained by our Spanish wastewater treatment expertise in Japan. This shows NSHD’s strength in being able to share best practices and apply them to projects and applications globally. We are also working to improve back-office integration efforts to achieve greater global efficiency.

Areas in which I expect advancement include procurement initiatives, lean manufacturing, sustainability, cost controls,

capital discipline, operational excellence, and increased functional department guidance. There is no simple approach to improve Company profitability; however, we are conscious of the need to allocate highly capable team specialists to lead innovation in critical areas. Through their contributions, I believe that profitability will be systematically improved.

Capital Allocation

Industrial gas companies require significant capital investment. Therefore, capital allocation is one of the most critical functions of the Nippon Sanso Holdings executive team. Capital is allocated based on opportunities and expected individual project returns. We have several sustainability-related projects underway and we constantly monitor the level of benefit that these projects return using milestones and financial metrics.

The combination of the Company’s essential products and its resilient markets make for strong and resilient cash flows; however, it is crucial that we prioritize capital allocation. Therefore, we will constantly prioritize and balance sustaining safe and reliable operational capital, large-growth project capital, M&A opportunities along with appropriate debt and cash management.

In Conclusion

In FYE2021, the COVID-19 pandemic caused an unprecedented situation for our employees, customers, suppliers, and their families and communities. However, our collective team has become stronger, risen above the difficulties, embraced our more resilient business model, and ensured a stable and reliable supply chain of our products to all of our customers. Some of the areas where I see future opportunities include carbon neutral and sustainable initiatives for both the Company and our customers; continued strengthening of our Asia and Oceania presence and the electronics market; increased productivity and procurement opportunities; innovative applications; IT and digital transformation and enhancement opportunities; and expanded application of best practices. As we continue to grow and improve our performance in these areas, I am confident that the Company will be stronger, more successful, more valuable to society, contribute to a sustainable society while simultaneously growing into a more profitable company.

Review of Medium-term management plan Ortus Stage 2

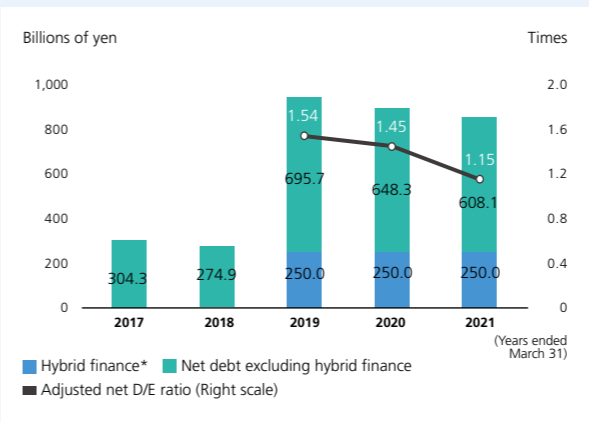
	FYE2017 full-term	FYE2018 full-term (the 1st FY)	FYE2019 full-term (the 2nd FY)	FYE2020 full-term (the 3rd FY)	FYE2021 full-term (the final FY)	FYE2021 (planned) (Announced in Feb. 2019)
Revenue (Billions of yen)	581.5	646.2	740.3	850.2	818.2	910.0
Core operating profit*1 (Billions of yen)	54.7	60.0	65.8	90.3	87.2	100.0
Core operating profit margin (%)	9.4	9.3	8.9	10.6	10.7	11.0
Overseas revenue ratio (%)	40.8	43.3	47.9	55.5	56.1	55.0
ROCE*2 (%)	8.4	8.4	6.2	6.4	6.1	7.1
Adjusted net D/E ratio*3 (Times)	—	—	1.54	1.45	1.15	1.27
Annual dividends per share (Yen)	20	23	25	28	30	—

*1 Core operating profit is calculated by subtracting losses (non-operating items) produced by non-recurring factors from operating profit. Non-recurring factors include structural reform charges, including costs associated with business downsizing or withdrawal; special severance payments; losses due to disasters or major accidents; and other factors such as the disposal of idle assets.

*2 Return on capital employed (ROCE) = Core operating profit / (outstanding interest-bearing debt + equity attributable to owners of parent)

*3 Adjusted net D/E ratio = (Net interest-bearing debt – equity-type debt) / (equity attributable to owners of the parent + equity-type debt). Equity-type debt is debt procured through hybrid financing that has been recognized as equity credit by ratings agencies (50% of the procured amount); hybrid financing is a form of debt financing that has features resembling equity, including 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.

Net interest-bearing liabilities



* For details regarding hybrid finance, please see note *3 on P.26.

Thomas Scott Kallman

Member of the Board,
Chairman and CEO,
Matheson Tri-Gas, Inc.

Alan David Draper

Executive Officer,
Group Finance and
Accounting Office, and CFO

Eduardo Gil Elejoste

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

Roundtable Discussion (1)

Our Vision and Our Future as a Global Integrated Industrial Gas Company

Nippon Sanso Holdings CFO Alan David Draper spoke with directors Thomas Scott Kallman and Eduardo Gil Elejoste about the new Nippon Sanso holding company structure, activities of the Board of Directors, decision-making within the Group, and keys for the future of the Group, our employees, and our stakeholders. Playing pivotal roles in the globalization of Nippon Sanso, Messrs. Kallman and Elejoste not only offer insights and valuable feedback to the Board of Directors but also lead their own organizations forward in alignment with the Vision of the Nippon Sanso Holdings Group.

Changes and outcomes under the holding company structure

DRAPER Nippon Sanso has transitioned to a holding company structure. What do you see as the benefits of this change?

ELEJOSTE The bigger benefits are yet to come, but I think the direction is clear. NSHD is a global company that must think globally. That includes the vision, the philosophy, the tagline, the market strategies, the technology strategies, the R&D strategies, the policies, and the standards. All of this must be global, but the company must act local as well. Of course, we will gain enormous benefits from sharing the best ideas and best practices across all regions. For example, safety, operational efficiencies, applications technologies, R&D, engineering, and clearly economies of scale. There is no doubt that this globalization—thinking global and acting local—will be very beneficial for the Company.

DRAPER Since becoming Board members over the past 18 months or so, have you noticed any issues you want to bring attention to?

KALLMAN I'm not so sure about issues per se, but it has been very useful to our businesses to be more aware and have a better understanding of overall Group performance. Of course, the pandemic had a major impact on the Group's financial performance. Being aware of the difficulties our Group was experiencing relative to our financial results, we took it upon ourselves at Matheson to focus on disciplined cost reductions and price management campaigns, along with a very high level of coordination for cross-selling to support overall Group performance. Happily, we not only improved after a difficult first quarter but also delivered the original pre-pandemic profit targets in support of overall NSHD Group performance. Being aware of the Group situation motivated us to focus intently on doing what we could.

ELEJOSTE I have not seen any issues since becoming a Board member. However, when the pandemic started, having a very difficult first quarter and year in front of us, we put a new budget together quickly

under the guidance of NSHD. While we did not exceed the original budget, we exceeded our revised budget. All-in-all, the organization is performing extremely well and is extremely disciplined. We continue to focus on safety and on our customers, and I was proud of the organization's disciplined approach to the pandemic.

KALLMAN I also think Board participation has helped us organize and establish a fairly structured risk management process at Matheson. We probably would not have put the emphasis and structure on better management and identification of risks had it not been for my Board participation.

DRAPER A Board discussion I observed that was very insightful was our discussion about people. We talked about what we can do differently in the organization and where to improve. I witnessed strong interactions and good comments, as well as ideas about continuing with people-excellence development. How to make the organization stronger by reassigning leadership and by identifying high-potential individuals. It was a passionate discussion, because we are passionate about our people.

KALLMAN I agree with you, Alan. It always comes down to people. Making sure we have the right people and treat them right. Train them and prepare them to drive the business forward. If we do that well, the shareholders benefit.

DRAPER What are the pros and cons of how Nippon Sanso Holdings delegates authority to each region?

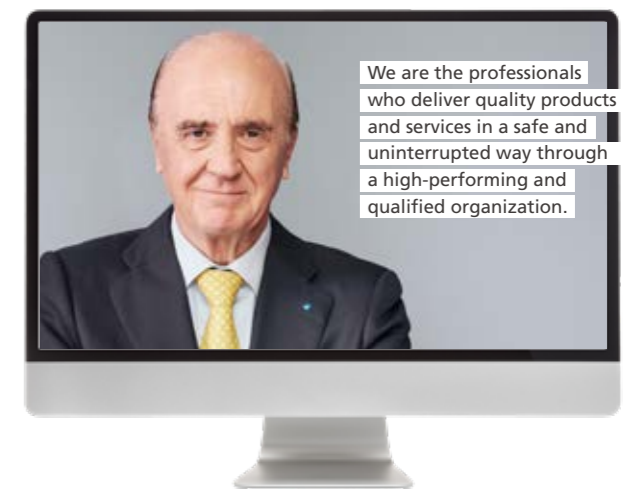
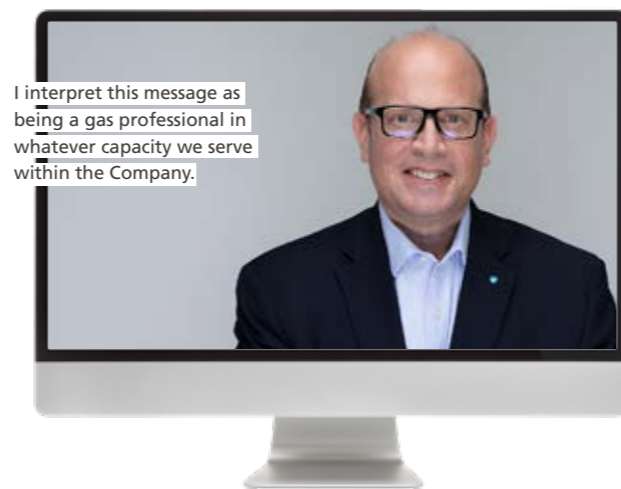
KALLMAN Clearly, extending the delegation of authority to the regions is going to provide flexibility and speed. I think a clear competitive advantage for Nippon Sanso Holdings affiliates recently has been our ability to assess and take strategic decisions faster than our competitors, with the strong support of Nippon Sanso Holdings. We've delivered several key strategic acquisitions and capital projects because of that. A related advantage is our ability to take strategic and tactical decisions to position regional businesses to compete in the environments that they're operating in. The delegation of authority to make decisions at the appropriate levels is important to us. Mr. Ichihara has been very insightful and strategic as far

as the types of acquisitions that we pursued. And when a decision is brought forward, we act quickly. And a key aspect of the acquisitions has been the process of very fast and seamless integration. This minimizes the cost that many organizations incur when trying to integrate a new organization into the larger business and we see the benefits of that. The models we implement to justify the acquisition are executed in a very disciplined fashion, and it shows.

ELEJOSTE I cannot think of cons, if you have the right teams in the regions. If you have the right teams in the regions and the right leadership, there are only pros in giving autonomy of action (again, think globally, act locally). The idea is to provide the regions with general guidelines (the grand scheme) and then let them operate and execute the details taking into account the changing environments that they can and will encounter. Talented teams, with the right leadership, the right experience, and training can achieve greater results if they are given freedom of action. Nippon Gases Europe has been the product of several acquisitions. I think that NSHD, TNSC Group at that time, saw a good opportunity to enter Europe by acquiring a complete company, meaning assets and employee organization. We were encouraged and motivated by NSHD in recognizing our past success and enabling us to continue to operate our business as it had been in the past. In that sense, the NSHD Group made it very easy for the European leadership and European team to start working in the new group. And now it has been two-and-a-half years of successful cooperation.

KALLMAN Also, the acquisitions brought forward by Mr. Ichihara made sense relative to how they could be integrated readily into the organization. In many instances, acquisitions improved overall intensity in a given marketplace, which is of course strategic. In other instances, it was a great product line extension, once again, strategic. All the acquisitions fit together. You don't see acquisitions that don't make sense relative to an overall industrial gas portfolio.

What “The Gas Professionals” means to you?



Effective approach to strengthening synergy with other geographic hubs

DRAPER What are your thoughts on the importance of culture and how have you ingrained culture in your organization?

ELEJOSTE I believe that Nippon Gases Europe is a diverse and inclusive open-minded organization with open and candid communication. That anybody in our company can say what he or she thinks. If you communicate well and extensively, people will understand why you demand so much from them. Make the effort, so people have a stronger sense of belonging. Then, people will enjoy working more and going the extra mile, because they understand you are also going the extra mile with them. That, along with our safety and compliance culture, is the culture we have. Obviously, we have our priorities: safety, compliance, the environment, people-excellence, customer focus, financial results, in that order. But only with excellent people can you have safety, compliance, environmental consciousness, customer focus, and financial results.

DRAPER What do you think are the strengths of your organizations, as well as the strengths of NSHD?

KALLMAN As far as NSHD is concerned, it's the significant engineering capabilities for design and production of ASUs. They've been very supportive of our requirements in building our network. We've installed 16 ASUs, most of them from the plant engineering center, and the plants that they provide us are

well-designed, very easy to start up, and very power-efficient. Too often, Japanese organizations are viewed as being very deliberate and maybe a bit slower to make decisions. But I can tell you that over the years, my experience has been that Taiyo Nippon Sanso, and now Nippon Sanso Holdings, has been very responsive and very quick to take action when opportunities present themselves. And it's been one of the key reasons why Matheson has been able to grow at the rate it has over the past 15 years. I think Matheson's strength is the ability of our organization to focus on key priorities and pivot as necessary when priorities change. We have a simple, very focused safety process. We also have a very focused quality process, which drives our cost-reduction program. A process- and procedure-oriented organization—both in safety and quality—sets the foundation to drive profitable growth. You also need to have process and procedures for sales, which we do. We have probably the simplest, but most effective, sales model in our industry in the United States. And the feedback we receive from individuals who come to our company in sales from other organizations—from our competitors—all say the same.

ELEJOSTE I think Nippon Gases Europe has very experienced staff and management. We also have a widely varied offering that can match the offering of any of our major competitors in Europe. We can move fast and make things simple in comparison with many of our competitors. We also demonstrate good profitability because of price to value and

our productivity. As I mentioned before, we have a very strong safety and compliance culture. Our organization is lean, agile, and very customer-oriented. We receive comments from customers that we are willing to do more than others. We are also highly committed to carbon-neutrality opportunities, which is huge in Europe, and we have to make sure to take more than our fair share of that opportunity in the future.

DRAPER Can you comment on your interactions with employees of other Group companies? What are your impressions? What have you learned?

KALLMAN I continue to be impressed with the level of engagement and enthusiasm in all regions with which I have contact. I see people striving to improve the overall business and to do the right things on a fundamental level. A recent example, which Eduardo mentioned, is addressing the challenge of sustainability. I've been equally impressed with the level of alignment of regional priorities across the Group in terms of ensuring a clear focus on safety, compliance, and quality. This is a reflection of the emphasis placed on these imperatives by the Nippon Sanso Holdings executive management and the Board.

ELEJOSTE We have started working together with the HyCO group of the United States and the working relationship is going very well. We are also in continuous contact with the helium group, because we are a big taker of helium and we are also in contact with the United States, Japan, and Southeast Asia because of the electronic gases. With

Japan we are also working together in the engineering area, in some applications technology opportunities, Additive Manufacturing, Waste Water Treatment, Combustion...and with Southeast we are working in productivity programs. Recently, NSHD has created the global carbon neutrality group. So, the interaction with the “rest of the world” is continuous and the right way to go. We are all learning from each other.

Future of the Nippon Sanso Holdings Group

DRAPER What are the essential characteristics of a leader in your respective organizations?

KALLMAN I think future leaders in our organization must be strong communicators and have the ability to connect across multiple geographies and cultures. A second trait is the ability to focus on what really matters and maintain that focus, despite the many distractions competing for her or his attention. A leader must also be able to focus on potential opportunities—actively search for new opportunities in technologies or other competitive advantages. Lastly, a leader must be comfortable with change. Not only the change that they experience but also in driving change and being willing to drive their team to make changes, sometimes beyond the comfort level of the team.

ELEJOSTE A leader that believes that people excellence (a talented diverse and inclusive team, thoroughly trained, highly motivated...) is the foundation of everything else, safety, compliance,

environmental consciousness, customer focus, and financial results. As a consequence establishes a strong performance and results culture to thoroughly upgrade the quality of the teams on a continuous step by step process, a thorough differentiation process that distinguishes in every team and organization the top performers, from the medium performers and the low performers and takes different actions towards the different groups. A leader that has the right balance of strategic thinker and tactical executioner, being able to think ahead or way ahead and, at the same time, delivers monthly and quarterly results. The most recent example being the approach taken during the pandemic when we continued to look for growth opportunities and acquisitions and continued to invest instead of just going in the direction of short-term cost savings through layoffs and reductions. This was very motivating for the organization, that we kept the right balance, even in the midst of the pandemic storm.

DRAPER Speaking of leaders, I have worked with President Hamada for about eight months now here in Japan. He has extensive experience with industrial gases, deep insights in the electronics industry, and a thirst to implement digital transformation in the Company. He talks about digital transformation and about embracing electronics to become more efficient and more effective. How we can utilize big data to make the right decisions and become more productive. His background and international experience brings another global perspective to the team and I am confident that he will continue the global-

ization efforts of our organization and make it even stronger and better than it is today. We call ourselves, “The Gas Professionals.” What does this mean to you?

ELEJOSTE That is a great tagline, and I take it very literally. We are the gas professionals, and that is how customers, suppliers, and partners must view us. We are the professionals who deliver quality products and services in a safe and uninterrupted way through a high-performing and qualified organization. That is what the term means to me.

KALLMAN Very simply, being a professional is doing what you said you were going to do. Deliver on the commitments you make to internal and external customers. We want our external customers to view us as their primary source of gases, equipment, and related applications and expertise. And if we are able to do this, I think it will ultimately result in an increase in shareholder value.

DRAPER Thank you. Not being on the commercial side of the business, I interpret this message as being a gas professional in whatever capacity we serve within the Company. A gas professional in finance, a gas professional in HR, a gas professional in IT, or whatever your position, being a gas professional means doing your ultimate best for the Company.

KALLMAN I think that's exactly right. This is the essence of how we are going to win as a team. Everyone doing their very best in their assigned role.

SECTION 2

OUR VALUE CREATION

The Nippon Sanso Holdings Group's Value Creation

The Nippon Sanso Holdings Group aims to create social value through innovative gas solutions that increase industrial productivity, enhance human well-being, and contribute to a more sustainable future. We are committed to achieving this vision through business expansion centered on industrial gases and through co-creation with all our stakeholders, including employees, customers, and suppliers.



The Nippon Sanso Holdings Group's Value Creation Story

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 striving for sustainable growth by further strengthening our advanced gas technologies and the customer contact points that we have acquired through our Thermos brand B2C business. We aim to deliver both social value and economic value, aiming to enhance human well-being, and contribute to a more sustainable future.

Social Issues

Climate change

Resource shortages

Food waste

Sickness risk

Health issues

Social infrastructure updates

Human rights infringements

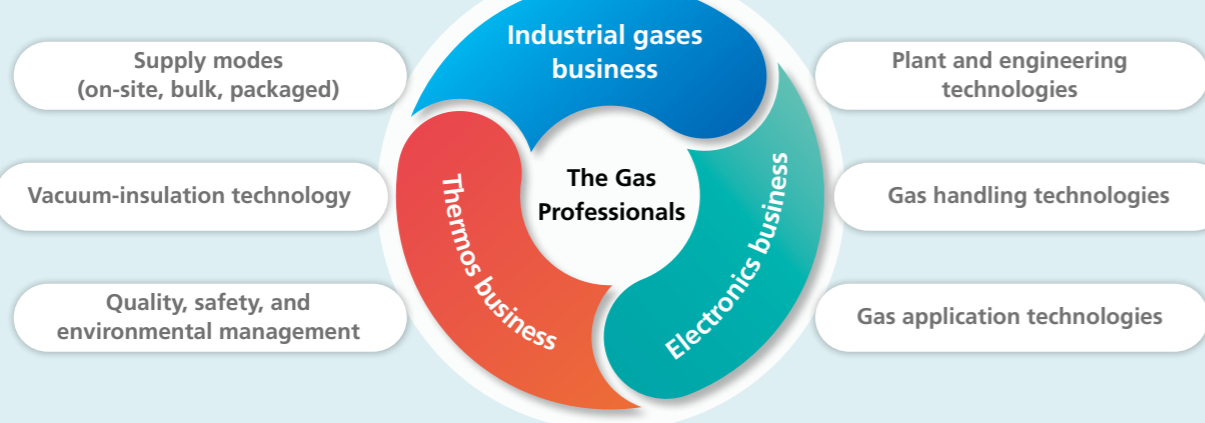
Ensuring occupational health and safety

HR capability development and training

Depopulation of regional communities

Business Activities

Proactive. Innovative. Collaborative. Making life better through gas technology.



Risk Management (→P.120)

Human Resources Who Embody Health, Integrity, and Resourcefulness (→P.72)

Consolidated number of employees **19,357**
(Overseas 12,758 Japan 6,599)

Environmental Management (→P.68)

Reducing environmental impact in business activities
Energy consumption in business activities **104,142 TJ**
Contribution to GHG emission reduction
2,892 kilotonnes CO₂e

Stable, Safe Production Capability

Production facilities to support next-generation technology
Capital investment **¥74.6 billion**

Uncompromising Technological Capabilities (→P.50)

Technological capabilities developed since the Company's foundation and open innovation
Research and development costs **¥3.3 billion**

Corporate Governance (→P.112)

Strong Financial Foundation (→P.25)

Stable financial foundation and fund procurement
Free cash flow **¥89.5 billion**

Strong Supply Chain

Collaboration and networking with sales agencies
Number of countries and regions where products are sold **30**

A Beneficial Cycle of Sustainable Growth Solutions for New Social Issues

Value Provided

Group Vision (→P.14)

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.

People



Respect everyone and contribute to people's growth, health, and job fulfillment

Society



Fulfill our function as part of social infrastructure and contribute to the development of a wide range of industries

Earth



Contribute to the preservation of a sustainable global environment

→ESG Materiality (P.58)

Products, Services, and Solutions

Industrial Gases Business Domain (→P.38)

Oxygen, nitrogen, argon, etc.
Equipment, facilities, solutions provision



Electronics Business Domain (→P.42)

Electronic materials gases, etc.
Equipment, facilities, solutions provision



Thermos Business Domain (→P.46)

Vacuum-insulated bottles, tumblers, fry pans, etc.
Household goods products



Negative outputs from business activities GHG emissions 5,651 thousand tonnes CO₂

Business Section: Development of Three Business Domains

Our industrial gases business supplies industrial gases such as oxygen, nitrogen, and argon to a wide range of industrial fields that support the modern world. Our electronics business provides various electronic materials gases used in the manufacturing processes for semiconductors, liquid-crystal displays (LCDs) and so forth as well as facilities and equipment needed for their supply. In the Thermos business, we propose and sell diverse household goods to general consumers to create new lifestyles required by a sustainable society. The Nippon Sanso Holdings Group's business domains comprise these three elements.

Business domain	Main products and services	Main users
Industrial gases business	Air separation gases, carbon gas, helium, hydrogen, LP gas, welding and cutting equipment, gas supply equipment, medical gases and related equipment, etc.	Steelmaking, chemicals, automotive, shipbuilding, machinery, medicine, food, etc.
Electronics business	Air separation gases, electronic materials gases, installation of refining and supply equipment, etc.	Electronics (semiconductors, LCDs, etc.)
Thermos business	Household goods	General consumers

How Air Separation Gases Are Manufactured

Cryogenic separation is a typical method for manufacturing air separation gases. Air is taken into an ASU from the atmosphere, then compressed. Water and impurities such as CO₂ are removed, and the air is cooled to boiling point to liquefy it. Boiling point is the temperature at which a liquid boils and

becomes a gas. Conversely, if a gas is cooled down to boiling point, it becomes a liquid. Different elements have different boiling points, and this characteristic is used to separate oxygen, nitrogen, and argon out of the air and refine them.

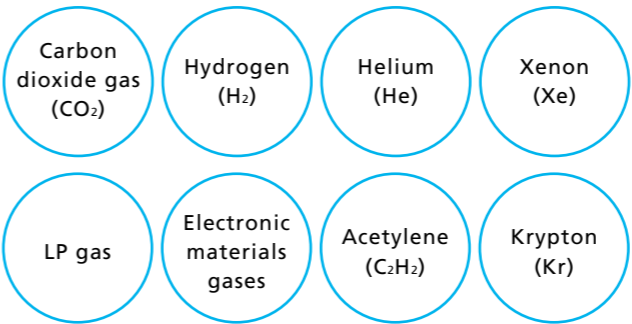
Surprising Uses of Industrial Gases

While industrial gases are primarily supplied to plants in various industrial fields, they are also used in areas that are close to our daily lives. For example, in the United States, we supply nitrogen to wineries. When wine is bottled, nitrogen is sealed into the bottle to reduce the oxygen concentration to 0%, preventing oxidation and keeping the wine fresh. At the same time, oxygen is used in fish farming (both marine and on land). Oxygen is added to enrich the water used to farm salmon in Europe, shrimp in Asia, and eels, trout, and salmon in Japan, helping to promote physical growth.

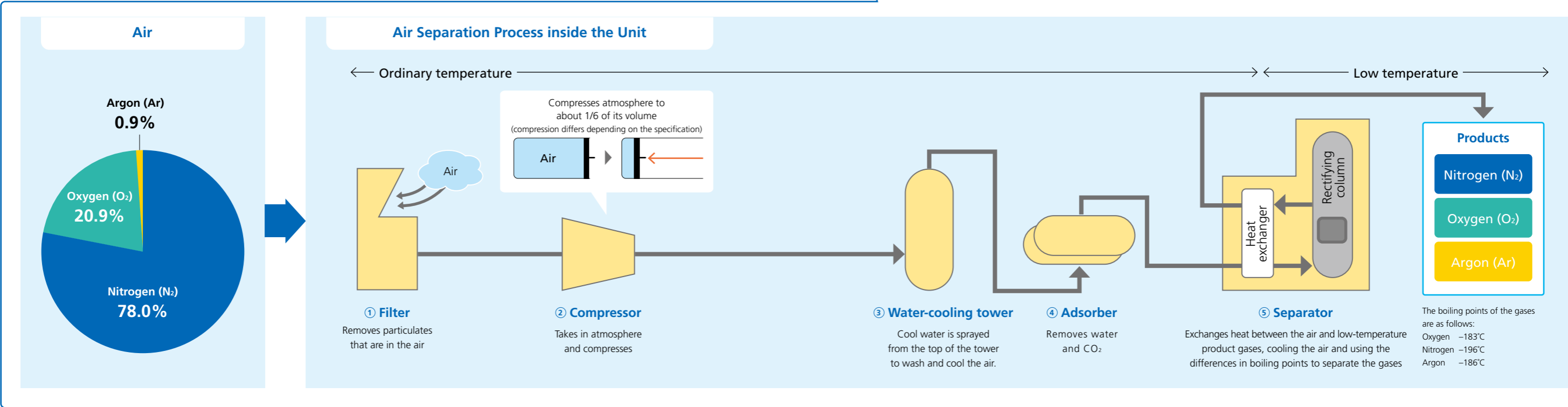


IR-kun

Other Industrial Gases



Gas Filling Plant



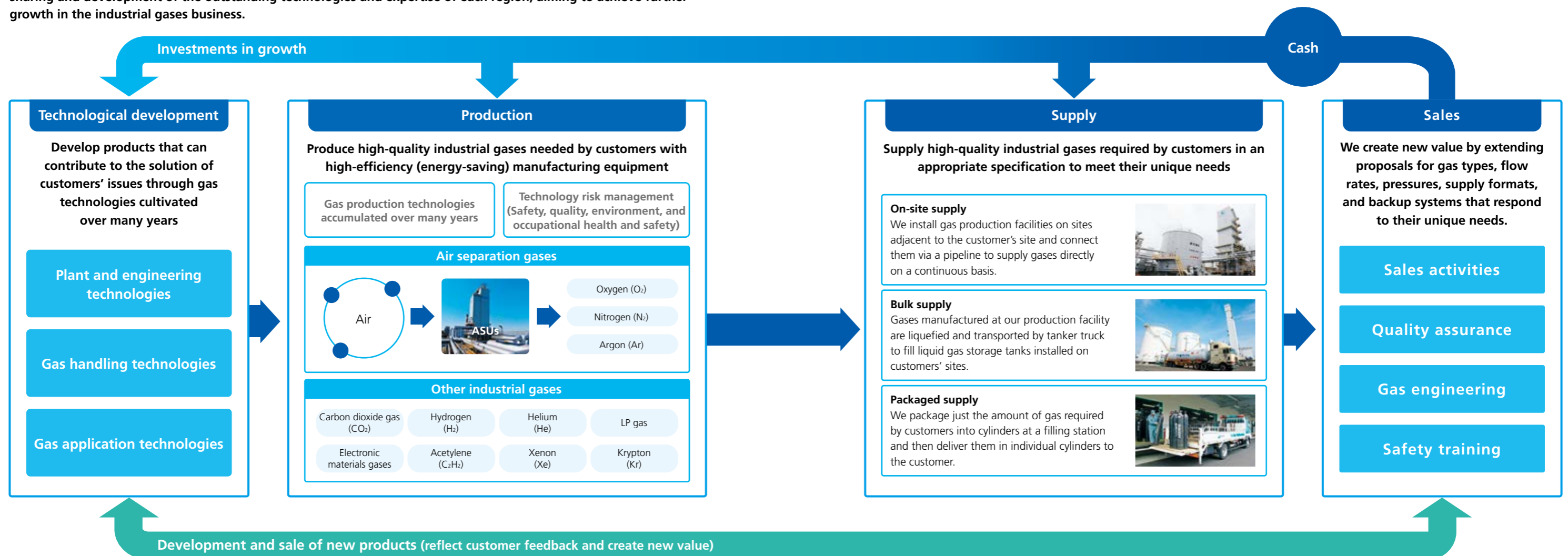
Industrial Gases Business

Air separation gases are our main industrial gases product, manufactured by separating and refining gases, mainly from air as a raw material. The industrial gases business provides these air separation gases to a wide range of industries, including steelmaking, chemicals, and automotive, as well as supplying medical gases such as oxygen. Since the needs for industrial gases differ in every region of the world, this business is established on the site of consumption, cultivated and expanded by operating companies in each region in accordance the characteristics of the region and customer. There are three supply modes: on-site, bulk, and packaged, which are specified to suit the needs of the customer. Looking ahead, the holding company, Nippon Sanso Holdings, will act as a driver for the sharing and development of the outstanding technologies and expertise of each region, aiming to achieve further growth in the industrial gases business.

Industrial Gases Business Process Centered on Air Separation Gases

Here, we introduce the flow from technological development to production, supply, and sales in the industrial gases business, the core business domain of Nippon Sanso Holdings. The Group also provides oxygen and other products for medical use. The Company started operations with the on-site plant method in 1964, the first in Japan. The business is able to provide air separation gases stably and in large volumes. We have also deployed our advanced technological capabilities cultivated in Japan to the global market, and we are expanding operations using the on-site plant method, primarily in the Gas Businesses in the United States and Europe. In the past few years, we have been expanding our production sites in Asia and Oceania, including the start of operations at an ASU in Rayong Province in eastern Thailand and a second nitrogen gas plant in the Philippines.

Among the technologies and know-how underpinning our industrial gases business, strengths of the Group are in its engineering function for everything from the design through to the maintenance of the ASUs that produce air separation gases; its production function for reliable and efficient production of industrial gases at gas production facilities; and its supply function for safe and reliable supplies of gases to customers. In addition to these strengths, various initiatives for supporting safety and security are also crucial to building relationships of trust with customers that support the Group's growth. These include our quality management, which ensures our ability to maintain the quality expected by customers, and safety education, which ensures the safety of the environments in which our gases are used.



Industrial Gases Business

Industrial Gases Used in a Wide Range of Fields

Since its foundation in 1910, the Company has evolved its gas technologies so that they now cover industrial fields comprehensively, including fields such as materials, chemicals, fabrication, life sciences, food, agriculture, electronics, and energy. As a business that plays a vital role in the modern world, we provide powerful support for our customers' corporate activities, contributing widely to the progress of technology and the development of industry.



Materials
Steelmaking, non-ferrous refining, glass, ceramics, cement, paper, and other materials
We supply technologies involved in new materials and innovative manufacturing processes to the materials industry, which is a foundation industry.



Chemicals
Petrochemical and chemical industries, rubber, plastics, and other organic materials
We supply products and technologies that contribute to better productivity and safety, such as raw materials gases, combustion and deterioration prevention, and reaction optimization through atmosphere control.



Fabrication
Automobiles, construction machinery, bridge building, construction, and shipbuilding
We supply technologies related to the assembly and processing of automobiles and construction machinery, as well as the manufacturing and processing of metals, ceramics, and functional materials, based on shield gas and atmospheric gas optimization technologies and gas control technologies.



Life Sciences
Medical, pharmaceutical, and biotechnology
We supply medical oxygen and Water-1⁸O used in PET diagnostics for customers in the field of biotechnology, such as advanced medical research, based on technologies for using liquid nitrogen at -196°C.



Food
Food manufacturing and processing
We supply solutions for food and food product markets, such as nitrogen-filled sealing and freezing. We are also developing the Bistranza® series of gas applications for food.



Agriculture
Agriculture, fisheries, and forestry
In the primary industries field, we supply insect pest control equipment that uses carbon gas, as well as highly concentrated oxygen to meet growing needs in the aquaculture industry.



Electronics-Related Products
Semiconductors, LCDs, and solar cells
In addition to supplying high-quality nitrogen gas and electronic materials gases for the electronics industry, we also provide a full-line of solutions including pipe installation and facility inspection services to maintain the quality of supplied gases.



Energy
Rechargeable batteries, reusable energy, solar cells, and new types of energy
We supply solutions that can be applied to the conventional fossil fuel energy field; the solar cell and electricity storage field, which is an essential component of smart grids; and the renewable energy field, including fermentation and bioresources.

Industrial Gases Supplied to Various Medical Front Lines

The Nippon Sanso Holdings Group operates a medical business as a subsegment of the industrial gases business. We supply medical gases such as oxygen, nitrogen, and carbon dioxide (dry ice) to medical and medical related institutions. Liquid helium at the ultra-low temperature of -268.9°C is used to cool the superconducting magnets in magnetic resonance imaging (MRI) equipment. Furthermore, in addition to gases, we also supply medical-related equipment. For example, Japanese operating company Taiyo Nippon Sanso Corporation group company IMI Co., Ltd. handles high-performance ventilators used in intensive care, which contribute to the treatment of patients in Japan with respiratory illnesses, including COVID-19. In addition to supplying medical gases and equipment to medical institutions, we also supply home oxygen therapy (HOT) equipment to patients who undergo ongoing

treatment at home. Furthermore, our liquid nitrogen cryo-preservation containers for cell storage are used by advanced research laboratories for induced pluripotent stem (iPS) cells and so forth. The Group is contributing to various medical front lines through the supply of gases and equipment.



Liquid nitrogen cryopreservation system

Strategies Going Forward

(1) Results of Medium-Term Management Plan
Ortus Stage 2

During the first quarter of FYE2021, the spread of COVID-19 infections caused a steep drop in production activity among many of the Group's customers in the manufacturing industry, with a resulting decrease in demand for industrial gases having a corresponding impact on sales. In the United States especially, we implemented measures such as cost management, cost reduction, and productivity improvements to partially offset the decrease in sales volume due to the sharp decrease in demand. These initiatives succeeded, and we observed a strong recovery in the subsequent quarters, with profits recovering to pre-pandemic levels in the third quarter.

Under medium-term management plan Ortus Stage 2, a four-year plan through to FYE2021, we have achieved results to a certain degree. In our efforts toward globalization, we significantly expanded the European business acquired in 2018 and the U.S. HyCO business* acquired in 2019. Today, our global HyCO business projects are run by the HyCO team of our U.S. operating company Matheson Tri-Gas, Inc. (MTG). The MTG HyCO team is now coordinating with the operating companies in Europe to strengthen the HyCO business there. This initiative is part of our efforts to share the expertise of our leading sites in each region by transitioning to a holding company structure in October 2020, aiming to create synergies and strengthen the overall capabilities of the Group. In addition, we started operations at five on-site projects that we newly acquired in the United States. Meanwhile, in the Asia and Oceania region, we are phasing in operations at supply depots and other such capital investment projects.

* The HyCO business provides on-site supply of hydrogen (H₂) and carbon monoxide (CO) to the petroleum refining and petrochemical industries.

(2) Promotion of Operational Excellence to Succeed in
Global Competition

The scale of the Gas Business in Asia and Oceania is still small compared with Japan, the United States, and Europe; but as an emerging market, it is expected to grow significantly over the medium to long term. We therefore recognize this as a region in which ongoing investments are essential. Moreover, the scale of the industrial gases market in the United States is the largest in the world, and we consider it an important growth area going forward. For example, we are looking at acquiring local distributors to increase the capacity utilization of our existing ASUs and run them efficiently. It is important that we recognize the Group's business opportunities and use them to achieve business expansion and growth.

The most important point for achieving further growth going forward is to strengthen and leverage the comprehensive capabilities of the Group. At the meetings of the Global Strategy Review Committee (→P.115), which is organized across each operating company, we share details of each operating companies' short-term strategies, action plans in order to examine the best allocation of resources across the Group. Going forward, we also believe that deploying initiatives to increase productivity on a global scale and promoting even higher levels of operational excellence will lead to further growth of the industrial gases business. Furthermore, over the medium term, we are also examining Groupwide themes for establishing projects to strengthen our comprehensive capabilities, including strengthening global products and services (electronics, helium, and engineering) and bolstering the Group's R&D.

Cross-Regional Initiatives

Enhance Operational Excellence

We are making a sweeping effort to increase productivity across the Group. By improving the results of business activities and increasing efficiency, we can build competitive advantage, with a view to sustainable growth. Specifically, we will further promote cross-regional productivity activities, sharing best practices for cost reduction within the Group and using this to drive Groupwide operational excellence, as we pursue a lean organization through cost reduction.

Expand Business Opportunities

We aim to expand business opportunities by strengthening the network between Nippon Sanso Holdings and its operating companies, while increasing profitability based on overall optimization and accelerating business growth. In each business support division—Total Electronics, Plant Engineering, Helium, Marketing, and Gas Application Technologies—we will pursue synergy creation through stronger collaboration between operating companies on a global scale.



An on-site plant in the United States

Electronics Business

We supply various electronic materials gases used in the manufacturing processes for semiconductors, LCDs, and solar cells in the electronics industry, as well as bulk gases such as nitrogen used for safety purposes. We also provide equipment related to gas supply. In addition, we offer services such as the installation of pipes to maintain the quality of the supplied gases, as well as container exchanges and equipment inspection on customers' sites. Electronic materials gases are manufactured at our plants in Japan, the United States, South Korea, China, Singapore, and countries in Europe, and delivered through our global supply chain. With this structure, we can provide a reliable supply of high-quality gases to meet the increasingly sophisticated requirements of our customers in the electronics industry, while also meeting customers' demands in terms of ensuring safety.

Providing Total Solutions

Some electronic materials gases may be highly toxic, flammable, or corrosive, which presents various hazards. To supply these hazardous gases at the high level of quality required by customers so that they can use them safely requires not only product manufacturing and quality control technologies but also technologies that can eliminate hazards. In addition to safety uses, quality requirements are increasing, particularly in semiconductor manufacturing with regard to nitrogen gas, which is used in a wide range of processes, and oxygen gas, which is used in oxidization processes.

The Group has refined its technologies for manufacturing and increasing the quality of various electronic materials gases, mainly in the United States and Japan. In addition, during the era of rapid growth in Japan's semiconductor industry, the Group honed technologies for the safe supply of high-quality materials to support customers' manufacturing high-quality products. These included electronic materials gas analysis and refining technologies, as well as technologies for safely supplying gases while maintaining their quality and detoxifying exhaust gas, and purifying technologies for removing impurities from bulk gas, giving consideration to the characteristics of the gases.

A key characteristic of the Group's electronics business is the ability to supply various electronic materials gases for the manufacture of semiconductors and electronic components, as well as supplying bulk gas of optimal quality through ASU gas and purifiers that can be designed and manufactured in-house. In addition, we provide a full line of services related to gases essential to the manufacturing process for the semiconductor, LCD, and electronic components industry. These include equipment for safely supplying electronic materials gases (cylinder cabinets), exhaust gas treatment equipment that neutralizes toxins in exhaust gas before its release, and safety monitoring systems. The structure for providing these comprehensive services is also unusual compared to competitor companies in that the Company can provide all services itself within Japan. Accordingly, we operate a large number of "Total Gas Centers" for comprehensively supplying gas-related services to customers' manufacturing sites.

Operation of Total Gas Centers

Semiconductor manufacturing requires the supply of a large number of gases in various modes. On customers' sites, or adjacent to them, the Group establishes Total Gas Centers equipped with ultra-high-purity nitrogen manufacturing units, supply equipment for electronic materials gases used in large quantities, and warehouses for safely storing containers of multiple types of electronic materials gases. This enables the Group to provide 24-hour services offering a reliable supply of ultra-high-purity nitrogen and materials gases.

The Group operates Total Gas Centers at 17 locations in Japan, offering on-site gas supply, and, depending on the customers' consumption, transport of electronic materials gases to the site. Furthermore, if needed, the Group also provides exchange of electronic materials gas containers in the supply facility on the customer's site, as well as daily inspections of

supply equipment and exhaust gas processing units that the customer has purchased, and safety management services using safety monitoring systems. These support services enable customers to focus on their own operations.



External view of a Total Gas Center



Business Expansion in East Asia (China, South Korea, and Taiwan)

East Asia has seen intensive investment in semiconductor plants over the past few years, and demand for electronic materials gases has increased, particularly for memory devices. Electronic materials gases have high added value, and many of them are procured globally. In East Asia, the Group's operations are centered mainly on import and sales of electronic materials gases, including purchased products procured from Taiyo Nippon Sanso Corporation and Matheson Tri-Gas, Inc. (MTG). Furthermore, we have strengthened our inventory storage capacity (warehousing) and logistics functions in each area to keep pace with demand trends among growing customers, contributing to their stable operations. In addition to the import and sale of electronic materials gases, in Taiwan we can provide comprehensive services for electronics customers, with functions for manufacturing various kinds of equipment and installing pipes. In South Korea, we have operated an electronic materials gases manufacturing business since 2002, supplying customers not only in South Korea but also other

countries in Asia and the United States. In China, our highly trained employees provide inventory management and transport services in warehouses set up on sites adjacent to customers, and these have been highly acclaimed. Moreover, since 2019, we have launched a second electronic materials gases manufacturing operation in East Asia to follow our operation in South Korea.



Expanded electronic materials gases warehouse in South Korea

Characteristics of Each Country

China	The Group provides highly valued site services on sites adjacent to customers, such as dedicated warehouse operations and transport services, as well as on-site services such as inventory management, container exchange, and chemical management. In 2019, we also started electronic materials gases manufacturing operations at Yangzhou Taiyo Nippon Sanso Semiconductor Gases Co., Ltd.
South Korea	In 2002, the Group started an electronic materials gases manufacturing operation. Today, this operation has the most advanced analysis equipment in the Group and provides products to Asian countries and the United States through our Group companies.
Taiwan	The Group is developing comprehensive services in Taiwan. It builds equipment such as refining units and supply equipment for electronics, supporting the Group's equipment business, and also has functions for providing high-level pipe installation.

Establishment of a Plant in East Asia, Where the Group's Comprehensive Capabilities Are Concentrated

Yangzhou Taiyo Nippon Sanso Semiconductor Gases is the newest electronic materials gases manufacturing plant to be built in East Asia.

The plant currently manufactures two types of gas. Manufacturing and quality control technologies have been introduced from Japan, the United States, and South Korea to create a plant where the Group's comprehensive capabilities are focused. As demand for electronic materials gases in China is expected to increase, the Group will bolster the plant's capabilities and expand the lineup of products handled.



Electronic materials gases production plant in Yangzhou, China

Strategies Going Forward

(1) Organizational Structure for Strengthening the Group's Comprehensive Capabilities

In October 2020, when the Company transitioned to a holding company structure, the Total Electronics Strategy Department was established within the Company's Group Corporate Planning Office. The department supports customers who are expanding globally by providing services with each geographic hub coordinated into a single group, while building

optimal supply chains to meet demand in each region.

In 2018, we continued to promote supply chain optimization under the Total Electronics concept in Europe, which had been newly added to the Group. These efforts included sales coordination and promoting procurement of electronic materials gases from Group companies in Asia and the United States.

History of Changes in Organizational Functions

January 2017 to June 2019	Up to September 2020	From October 2020 (After transition to a holding company)
Established Total Electronics in Shanghai as a virtual organization to promote Group coordination	Total Electronics Strategy, Global Operations Division, Taiyo Nippon Sanso Corporation	Total Electronics Strategy, Group Corporate Planning Office, Nippon Sanso Holdings Corporation

(2) Initiatives to Strengthen the Group's Comprehensive Capabilities

Up until now, electronics-related investment has been concentrated in East Asia (China, South Korea, and Taiwan), but a move to revive production in Europe and the United States is underway, driven mainly by a semiconductor shortage and the deterioration in U.S.–China relations. Accordingly, capital investment and production activities by customers are expected to drive growth in demand for electronic materials gases in Europe and the United States. The Group will monitor customer demand trends and needs not only in Asia but also in Europe and the United States, and proceed to expand the range of products it handles and increase its capacity as necessary, mainly at its existing manufacturing sites.

On the other hand, the Group believes that it must work as one to meet market demands as requirements for even higher levels of quality follow increases in process refinement and complexity, mainly for customers who employ cutting-edge processes. The Group is already engaged in a Groupwide project aimed at reducing quality issues. Now, “increasing customer satisfaction” has been added as a project goal. Customers’ quality requirements are shared within the Group and we work to strengthen our ability to respond to customers’ changing requirements as they increase in complexity.

Moreover, customers’ capital investments also present opportunities for on-site supply businesses, mainly for nitrogen gas, and equipment sales, mainly of refining units. The Group will therefore look at ways to utilize its strengths to achieve further business growth. For example, with the next-generation gas supply system of Taiyo Nippon Sanso Corporation, Intelligent Gas Supplying System (IGSS), we can propose automation and digitalization of management of customers’ electronic materials

gases equipment to convert their plants into smart factories. We are also able to supply state-of-the-art solutions to customers’ technical issues and contribute to stable supplies globally, including supply technologies such as the NANOCHEM® purifier produced by MTG, and the use of DX to comprehensively manage and supply high-quality material gases manufacturing technology. We will promote further collaboration within the Group and make effective use of the respective strengths of our regional operating companies as we strive to expand the Group's electronics business.



Next-generation gas supply system IGSS
For information regarding its contribution from a DX perspective, please see P.54.



NANOCHEM® is also able to purify reactive gases.

THERMOS

Thermos Business

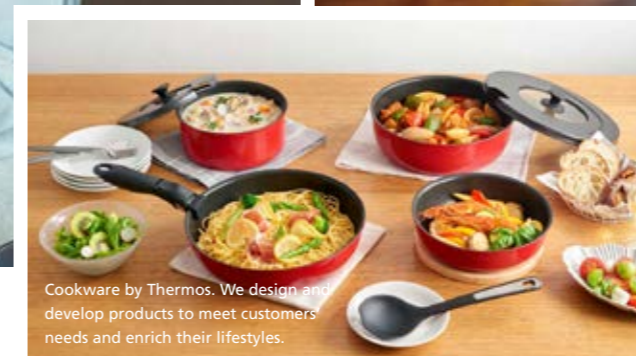
In 1978, Nippon Sanso Holdings' predecessor developed the world's first stainless steel vacuum-insulated bottle using vacuum-insulation technology cultivated in the industrial gases business and then began manufacturing and sales operations. In 1989, Nippon Sanso acquired the Thermos business (manufacture and sales of Thermos brand glass vacuum-insulated bottles and so forth) from U.S. company Household International Inc., thereby starting the history of the Thermos brand in the Company. Then, in 2001, Nippon Sanso's household goods business was split off to establish Thermos K.K. The Company continues to create new value to realize comfortable lifestyles in over 120 countries around the world through Thermos products that use Nippon Sanso's original vacuum-insulation technology. Thermos K.K.'s brand concept is "Thermos Magic." The concept expresses our aspiration of creating inspired lifestyles that offer better taste, immediate convenience, and heart-warming comfort by combining our vacuum-insulation technology flexibly with unique lifestyle comfort ideas.



Thermos Styling Store
at MARK IS Minatomirai

Nippon Sanso Holdings Group's Sole **B2C Business**

Unlike the industrial gases business, the Thermos Business is Nippon Sanso Holdings' sole B2C business, creating a broad range of contact points with general consumers. We operate through almost every sales channel, including retail stores and e-commerce, to provide customers with opportunities to encounter our products in a range of settings. As there are many places where people can experience Thermos products physically for themselves, including our directly operated Thermos Styling Store, we operate a mix of marketing that combines advertising and in-store promotions, among other methods. We also plan and develop products with constant attention to ease-of-use for the user, based on market research and other information. These efforts have resulted in a high level of brand awareness.



High Quality Trusted by Customers

Up until now, our product lineup has been centered primarily on outdoor products, such as portable mugs, but recently we have also been focusing on products for indoor use in cooking and at mealtimes, such as frying pans and tumblers. In addition, our product development has been recognized for its quality and reliability, drawing on the high safety standards cultivated in Nippon Sanso Holdings' gases business. We continue to maintain a strong brand image through our dedication to improving customers' daily lives and our high-quality products. Moreover, we have earned recognition for strong customer support and replacement parts services that enable long service life of products after purchase, helping to create a reputation for high quality associated with the Thermos brand.



The Shuttle Chef® series realizes our corporate philosophy by saving time and energy.

Bottles made in collaboration
with the Institute for
Raptor Biomedicine Japan



Business Is About **Sustainability**

Corporate Philosophy

Thermos continues to introduce new kinds of lifestyles that are agreeable to people and society and also environmentally friendly.

For many years, Thermos has been developing products designed to realize comfortable lifestyles for customers. These efforts have resulted in the creation of sustainable products such as personal bottles that can reduce plastic waste and the Shuttle Chef® series of vacuum-insulated thermal cooking pots, which continue to cook food with residual heat to shorten cooking time and reduce energy usage. As these examples show, our business itself contributes to sustainability. In addition, we have recently partnered with the Institute for Raptor Biomedicine Japan, and when customers purchase a bottle affiliated with the institute, part of the sales revenue is used by the institute to protect endangered wildlife such as Steller's sea eagles, white-tailed eagles, and Blakiston's fish owls.



Why Thermos Is Part of the Nippon Sanso Holdings Group

Creation of the World's First Stainless Steel Vacuum-Insulated Bottle

The Company's predecessor, Nippon Sanso Ltd., was founded in 1910 as Japan's first industrial gases manufacturer. In the 1960s, the Company supported the development of Japanese industry through measures such as installing on-site plants directly connected to customers' factories.

Having reached this stage, in the 1970s the Company took up a new challenge. Until then, the Company had provided production goods in the form of industrial gases; now, it was to advance beyond this role to develop products for general consumers, starting a new business for entering the consumer goods market. What kind of products were possible using technological capabilities developed through industrial gases? In 1975,

a team of three began to explore such possibilities. In the process of conducting market research, they found a need for a vacuum-insulated bottle that would not lose heat and would not break. The glass vacuum-insulated bottles of the time were prone to break easily. To answer this need, the personnel in charge of development came up with a vacuum-insulated bottle made from stainless steel. The Company used vacuum-insulation technology in the tanks of the tanker trucks used to transport its industrial gases. These were in fact giant vacuum-insulated bottles.

Vacuum-insulated bottles were available in table-top and portable types. The former had a market penetration rate of close to 100% while the latter stood at around 60%. Furthermore, since leading major manufacturers had focused on the table-top type, the Company focused



The Shuttle Mini launched in 1982. The product was launched at a lower price band than the initial products, and this made it highly popular for use in outings and sports day events.

on developing the portable type. One of the challenges in manufacturing was how to form a vacuum inside the double-walled structure and mass produce the products. The innovation in manufacturing method that provided the answer was a totally innovative idea of building the bottles inside a vacuum room. The products were assembled in a vacuum environment, then the metal braze at the bottom was heated at the end to melt it. With this method, in 1976 the Company completed the world's first prototype of an unbreakable vacuum-insulated bottle. At the time, the price of a vacuum-insulated bottle was ¥2,000–¥3,000, but market research showed that people would be willing to pay ¥10,000 for an unbreakable type. After much consideration, the Company decided on a price of ¥6,900. This was partly to express the confidence of the developers in the quality of their product.



ACT Stainless Pot, the world's first stainless steel vacuum-insulated bottle, launched in 1978



The sales copy used in advertising at the time when the product was launched was for an "unbreakable vacuum-insulated bottle" rather than a stainless steel one.

Brand Evolution from NISSAN to Shuttle to Thermos

In 1978, the unbreakable stainless steel vacuum-insulated bottle was launched on the general market, where it was well received. Some of the manufacturers at the time were said to have remarked that the new product would disrupt the existing market and usher in a new era. The product was initially launched under the brand name NISSAN. In 1984, a vacuum-insulated bottle with the product name Shuttle was launched, and after that products bore the brands Nippon Sanso, NISSAN, and Shuttle together. Eventually, the product advertising began to place the Shuttle brand at the front.

Meanwhile, the Thermos brand originates from THERMOS GmbH, which was established in Germany in 1904. Today, it has grown to become the world's largest brand of vacuum-insulated bottles, but in 1989 its manufacturing business was acquired by the Company. In 1991, the Company's Vacuum-Insulated Bottle Department was elevated to become the Thermos Business Department. Ahead of this, Nissan Thermo K.K. was established in 1980, and in 2001 the Thermos Business Department underwent a corporate split off and merged with this company to form the present

company, Thermos K.K. Today, the Company's presence in Japan has increased due to its products, which combine technology born from Nippon Sanso with the Thermos brand.

Industrial Gases and Vacuum-Insulated Bottles Share the Same DNA

Here, we go back to the 1970s when the search for a new business started. The Company set out guidelines for selecting themes on what kind of products it should create. These included "something completely new to the world, or something made by a completely new method," "something with a connection to the company's current business," and "something difficult for other Company's to imitate." The Company set out to use proprietary technologies that it had honed internally to create a product that could be differentiated from those of other companies. The result was the vacuum-insulated bottle.

Developing a stainless steel vacuum-insulated bottle required vacuum-insulation technology and advanced welding technology. These are indispensable technologies for the safe, reliable supply of industrial

gases. It is perhaps inevitable that a gas company would select vacuum-insulated bottles as its consumer goods. Industrial gases and vacuum-insulated bottles have the same DNA that has been passed down through the Company.

The Group Philosophy of Nippon Sanso Holdings is "Proactive. Innovative. Collaborative. Making life better through gas technology." Thermos K.K. has its own original corporate philosophy, and to realize this, the company has declared that it will contribute to saving energy through its various technologies and creative capabilities, including proprietary insulating technologies, and provide new value that realizes comfortable lifestyles. This aspiration is encapsulated in the phrase "Making life better" in the Nippon Sanso Holdings Group Philosophy. This is completely aligned with the philosophy of Thermos K.K. It is also the biggest reason that the Thermos brand is part of the Nippon Sanso Holdings Group.

Market-Driven Section: Basic Technologies, R&D, and DX

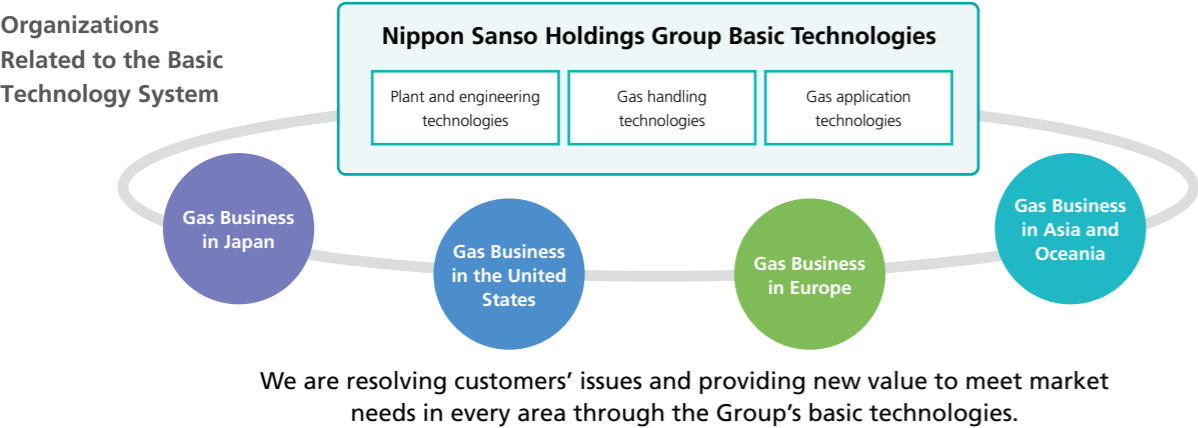
Uncompromising Technological Capabilities
Developed In-House

The Nippon Sanso Holdings Group has basic technologies in the areas of plant and engineering, gas handling, and gas applications. We are using these in R&D to enable technologies and products that meet customer needs in the four geographic hubs where the Group is operating its business. We have also been focusing on DX over the past few years, aiming to drive further efficiency gains and optimization in our business.

Basic Technologies

The basic technologies of the group support its business domains. These include plant and engineering technologies, which involve operations from design through to the maintenance of ASUs that produce air separation gases; gas handling technologies, which involve the continuous stable and efficient production and supply of air separation gases; and

gas application technologies, which involve using the characteristics of gases in various fields such as food freezing and metal processing. Using these technologies, we will continue uncompromising R&D to provide optimal solutions that meet customers' demands.



Plant and Engineering Technologies

Since achieving the first domestic production of ASUs in 1935, the Company has built over 100 plants around the world as a leading manufacturer of ASUs. We provide comprehensive services from basic design to detailed design, manufacture, procurement, construction, commissioning, and maintenance. Plant and engineering technologies are divided into five main functions: plan proposal, detailed planning, construction work, procurement, and plant construction. These five functions are comprehensively provided by the Plant Engineering Center established in the Group's Japanese operating company, Taiyo Nippon Sanso Corporation.

The reliable, efficient, and safe production and supply of gases depends on improving the skill levels of plant operators, as well as on ensuring careful everyday operational and equipment

management at our factories. We provide extensive practical education, including training for emergency situations, using a proprietary ASU simulator developed for this purpose.



Operations at the Keihin Factory of the Plant Engineering Center, Taiyo Nippon Sanso Corporation

Gas Handling Technologies

In gas handling technologies, we deal with different conditions of gas supply, including requirements for the amount and pressure, depending on the customer's usage environment. Accordingly, we select the most appropriate mode of supply for each customer, including through pipelines from on-site plants or bulk supply by tanker truck for storage in tanks located at the customer's site. By supplying gas in the optimal form, we are able to fully meet our customers' requirements.

Furthermore, different methods of handling gas present different risks. In addition to ensuring strict adherence to safe



We supply gas in the optimal form for each customer.

driving rules by companies responsible for conveying and supplying gases by tanker truck, we promote initiatives to improve the awareness and skills of employees involved in supply operations who handle high-pressure gas.



We ensure safe at our production facilities.

Gas Application Technologies

Gas application technologies unlock the many effects and benefits of gases. Depending on the application, we apply expertise for using gas more safely and efficiently. We conduct R&D for different gas applications, such as welding, food processing, heat treatment, combustion, and refrigeration, and provide a host of technical support and solutions that contribute to solving customers' issues.

Over the past few years, there has been an increase in environmental awareness among our customer corporations.



At the Yamanashi Laboratory, we conduct R&D on themes such as oxygen-enriched combustion, welding and cutting, and heat treatment.

We have seen growing interest in oxygen-enriched combustion and hydrogen combustion technologies (→P.53), which contribute to reducing CO₂ emissions. On the social issue of food loss, nitrogen-filled packaging technologies and rapid-freezing technology using liquid nitrogen are being used to extend the use-by dates of fresh food and cooking ingredients. The Company will use its gas application technologies to contribute to sustainability with a focus on the global environment, production, and people's daily lives.



R&D on welding technology

Market-Driven Section: Basic Technologies, R&D, and DX

R&D Strategy

The overall R&D functions for the Group are carried out mainly by the R&D bases of the Group’s Japanese operating company, Taiyo Nippon Sanso Corporation. We have established the following policy for promoting efficient and optimal R&D in collaboration with partners.

Taiyo Nippon Sanso Corporation R&D Unit

R&D Policy

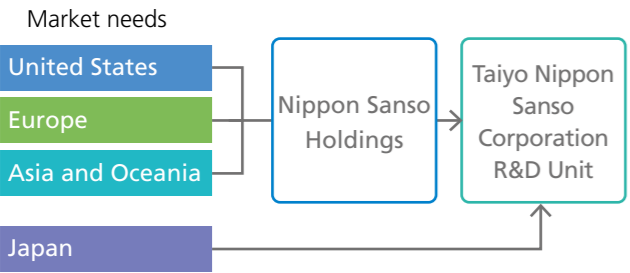
We have established a technology research organization for pursuing sustainability as a Group, which will contribute to earnings expansion by promoting innovation, operational efficiency, and globalization.

Basic Approach

- Expand existing technologies and contribute to strengthening 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 global open innovation to complement technologies, accelerate development, and expand channels
- Contribute to operational efficiency through effective use of digital technology

R&D Promotion Structure

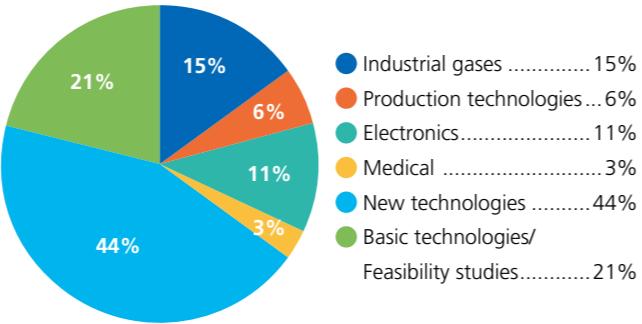
Our continuing rigorous pursuit of the possibilities of gas and R&D will help to create new demand for gas. We will continue striving to propose total solutions for our customers’ needs, backed by a wealth of expertise and experience.



The role of the holding company (Nippon Sanso Holdings) is to collect information such as user requests and market needs gathered at our global geographic hubs in the United States, Europe, and Asia and Oceania, organize the measures that need to be implemented in each region, and decide on the overall policy. This policy is shared and discussed with Taiyo Nippon Sanso Corporation’s R&D Unit, which organizes the overall R&D strategy for the Group. Currently, our R&D

bases are part of Taiyo Nippon Sanso Corporation (Yamanashi Laboratory, Tsukuba Laboratory, and SI Innovation Center), and we also conduct R&D related to electronics and so forth at our Longmont site in the United States. At the Tsukuba Laboratory and the Longmont site, we conduct regular exchange meetings to foster deeper connections, and we aim to generate further synergies through exchanges of personnel and technologies, among other initiatives.

Breakdown of Research and Development Costs



Initiatives for Realizing a Carbon-Neutral Society with Combustion Technologies

The Group’s R&D base at the Yamanashi Laboratory of Taiyo Nippon Sanso Corporation is focusing on oxygen combustion technologies as part of our efforts to realize carbon neutrality by 2050. Using the Group’s basic technologies, we promote the development of oxygen combustion technologies for a broad range of applications, contributing to energy saving and emission reduction of substances harmful to the environment. For example, we have developed a combustion technology whereby high-purity oxygen is added to combustible gas, increasing the oxygen concentration in the environment to 21% or higher, which boosts combustion efficiency. This facilitates a higher burner flame temperature while at the same time lowering the concentration of nitrogen oxide (NOx) in the oxidizing gas, thereby reducing NOx in emissions and thermal losses. This technology is used in a variety of applications, such as high-temperature heating furnaces and melting furnaces, where it contributes to both energy saving and CO₂ emission reduction.

The Company’s oxygen combustion technology has its origins in an oxygen burner technology introduced from U.S. firm Air Reduction Company in 1970, in which fuel (mainly

heavy oil) and oxygen were injected into a nozzle tip, diffused, and combusted. Attaching a nozzle and oxygen burner to a smelting or sintering furnace thus made it possible to improve productivity. In the United States, the technology was commonly used in aluminum smelting, but in Japan it first became popular as a way to reduce energy consumed by electric furnaces, after which use expanded to include other industrial furnaces, including aluminum melting furnaces, refractory cement melting furnaces, and aluminum oxide kilns. The Company has responded by developing a lineup of products suited to diverse needs, including the SCOPE-Jet® swing burner, which substantially reduces power consumption and operation time, and Innova-Jet®, which achieves a significant reduction in NOx generation during oxygen combustion.

Recently, we have been cooperating with the Nippon Gases Euro-Holding S.L.U. group on R&D into hydrogen combustion and ammonia combustion as a new initiative. Since hydrogen and ammonia do not produce any CO₂ or atmospheric pollutants at all when they combust, they are expected to contribute toward realizing carbon neutrality.



Comment from a Professor at a Partner University
Expected Performance as a Leader in the Drive for Carbon Neutrality

Professor Hideaki Kobayashi, Tohoku University

Taiyo Nippon Sanso Corporation supplies industrial gases, but it is also expanding operations in a wide range of applications. The company’s technology development is extremely highly rated by the Combustion society of Japan, which is my main academic society, and received the Society’s technology award in fiscal 2015. My relationship to Taiyo Nippon Sanso came about through the activities of the society, as it was the main participating institution from the start of the national Strategic Innovation Program (SIP)’s Energy Carrier Project, which was conducted over five years from 2014. In this project, I was leading the ammonia direct combustion team, which gave me an opportunity to become more familiar with Taiyo Nippon Sanso’s new technologies. I was put in charge of

developing basic technologies for using carbon-free ammonia as fuel for an industrial furnace, and we achieved the initial target at a high level. At the end of 2020, ammonia fuel was included explicitly in a statement on the green growth strategy associated with achieving carbon neutrality by 2050. Amid these developments, I would like to continue working with Taiyo Nippon Sanso on early social implementation of the results of our SIP project. Open innovation is much talked about these days. I hope that Taiyo Nippon Sanso will continue to develop and grow its technologies and its outstanding human resources, which are its strengths, and that the company will play a leading role in achieving carbon neutrality for the industrial sector.

Market-Driven Section: Basic Technologies, R&D, and DX

Promotion of DX

Nippon Sanso Holdings will begin initiatives to promote DX as a means for solving various issues that arise as the Company executes its business strategies. For example, in the United States, DX is helping to achieve efficient operation management by enabling centralized operations of ASUs through remote monitoring and control. We are also working to build a supply chain in Japan that can be operated with fewer personnel. First, it is important to build an organization

and business processes based on data, then utilize the data and digital technologies to anticipate customer feedback and create proposals that contribute to innovation of customers' technologies and production processes. As this process gradually gathers momentum, we recognize that it will lead to increased efficiency and optimization of business overall. Eventually, we aim to extend this initiative globally and involve the entire supply chain.

Example

Conversion to Smart Factories (Automation and Labor Saving), and the IGSS for Realizing DX

Taiyo Nippon Sanso Corporation has developed the Intelligent Gas Supplying System (IGSS) to realize DX of the gas industry and respond to customers' needs for adopting smart factories. Reliable gas supply and monitoring and daily container exchange operations play an important role in ensuring the production, quality, and safety of customers' products. The Company offers gas technologies of the future that contribute to operational efficiency gains and labor saving by providing new

added-value services. These are next-generation gas supply systems that combine digital innovation technologies using the Internet of Things (IoT) and robotic process automation (RPA)* with gas handling expertise cultivated by the Company over many years. This is just one example of the Group's approach to DX.

* An initiative to substitute and replace operations that have been possible only through human workers, or even more sophisticated operations, using cognitive technologies including rule engines, AI, and machine learning



Image of the IGSS in operation

Example

Remote Monitoring of ASU (Plant) Operations in the United States

Given the vast geography of the United States and the large number of ASUs (plants) there, Matheson Tri-Gas, Inc. (MTG) has established centralized operations for remote monitoring and operation of plants to enable efficient business operations. As many as 260 plants can be monitored on a PC, which also allows the user to perform operations related to tank levels and power supply network load.

In October 2019, we upgraded the Remote Operation Center, which conducts remote monitoring of plants. This will enable remote monitoring of even more plants, and we have also installed a system for monitoring mass production units for HyCO.

The DX approach of using remote monitoring for plants is an important key to MTG's supply chain optimization strategy.



MTG's Remote Operation Center

Strategies Going Forward

As we promote and expand our business going forward, we will enhance the areas we are developing as part our DX strategy at each of our locations. In Japan and in Asia and Oceania, we will use DX with a focus on increasing productivity, while in Europe we will apply it to customer relationship management (CRM) and human resources development (talent management).

Japan

We aim to increase operational efficiency and productivity and to rebuild our business model using digital technology, including remote operation of production plants and increased efficiency of logistics operations, which are key strategies of Taiyo Nippon Sanso Corporation's Corporate Planning Office and ICT Unit.

Europe

In June 2019, we launched the DX project. Our three main fields of focus are customer engagement, increased efficiency of operations, and employee engagement. We will also focus on utilizing DX for human resources development.

Asia and Oceania

In the Engineering Division of Nippon Sanso Holdings Singapore Pte. Ltd., we are promoting the use of digital technology, including visualization through centralized management of production status at plants in each country. We are also promoting a container management system and an automatic order shipment delivery system in the field of logistics for our operating companies in Southeast Asia.

Co-Creation: Sustainability Strategy

Enhancing Human Well-Being and Contributing to a More Sustainable Future through Sustainability Management

Nippon Sanso Holdings aims to create new value through innovative gas solutions, and to enhance human well-being and contribute to a more sustainable future. We believe that by contributing sustainably to helping resolve issues facing people, society, and the earth, we will simultaneously increase social value and economic value, and by extension the Group's corporate value. With this philosophy incorporated into the Group Vision, which is commonly understood by all our employees, we are working together as a united group to promote sustainability management.

Sustainability Management Focused on the Themes of "the Earth," "Society," "People," and "Management Issues"

The Group is closely involved with a wide range of industries, and we believe that our business activities themselves provide a way for contributing to the well-being and sustainable future of all our stakeholders. Moreover, the world is currently facing significant unavoidable challenges such as climate change, abnormal weather, resource depletion, and food shortages. Although these issues are global in scale, there are many ways for the Group to contribute to solving them using its strengths. We have identified "the earth," "society," and "people" as key themes to which we should apply our strengths to providing solutions and making improvements for a better future. We will work to contribute to solutions in these areas, in addition to the theme of "management issues."



The Earth: Contributing to a sustainable global environment with a sustainable business model

As a group that takes advantage of the natural resource of air, the sustainability of the global environment is important to us. In addition to reducing the environmental impact of our business activities, we will also strive to create products and services that help resolve environmental issues in order to contribute to a sustainable global environment.

Society: Contributing to the realization of an abundant society by helping resolve various issues and proposing diverse lifestyles

Using our social infrastructure base in every region and various points of contact with local communities, we will contribute to the realization of an abundant society by helping resolve various social issues, such as food shortages and the treatment of illnesses, through the Thermos business and the offer of comfortable and environmentally friendly lifestyles.

People: Respecting and coexisting with all people involved in our business activities

We aim to earn the trust of all stakeholders, including our human resources, who are essential to the Company's sustainable growth, as well as our supply chain, our customers, and shareholders and investors. To this end, we will engage in close dialogues with them as we cooperate to build a better society.

Management Issues: Providing a safe, reliable supply of innovative gas solutions

To ensure the safety and stability of gas supplies, we are working to increase our security capabilities and maintain and increase quality at every step from the production processes to the supply process and in our customers' use of the products.

Message from the CSO

Takeshi Miki

Senior Executive Officer,
Group Technological Affairs & Environment Office,
and Chief Sustainability Officer (CSO),
Nippon Sanso Holdings Corporation
(Additionally appointed as Senior Executive Officer,
Head of Technological Affairs Unit,
Taiyo Nippon Sanso Corporation)

We will contribute to the realization of a carbon-neutral society while working to achieve sustainable growth and enhance corporate value.

As the world seeks solutions to global-scale environmental issues and a host of social issues, it is increasingly important for companies to play their part in contributing to the United Nations Sustainable Development Goals (SDGs). Furthermore, in addition to the financial aspects of business, it is also important for companies to sustainably develop their non-financial initiatives. In particular, promoting environmental, social, and governance (ESG) initiatives is now an essential priority.

With industrial gases as its business foundation, the Nippon Sanso Holdings Group has contributed to society and the environment through gas technology. With its transition to a holding company structure in October 2020, the Group has made a fresh start and will now strengthen its sustainability efforts with a wider perspective as a globally active corporate group.

The sustainability of the global environment is an extremely important issue for the Group, which makes use of the natural resource of air. We will further our efforts to improve the energy efficiency of our production facilities and expand the use of renewable energy, aiming to contribute to the realization of a carbon-neutral society. Furthermore, as a corporate group that handles industrial gases, our business is based on a commitment to providing customers with a secure, safe, and reliable supply of gases. In keeping with our motto, "Selling gas is selling safety," we will strive to ensure safety in all aspects of our operations while contributing to healthy, safe, and secure activities in society.

Furthermore, the Group has a range of outstanding basic technologies cultivated over many years. These include technologies for increasing combustion efficiency by raising oxygen concentration; technologies for using hydrogen and ammonia, which do not emit CO₂; freezing and gas technologies that enable extended food preservation periods, reduced food loss, and increased aquaculture production; and contributions to the medical and health-care fields, such as iPS cell cryopreservation technology. Furthermore, in the Thermos business, we are helping to lower our environmental impact by reducing plastic usage through the promotion of personal bottles and realizing energy saving using advanced technologies for keeping contents hot or cold. We will also use the wide range of contact points with general consumers to propose abundant lifestyles by providing sustainable products. In addition, the industrial gases field still holds significant potential for innovation. Examples include contributions to advanced technologies such as semiconductor manufacturing, applications for stable isotopes in medical testing technology, and the advancement of metal 3D printing through the use of inert gas. Through our products and services that make use of these technologies, we will contribute to solutions for environmental and social issues.

As "The Gas Professionals," the Group will aim to achieve sustainable growth and further increase its corporate value by providing innovative gas solutions to enhance human well-being and contribute to a more sustainable future.





Co-Creation: Sustainability Strategy

ESG Materiality

With the aim of contributing to the realization of a sustainable society, we work to ensure a solid grasp of our impact on the global environment, society, and people (the Company and its organizational structure) through all of our business processes, that is, across the entire value chain. To this end, we have defined the roles we are expected to play in addressing issues we have identified as our materiality (material issues), which are grouped under four themes, including management issues.

External Environment



Theme	Materiality (Material Issues)	Role of the Nippon Sanso Holdings Group	Principal Initiatives	Relevant SDGs
<div><div>Management Issues</div></div>	<ul style="list-style-type: none">ComplianceCorporate governanceProcess safety	<ul style="list-style-type: none">In adherence to high ethical standards, strive to conduct corporate activities in a fair, impartial, and sincere manner by promoting and maintaining compliance with relevant laws, regulations, international norms, and internal rules.Reinforce corporate governance by improving management transparency and fairness, as well as by increasing management agility through efforts to enhance management oversight functions and accelerate decision-making.Strengthen independent systems for ensuring process safety in line with our belief that selling gases is commensurate with selling safety.Realize reliable supply of industrial gases, thereby ensuring our ability to provide the gases our customers need when they are needed.	<ul style="list-style-type: none">Reinforcement of systems based on Japan’s Corporate Governance CodeInitiatives to ensure safe and reliable supplyContinuous implementation of compliance training	<div><div><div>8</div><div>DECENT WORK AND ECONOMIC GROWTH</div></div><div><div>9</div><div>INDUSTRY, INNOVATION AND INFRASTRUCTURE</div></div></div>
<div><div>The Earth</div></div>	<ul style="list-style-type: none">Efficient use of resources and energyClimate changeSecuring of clean water resourcesPreservation of biodiversity	<ul style="list-style-type: none">Introduce effective ASUs that help reduce electric power consumption and CO₂ emissions.Lower fuel consumption by tanker trucks to reduce related CO₂ emissions.Fortify framework for mitigating climate change through the reduction of GHG emissions and other efforts.Promote the reduction of GHG emissions and the creation of opportunities to mitigate/adapt to climate change and expansion of business through the sale of vacuum-insulated bottles and cookware.	<ul style="list-style-type: none">Promotion of environmental managementInitiatives to protect the global environment	<div><div><div>7</div><div>AFORDABLE AND CLEAN ENERGY</div></div><div><div>12</div><div>RESPONSIBLE CONSUMPTION AND PRODUCTION</div></div><div><div>13</div><div>CLIMATE ACTION</div></div></div>
<div><div>Society</div></div>	<ul style="list-style-type: none">Contribution to maintenance of physical healthContribution to medical careResponse to food- and agriculture-related issuesIncrease in consumer satisfactionContribution to upgrading and expanding social infrastructureResponse to smart societies	<ul style="list-style-type: none">Contribute to health and medical care through the provision of products for the medical field.Provide industrial gases and related equipment that contribute to the resolution of key issues by helping protect food resources and improve agricultural productivity.Leverage the advantages of LP gas, including its low carbon footprint and disaster-resistant nature of its distribution system, to create business opportunities and expand business.Contribute to the realization of comfortable and environment-friendly lifestyles through the sale of Thermos brand products.Ensure that customers can use products and services with peace of mind by strengthening systems to ensure quality and safety across the entire product life cycle.	<ul style="list-style-type: none">Development of products that contribute to solutions for environmental and social issuesReinforcement of quality assurance and management systems	<div><div><div>3</div><div>GOOD HEALTH AND WELL-BEING</div></div><div><div>9</div><div>INDUSTRY, INNOVATION AND INFRASTRUCTURE</div></div></div>
<div><div>People (The Company and Its Organizational Structure)</div></div>	<ul style="list-style-type: none">Respect for human rightsOccupational health and safetyHuman resources development and trainingDiversity and inclusionProduct and service reliabilityPromotion of measures to improve information security and privacyStakeholder engagementContribution to communitiesPromotion of sophisticated information and communications technology (ICT) useParticipation in initiatives and demonstration of leadershipPromotion of sustainability in the supply chain	<ul style="list-style-type: none">Respect human rights in corporate activities and require that business partners do not violate human rights or engage in any form of discriminatory behavior (through such measures as the promotion of anti-harassment initiatives and the establishment of hotlines).Promote health management in accordance with relevant national and regional laws and regulations, create a safe work environment, while at the same time maintaining and advancing the physical and mental health of employees.Offer equal opportunities in hiring, placement, advancement, and skill development as well as seek to foster and develop human resources from a medium- and long-term perspective.Actively seek to secure diverse human resources with diverse values without regard to considerations such as nationality, age, or religion and promote diversity and inclusion in corporate activities (e.g., promotion of active roles for women, hiring of non-Japanese, employment of people with disabilities, etc.).Recognize the importance of and responsibilities associated with protecting information assets in corporate activities and ensure appropriate information management to prevent leaks of confidential information pertaining to customers, business partners, Nippon Sanso Holdings, and other parties.Step up efforts to contribute to society through business activities and deepen understanding of communities while at the same time working continuously to respond to communities’ requests and expectations.Earn stakeholders’ trust through respect and close dialogue and by reflecting their views in corporate activities, and work with stakeholders to realize a better society.	<ul style="list-style-type: none">Thorough internal promotion of the “Policy on the Prevention and Eradication of Harassment in the Workplace”Employee education and trainingMaintenance and improvement of information security systemsPromotion of sophisticated ICT useDialogue with shareholders and investment analystsInitiatives to ensure safe and reliable supplyCreation of environments to promote innovation and diversitySocial contribution activitiesHealth management initiativesEnhancement of information disclosure	<div><div><div>3</div><div>GOOD HEALTH AND WELL-BEING</div></div><div><div>8</div><div>DECENT WORK AND ECONOMIC GROWTH</div></div><div><div>9</div><div>INDUSTRY, INNOVATION AND INFRASTRUCTURE</div></div><div><div>12</div><div>RESPONSIBLE CONSUMPTION AND PRODUCTION</div></div></div>

Co-Creation: Sustainability Strategy

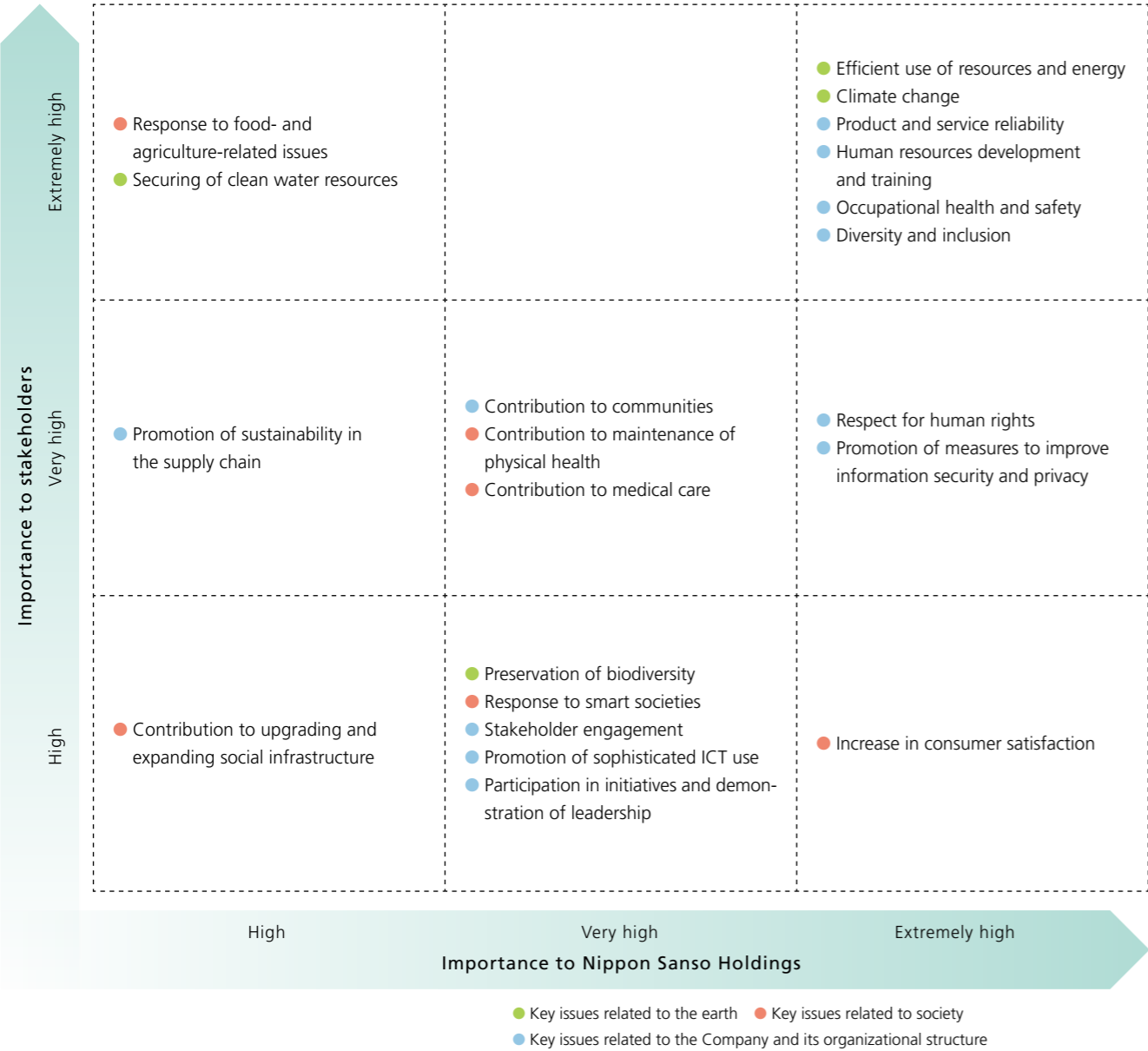
Identification of ESG Materiality

Our materiality refers to the material issues that Nippon Sanso Holdings should engage with in order to grow sustainably with society. We see these as something that connects the solutions to global issues such as the SDGs to the Company's philosophy system and leads to the creation of value. Materiality forms the foundation of our business activities.

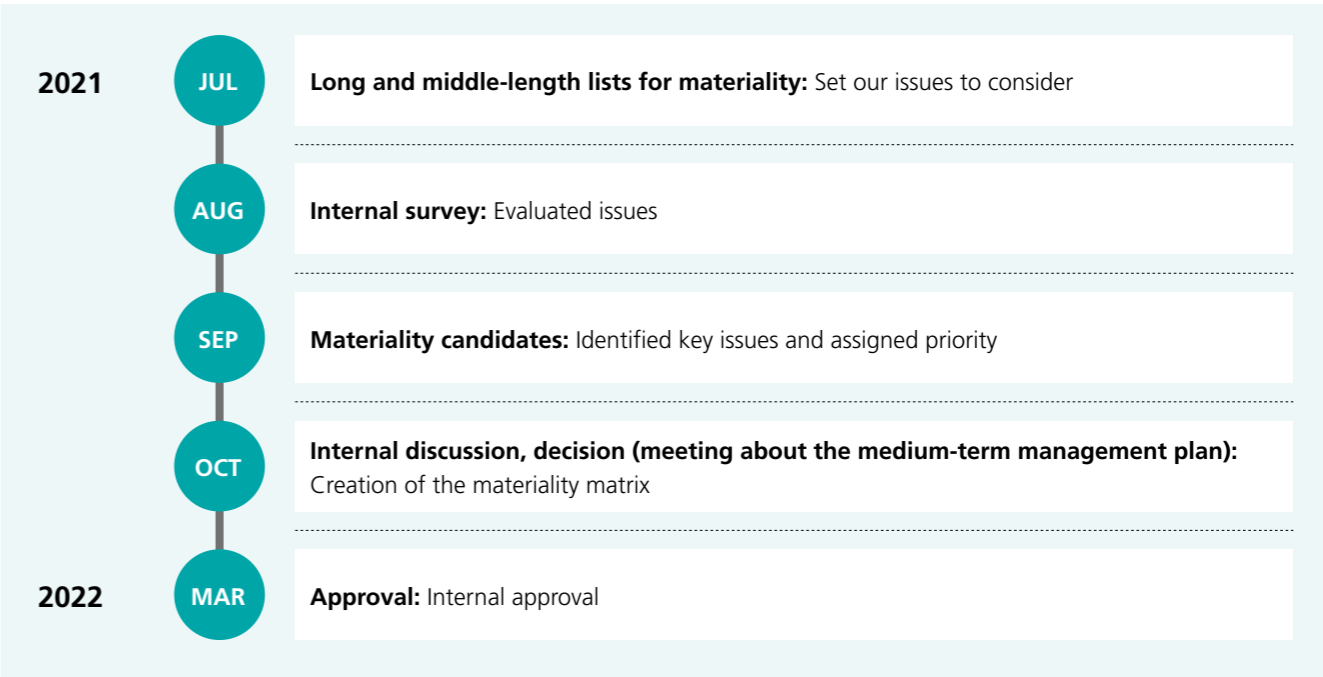
The Company recognizes the interests of society and stakeholders, as well as social issues. Considering their impacts on management, we have been renewing our current materiality to coincide with the formulation of the next medium-term management plan, which starts from April 2022.

Going forward, we will set out clear key performance indicators (KPIs) and promote initiatives in line with our materiality. Our aim is to help resolve social issues and increase corporate value through our business activities.

Matrix of Key Initiatives



Materiality Identification Process



Process and Direction of Renewing ESG Materiality for the Next Medium-Term Management Plan

ESG issues, the SDGs, and other topics related to sustainability are growing in importance globally, and the impact on the Company's corporate activities is also changing. We have therefore conducted a revision of the Company's materiality, initially formulated in 2015.

In this revision, we considered a wide range of stakeholder perspectives, including the SDGs, various international guidelines, and ESG evaluations, as well as the impact of our businesses. We exchanged opinions with outside officers and external specialist firms and conducted employee surveys in

regions around the world. After obtaining approval from the Management Committee and the Board of Directors, we plan to announce the new materiality.

The Group will continue to promote sustainability management, contributing through its worldwide business activities to the solution of global issues, such as the sustainable development of economies and societies in various countries and regions around the world.

Roundtable Discussion (2)

Progressing toward the Realization of a Carbon-Neutral Society by 2050

With the transition to a holding company structure in October 2020, the Nippon Sanso Holdings Group shared its determination to contribute further to sustainability through greater global cooperation. The Group also reemphasized what it can do to advance this goal and presented “Contributing to the Realization of a Carbon-Neutral Society by 2050” as an important policy. The sustainability officers of each operating company sat down together to discuss the vision for the Group’s sustainability management going forward as the Group works in concert to achieve this target.

Awareness of Sustainability in Each Region

MIKI Recently, there has been increasing interest in the non-financial initiatives of companies, such as ESG initiatives and the level of contribution to realizing the SDGs. Nippon Sanso Holdings has also announced a target of contributing to the realization of a carbon-neutral society by 2050 at the financial results presentation held in May 2021. Today, we have brought together the sustainability officers from each operating company. I have dealt with each company individually before, but since this is the first time that we have assembled in this capacity, please begin by introducing yourself.

URIARTE I have worked at Nippon Gases Euro-Holding S.L.U. (NGE) for 38 years. Since January 2020, I have been in charge of sustainability at NGE, with a combined responsibility for health, safety, environment, and quality areas. I am delighted to have this opportunity to meet you all.

STROUD I have worked at Matheson Tri-Gas, Inc. (MTG) for about 15 years. My various job titles include vice

president in charge of management, legal affairs, and human resources, as well as having responsibility for safety, health, environment, and quality. Furthermore, I am the Chief Compliance Officer (CCO) for North America.

ISHIHARA I am Hitoshi Ishihara, president and CEO of Nippon Sanso Holdings Singapore Pte. Ltd. (NSHS). NSHS is the regional holding company for the ASEAN region, so it provides support to operating companies in the region in various fields such as safety, compliance, engineering, and human resources development. The Group’s initiatives on the key issue of sustainability are an important theme, and I am extremely happy to participate today as a representative of the Asia and Oceania region.

YAMADA My name is Masashi Yamada, and I am here today from Thermos K.K., where I am in charge of quality and safety. Unlike the companies represented by the other participants at the meeting today, Thermos

develops, manufactures, and sells products mainly comprising household goods and vacuum-insulated bottles for the consumer market.

MIKI Thank you. Currently at Nippon Sanso Holdings, we are actively working to disclose information related particularly to the environment, having agreed with the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD) in 2019. We are promoting disclosure of the quantitative effects of our environmental contribution after evaluation by independent institutions. I believe that our industrial gases business is already a sustainable one, since we do not use fossil fuels in the air separation process and do not use up resources as we use air for the raw material. We also supply gases to the food and medical fields. In that sense, I think we can say that we contribute to both environmental and social issues through the safe, secure, and reliable provision of gas. Moreover, the Thermos brand is also being developed as an environmentally friendly

Leaders Promoting Sustainability Management at Nippon Sanso Holdings



Takeshi Miki
Senior Executive Officer,
Group Technological Affairs & Environment Office,
and Chief Sustainability Officer (CSO),
Nippon Sanso Holdings Corporation
(Additionally appointed as Senior Executive Officer,
Head of Technological Affairs Unit, Taiyo Nippon Sanso Corporation)



Stephen Stroud
Executive Vice President,
Corporate Administration and General Counsel
Matheson Tri-Gas, Inc.



Inaki Uriarte
Director, Sustainability and HSEQ Europe
Nippon Gases Euro-Holding S.L.U.



Hitoshi Ishihara
Representative Director, President and CEO
Nippon Sanso Holdings Singapore Pte. Ltd.



Masashi Yamada
Director, General Manager of the Quality Control Department
Thermos K.K.

product. I believe that the Group is contributing to sustainability across a broad range of areas. I would like to hear a brief introduction of what each operating company is doing in this regard.

URIARTE The key to reducing GHG emissions is to improve the productivity of business processes and equipment, such as upgrading equipment technology. It is also extremely important to work with energy suppliers. NGE makes strategic investments in suppliers that handle renewable energy. To ensure our renewable energy share, we have defined a strategy of acquisition of Renewable Electricity Certificates combined with Power Purchase Agreements through joint investments with suppliers in the energy field. Through these, we will provide a reliable supply of renewable energy over the medium and long term. These various initiatives embody our commitment to reducing our GHG emissions by 35% from the fiscal 2019 level over the 10 years from 2019 and 2029.

STROUD MTG acquired the environmentally friendly HyCO business from

Linde Gas North America LLC in 2019, and we are currently developing the business in cooperation with various regions. Since hydrogen can be used as a substitute for fossil fuels, this business has much to offer in the energy field. Furthermore, even in the current COVID-19 pandemic, there have been some extremely good developments. We have collaborated with a large U.S. shipping company to supply the dry ice needed for transporting COVID-19 vaccines. This has had a tremendously positive impact in terms of social contribution. This dry ice is also very closely related to environmental issues. MTG has modified its dry ice production plants to recover CO₂ emissions during the production process and to reuse the recovered CO₂. The recaptured CO₂ converts into 14,000 tons of dry ice per year. Another sustainability focus of MTG’s business is plant automation. In addition to improving operating efficiency, plant automation has a significant impact on reducing CO₂. The monitoring and control functions for production are efficiently maintained, so that we can respond rapidly to market

needs and supply just the amount of product needed to meet demand.

ISHIHARA The United States and Europe are leading on a wide range of initiatives, which has really given us a good example. In Asia and Oceania, there is a wide variation in country and population sizes, among other aspects, and there is a wide diversity between countries in terms of their initiatives, industry structures, business environments, and living environments. Asia in particular is a growth market, and there is significant potential there for industrial gas manufacturers such as ourselves to contribute to efforts to further upgrade industrial and social infrastructure to support industry development. Our first priority is to continue safe, reliable supplies of gas as a social infrastructure, and also to play our part in the social infrastructure in the Asian market by providing products that can contribute to the environment based on the gas production technology, experience, and knowledge that we have cultivated over many years. In addition, Southeast Asia is a region with abundant marine products and fruits, and

Roundtable Discussion (2)

Progressing toward the Realization of a Carbon-Neutral Society by 2050

we will engage in providing goods and services that contribute to society, such as food freezing or refrigerated storage, and supplies of oxygen for remote medical care. The ASEAN region is home to many different ethnic groups, making diversity initiatives essential. Compared to other regions, Asia and Oceania has a significantly higher ratio of female employees and managers, and it is also distinguished by a large number of young workers. In this situation, we have made understanding diverse values one of our management strategies.

YAMADA Thermos has a different business model to the gas companies, and our corporate philosophy is “Thermos continues to introduce new kinds of lifestyles that are agreeable to people and society and also environmentally friendly.” First, we are reducing plastic containers by promoting personal bottles. By encouraging each person to use their own vacuum-insulated bottle, we help to reduce single-use PET bottles and paper cups. Next are our products, such as vacuum-insulated bottles and soup containers

that keep their contents hot or cold. In particular, Thermos’ flagship product, Shuttle Chef®, which is exclusive to Thermos, helps to save energy as it allows cooking with its heat retaining capability. Furthermore, we also use products returned from the logistics chain for recycling, or sell them at discounted prices to employees and use the proceeds to donate to tree-planting activities and so forth.

MIKI The Asian market is certainly one where GHG countermeasures need to be promoted as business is expanded. This goes not only for Asia but is also obviously important for the whole Group to reduce its environmental impact while expanding business. However, environmental measures and contributing to sustainability are also business opportunities. I would like us to discern which fields harbor opportunities and work to increase our corporate value while proactively engaging with and contributing to sustainability. Looking at things in terms of business opportunities, there are of course some differences between the Thermos business and the industrial gases business; however, the Thermos business may have a great number of opportunities in terms of contributing to sustainability.

YAMADA That’s right. It is most important to include the perspective of sustainability at every step, from planning and development, through to production, quality control, and sales. At the planning stage, we look at how much resource saving can be achieved, including the product packaging. At the development stage, we look for ways to save materials such as metal and plastic. At the production stage, we plan to examine the development of production methods and equipment that have low material loss. In quality control, we are continuing long-standing efforts to lower the rate of claims by reducing defective products, thereby cutting down on product disposals. Products and services that incorporate these sustainability aspects offer added value to customers by enabling them to reduce their environmental impact through Thermos products. I believe this is an extremely important way to think about business opportunities going forward.



URIARTE I fully agree. I see sustainability as a cornerstone of our business strategy and our stakeholders are the main focus of our ESG initiatives. In Europe, we need to continue focusing on contributing to renewable energy and reducing waste. In addition, going forward we will use external rating organizations and so forth to gain a deeper understanding of how we are evaluated by our stakeholders, and make use of this information in proposing management strategies. Management of governance and compliance, the environmental impact of our activities, community engagement programs and our people is really what sustainability is all about, and it also ties into increasing corporate value. I think that sharing the knowledge of various initiatives that are taking place in each country through this dialogue will help to strengthen the Nippon Sanso Holdings Group’s contribution to sustainability even further.

STROUD The HyCO business in the United States set up a task force last year, which has been working with members in Europe and a team in Asia to further strengthen the HyCO business by looking at ways to identify fields for development and so forth. Many of these fields involve the use of hydrogen in sustainability efforts such as the “blue” and “green” hydrogen initiatives.

We want to continue deepening our cooperation with each region from a perspective of sustainability, and I believe that many of the initiatives that have been spoken of today can be applied in other regions as well. We have made an excellent start today, and I hope that we can continue to learn from one another as we implement our initiatives.

MIKI Thank you all for your contributions. Right now, we are formulating the next medium-term management plan, truly as a Group. We will use the discussion today, quantifying what we can in the next plan to set KPIs that will enable people to visualize our sustainability initiatives clearly.

Sustainability Is a Key Perspective for Management Strategy

MIKI We have heard about each company’s initiatives to date. I would like to hear your opinions about challenges to be addressed going forward. Broadly speaking, I think there are three points to address regarding carbon neutrality. The first is how to reduce the level of GHG emissions from business activities. This will require efforts to reduce electricity consumption and switching to greener electricity sources. It will also be important to streamlining production and logistics using DX. The second point is how to reduce GHG emissions from our customers’ production activities. Supplying materials that contribute to the environment and strengthening CCUS will be key in this regard. The third point is that there is

room to grow new businesses in the manner of the global HyCO division and so forth. I believe that there are still many fields in which we can contribute toward realizing carbon neutrality.

ISHIHARA In Asia and Oceania, the scale of the companies and their earnings are still small compared to those of Europe and the United States. The region is still in the developmental stage. Conversely, since there is room for growth, it is also the region with the highest growth expectations in the Group. In that sense, with its strategy for business expansion, the Asia and Oceania business will continue to see an increasing trend in GHG emissions in absolute terms, partly driven by expansion in production capacity. This being the case, we

will contribute to CO₂ reduction, including by increasing the operating efficiency of plants in our production facilities and increasing the efficiency of our transportation and supply chains, as well as CO₂ reduction for our customers through the sale of products that contribute to the environment. In addition, we will also be proactive in exploring new opportunities in Asia and Oceania for the HyCO business that Mr. Stroud mentioned. Furthermore, our foundation in a growth market such as Asia and Oceania inevitably comes down to the capabilities of our human resources. We need to minimize business risks, including strengthening efforts for compliance and safety, while at the same time the involvement of top management of each company is also essential. We are therefore seeking to build a solid structure for engaging in governance enhancement and diversity promotion across the entire Asia and Oceania region. There are many challenges to be met, but we will start by properly carrying out the tasks that lie immediately in front of us and increasing economic value and social value. In this way, we aim to achieve sustainable growth while also building a foundation to support it.



Feature

Response to Environmental and Social Issues

We are facing a host of environmental and social issues that must be overcome, including climate change, food shortages, and effective use of energy and resources. Nippon Sanso Holdings will provide solutions using the advanced technologies that it has developed, aiming to help resolve these issues and realize a sustainable society.

Aiming to Help Resolve Environmental and Social Issues Using Our Gas Technologies

Nippon Sanso Holdings maintains awareness of environmental and social issues throughout the value chains of its businesses, from development and production to supply, sales, and product use. In the development and production process, we are reducing energy usage per base unit through the development and design of energy-saving ASUs, upgrading to highly efficient ASU components, and optimizing plant operations in response to demand trends. At the supply stage, we are promoting efficiency improvements for our LP gas tanker trucks. In other areas, we have been promoting initiatives to reduce the environmental impact of our business activities, such as expanding the use of renewable energy, as well as reducing GHG emissions and contributing to global warming prevention. Safety

is also an important value for us. We see our mission as providing innovative gas solutions safely and reliably, without any interruption to supply. We recognize that continuously contributing to the development of industry in a safe manner will realize a sustainable society and also contribute to enhancing the corporate value of the Group. In the Group's business of providing gas solutions, safety has a close affinity with the concept of sustainability. Finally, technologies derived from our advanced gas technologies are being used in the medical and food sectors to contribute to health maintenance, disease treatment, and the preservation of food resources.

Reporting Based on the TCFD Recommendations

Nippon Sanso Holdings expressed its support for the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD)* in November 2019. The Group has already been working to reduce environmental impacts and save energy, and to expand its lineup of products that contribute to reducing GHG emissions. However, based on the final recommendations of the TCFD, we will enhance these initiatives even further and phase in improvements to our relevant information disclosure as we work to increase the corporate value of the entire Group.

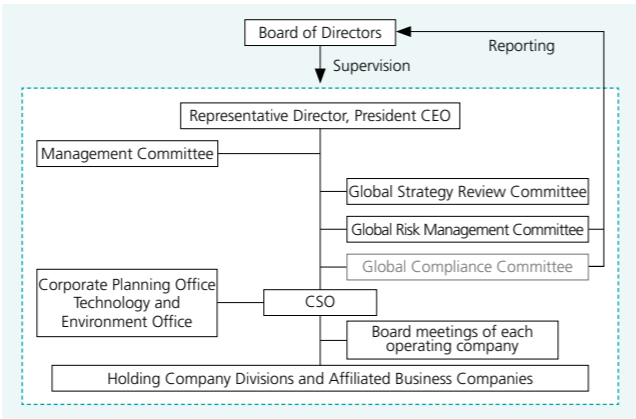
* The TCFD announced its final recommendation report in June 2017, which recommends that all companies and other organizations disclose information about governance, strategies, risk management, indicators, and targets regarding climate change-related risks and opportunities.

➡ For details on governance disclosure, please refer to [More Information on Sustainability \(→P.145\)](#).

Governance

The Company has established a governance structure for climate change issues, and the entire Group is engaged in initiatives on climate change.

Governance Structure for Climate Change Issues



* For information about the corporate governance structure, please refer here (→P.112).

Strategy

We will identify climate change risks and opportunities related to our organization and integrate them with the organization's strategy and financial plan to formulate the medium-term management plan.

Initiatives
<ul style="list-style-type: none">• We identify major risks and opportunities through a materiality assessment (→P.60).• We identify the impact of risks and opportunities (short, medium, and long term (→P.120)) on the organization's business, strategies, and financial plans, and work to promote countermeasures.

Climate-related risks and opportunities the organization has identified over the short, medium, and long term (For details about risks and opportunities, please see→P.120).

* Excerpt from our CDP Response Form. The CDP is an international NGO working in the field of the environment, such as climate change.

	Risks	Opportunities
Short term	<ul style="list-style-type: none">• Decline in reputation as a company that emits large quantities of GHGs	<ul style="list-style-type: none">• Promotion of initiatives contributing to GHG emission reduction by improving operating efficiency of ASUs using digital solution technologies
Medium term	<ul style="list-style-type: none">• Increase in tax burden with the introduction of carbon pricing scheme	<ul style="list-style-type: none">• Gain first mover advantage from entering the market for CO₂-free industrial gases ahead of other companies
Long term	<ul style="list-style-type: none">• Faults in ASUs due to torrential rains, lightning, hail, etc., associated with abnormal weather• Increase in power of air compressors associated with rise in average global temperature	<ul style="list-style-type: none">• Capture of hydrogen demand associated with the transition from coke-reduction to hydrogen-reduction technology in blast furnaces

Impact of climate-related risks and opportunities on the organization's businesses, strategies, and financial planning

	Risk countermeasures	Promotion of opportunities
Business	<ul style="list-style-type: none">• Transition to a low-carbon industrial gases business• Industrial gases business adapted to abnormal weather	<ul style="list-style-type: none">• Development of products that reduce customers' GHG emissions• Realizing energy-saving ASUs through digital solution technologies
Strategies	<ul style="list-style-type: none">• Implementation of GHG emission reduction by replacing aging ASUs in stages• Promotion of use of renewable energy and shift to purchase of electric power with low emission factor• Implementation of GHG emission reduction by using digital solution technologies	<ul style="list-style-type: none">• Introduction of low-carbon products to market, including development of ammonia combustion technology in industrial furnaces• Implementation of GHG emission reduction by using digital solution technologies
Financial planning	<ul style="list-style-type: none">• Establishment of financial plan corresponding to plans for regular replacement projects• Comprehensive insurance for ASUs to handle abnormal weather	<ul style="list-style-type: none">• Development budgeting measures for environmental products and services

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
<ul style="list-style-type: none">• Global Risk Management Committee• Global Strategy Review Committee• Technology Risk Liaison Committee	<ul style="list-style-type: none">• 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• Risk importance determined by occurrence frequency × Financial or strategic impact• Annual Global Strategy Review Committee meeting (Chairperson: CEO) to determine financial or strategic impact on business• Specific countermeasures for items determined by the Global Strategy Review Committee determined at Technology Risk Liaison Committee meeting held between Nippon Sanso Holdings and operating companies, then deployed globally

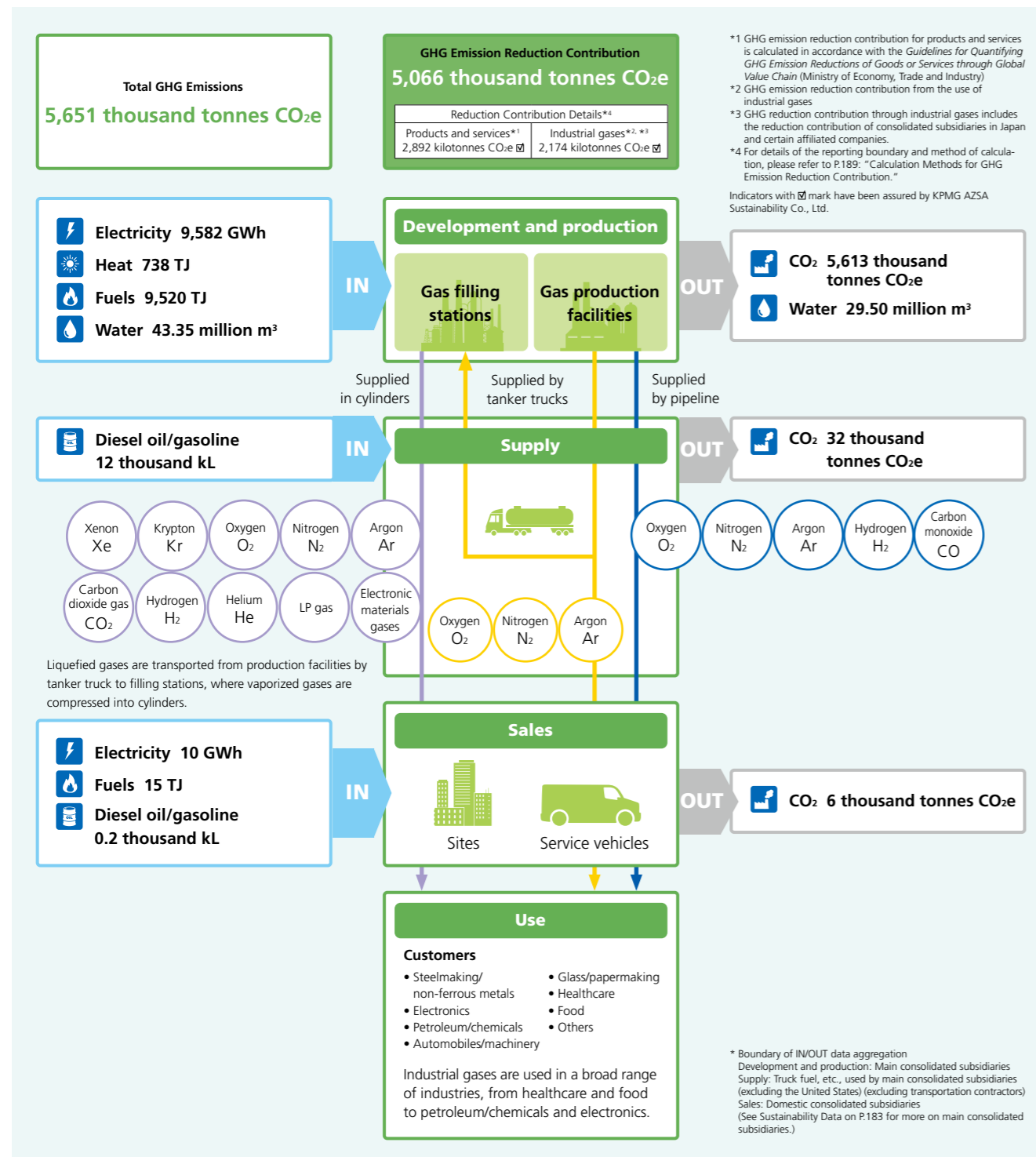
Metrics (Indicators) and Targets

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">• We disclose Scope 1, Scope 2, and Scope 3 GHG emissions (→P.178).	<ul style="list-style-type: none">• Sustainability data (→P.178)• Independent assurance report (→P.190)

Material Balance of the Nippon Sanso Holdings Group

The main products of the Nippon Sanso Holdings Group are oxygen, nitrogen, and argon. We manufacture these products using air as the raw material, which we return mostly to the atmosphere. Since both the raw material and the finished product are gases, we generate little waste. Since the raw material is air, we do not need to procure any other raw materials. In other words, the industrial gases business model of separating and selling air is a sustainable, resource-recycling business that consumes essentially no raw materials and generates no waste.



Business Strategies to Realize a Carbon-Neutral Society

To realize a carbon-neutral society, we believe it will be necessary to use technologies extended from current ones, completely new technologies, or a combination of both.

Moreover, to realize this new society will require not only the effort of the Group but also proactive collaboration with companies and universities that is be expected to produce synergies.

Expected Corporate Value

In Response to the Global Trend toward a Carbon-Neutral Society

Contributing to the Realization of Carbon Neutrality by 2050

Major Issues for Our Group (Areas in which our Group is actively involved)

GHG Emissions Generated by Our Business Activities

- The majority of the Group's GHG emissions are accounted for by electricity consumed by industrial gas production facilities, including emissions from the transportation of vehicles supplied with bulk and packaged supplies.
- DX will be used to reduce power consumption and improve transport efficiency.

Shift power consumption to more renewable resources to become more Green*¹

Efficiency
improvement in
production and
logistics

GHG Emissions Generated by Customers' Manufacturing Activities

- Customers' GHG emissions can be expected to contribute to control and reduction through the effective use of our gas utilization technologies and industrial gases.
- We can expect to use DX to solve customer problems and improve productivity with our gas utilization technology.

Further pursuit in combustion efficiency

Promotion of initiatives in CCUS*²

Industrial Reform of Next-Generation Energy

In order to reduce GHG emissions from the use of existing energy sources such as coal, oil, and natural gas, there is a need to reform industries toward the spread of next-generation energy.

Global HyCO team is actively working on new initiatives and opportunities

Taking inventory regarding in-house carbon neutral related technologies

*1 more Green: A method to utilize a mechanism to trade the environmental added value of electricity generated by renewable energy through a review of contracts and a system in which a certificate issuing company obtains certification from a third-party certification organization, etc.


*2 CCUS: Carbon capture, utilization, and storage.

Feature: Response to Environmental and Social Issues

Business Opportunities for Realizing a Carbon-Neutral Society

Evaluation of Business Potential in Each Global Region

Efforts to realize a carbon-free society are linked to the industrial structure and economic policies, such as governments and political and economic alliances, of each country. Therefore, our business expectations differ in each global region.



European operating companies



NIPPON GASES
The Gas Professionals



In line with the European Green Deal, the European New Industrial Strategy, and the New Recycling-Oriented Economic Action Program*, efforts and momentum to decarbonize in Europe are accelerating. Our Group views this trend as a new opportunity, and has established a project to share the characteristics and strengths of each geographic hub in this field with each other and pursue business possibilities.

For example, we are responding to the demands of society by combining technologies, knowledge, and experience within the Group to meet the needs of society, such as the possibility of further utilizing hydrogen additives, fuels, and energy when making steel, and the need for proposals to solve decarbonization issues at customers' sites.

* (Reference) A European Green Deal (European Commission website); https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal_en
Source (in Japanese); JETRO "Outline of European Green Deal and Rules Formulation and Corporate Activities of the European Union and Member Countries Concerning Recycling-Oriented Plastics Strategies (March 2020)" <https://www.jetro.go.jp/world/reports/2020/01/a4731e6fb00a9859.html>

Our Group's Solutions That We Expect to Contribute to a Carbon-Neutral Society

Our Contribution Technology (Gas Application and Gas Engineering)

Japan

Joint project to develop renewable energy offshore hydrogen production and supply infrastructure



Japan

Ammonia mixture burner

Ammonia combustion technology contributes to CO₂ emission reduction in industrial furnaces



United States

HyCO business (Hydrogen production and supply)

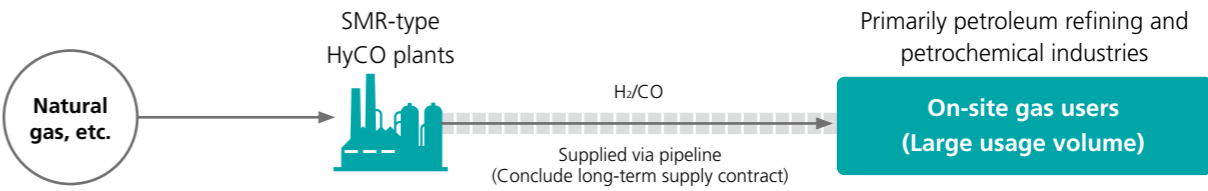


U.S. HyCO Business Strengthens Ties with Nippon Gases Euro-Holding S.L.U.

As companies focus their efforts to realize a carbon-neutral society, interest is growing in hydrogen as a next-generation energy source that emits zero CO₂ when consumed. Hydrogen is expected to be used effectively in industries that emit large amounts of CO₂, such as blast furnace steelmaking processes. Under the Ortus Stage 2 medium-term management plan, which concluded in FYE 2021, Nippon Sanso Holdings expanded in the gas technology field through in the gas technology field through M&A, pursuing a key strategy of innovation. In 2019, the company acquired the U.S. HyCO business of Germany's Linde AG. As a result, we were able to incorporate into the Group a business that produces and supplies large volumes of hydrogen (H₂) and carbon monoxide (CO) at a certain scale on-site. This acquisition has led to an expansion in our product lineup.

Business Model of the HyCO Business

Separate hydrogen and carbon monoxide from feedstock such as natural gas using steam methane reforming (SMR) systems and supply it to the petroleum refining and petrochemical industries through pipelines, primarily for use in the desulfurization process.



Natural gas, etc. → SMR-type HyCO plants → H₂/CO → Primarily petroleum refining and petrochemical industries

On-site gas users (Large usage volume)

Supplied via pipeline (Conclude long-term supply contract)

In Japan, users in the petroleum refining and petrochemical industries internally produce and consume hydrogen and carbon monoxide. Considering this business structure, industrial gas manufacturers have not entered this business.

Global HyCO

Since shifting to a holding company structure in October 2020, we have focused on hydrogen to strengthen our comprehensive capabilities. Hydrogen offers a high potential to contribute to a carbon-neutral society, and the global HyCO team of Matheson Tri-Gas, Inc. has taken the lead in exploring business opportunities for the HyCO business. Societies in Europe are expressing an increasing desire to shift to hydrogen. Here, the engineering division of Nippon Gases Euro-Holding S.L.U. and the HyCO team of the United States are working together to evaluate the viability of businesses related to new, lower environmental-impact frameworks that combine methods for the economical mass production of hydrogen developed in the HyCO business with CCUS. The companies are also engaged in technical research, including joint projects with outside entities, to discover other potential applications for this business.



Human Resources Strategy

Securing and developing human resources is essential for the sustainable growth of a company. It is the Group’s approximately 20,000 individual employees worldwide who support our social mission of reliably supplying industrial gases and proposing comfortable lifestyles. The concept behind our Group Vision, “enhance human well-being and contribute to a more sustainable future,” is the same for our regional industrial gases operating companies and for the Thermos business. By promoting the development of human resources sharing the same aspiration, we aim to promote the development of the Nippon Sanso Holdings Group together.



The Nippon Sanso Holdings 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 world, 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. They are shared by all Group companies, including Thermos, which operate globally. Each operating company will focus on the essential qualities of health, integrity, and resourcefulness making reference to its own unique values as well, and modifying them into a concept that is easy to understand, which it will promote internally.

Global Human Resources Development Strategy

Having changed its structure on October 1, 2020, Nippon Sanso Holdings is now changing the main fields of its activity to make them more global. Right now, nearly 70% of the Group’s consolidated employees are non-Japanese, and we are continuing to grow into a multinational organization. Therefore, one of our management priorities is to develop global human resources who will be responsible for the Group’s future. The kind of global human resources that the Group aims to develop will have experience in different countries, but it is also important for them to have understanding toward diverse cultures and

customs and a respectful attitude toward their colleagues. In addition, they must focus on increasing the value of the Company over the long term, while building lasting, deep relationships with customers and society in any country and area. With a view to developing such global human resources, we will take into account each operating company’s individual characteristics to enable employees to share and relate to our Group Philosophy and Vision.

Please see P.10 for data on the percentage of non-Japanese employees and the number of overseas Group companies, etc.

Message from Head of the HR Division



Satoshi Wataru
Senior Executive Officer of Group Human Resources & Corporate Secretariat Office, General Manager of Human Resources and Chief Health Officer (CHO) Nippon Sanso Holdings Corporation (Additionally appointed as General Manager of Human Resources and Head of Corporate Unit, Member of the Board, Senior Executive Officer, Taiyo Nippon Sanso Corporation)

Basic Approach

In June 2021, roughly six months after we launched the holding company, we inaugurated a new management structure. At the time, the Company had been at the mercy of COVID-19 for about a year, but it made me consider how the Group’s industrial gases business contributes to society.

As suppliers of life-saving oxygen, fire-preventing nitrogen, packaging gas for extending the freshness of food, and other gases for various uses, Group employees around the world performed the roles of essential workers in their respective departments, continuing to provide a reliable supply of products. Aside from COVID-19, disasters due to climate change and other factors are on the rise around the world. For the Group to carry out its important social responsibilities in this situation, it is vital to have human resources who have integrity. With integrity providing a foundation, the Group will work toward realizing a comfortable future for people, society, and the earth. To this end, I believe it is essential that we secure, develop, and circulate human resources who are able to accept different regional values, customs, and cultures, as well as diversity in terms of gender, race, and so forth.

Human Resource Exchanges

Personnel exchanges are known to be an extremely effective means of encouraging innovation and increasing work productivity. The Group has already been promoting initiatives to enhance its comprehensive capabilities by sharing the points where each operating company excels, and this is starting to produce significant productivity gains. Within Nippon Sanso Holdings, the appointment of Alan David Draper as CFO has brought a real transformation in our approach to working and our values. Similarly, Toshihiko Hamada as our newly appointed President CEO has brought a clear understanding of the importance of diversity from his experience working overseas in the United States twice and as president of a subsidiary. He believes that we should aggressively promote human resource exchanges.

I believe that this applies to Thermos K.K. as well, despite having a different business format. Thermos takes a sensitive approach to consumers and proposes environmentally friendly lifestyles in a way that could bring fresh values to the Group from the perspective of the SDGs. I believe that the Group needs to go further than sharing best practices by promoting real personnel exchanges as well.

Work Styles

Another important priority from the perspective of securing diversity and promoting active roles for women is to enhance our systems for creating comfortable working environments. Within the Group, the respective ratios of female employees overall and in managerial positions are high in Europe, Southeast Asia, and the Thermos business, and low in Japan and the United States. I believe that we need to create environments where people of all genders can develop their full potential, and to promote education that increases mutual understanding between team members working together.

From a separate perspective, some issues also came to light when people were remote working during the COVID-19 pandemic. The issues varied by region and age group, for example, inability to concentrate on work at home, or conversely, concentrating too hard and over working, mental discomfort due to not being able to meet and speak with people directly, and difficulty with communicating technical expertise. The solutions to such issues are not simple, but I believe the key is to share best practices between operating companies to review work styles, and incorporate measures that suit the various situations in each company and area.

The Group has highly talented human resources all over the world. I am confident that all Group employees will commit themselves deeply to the Company’s Vision and Mission, respect one another, and take pride in the Company’s business.

Human Resources Development
at Four Geographic Hubs + Thermos Business

Human Resources Development Strategy
in Japan

The Group’s operating company in Japan, Taiyo Nippon Sanso Corporation, has prepared education and training programs for the growth of employees, starting with basic training for young employees over a five-year period after joining the Company. Based on the ideals of health, integrity, and resourcefulness, we aim to develop human resources who can think and speak out on their own initiative about how to safely and securely provide products and services needed by society. In addition, as we continue developing human resources with a global perspective, we will also promote sharing of human resources between Group companies in Japan, and concentrate on creating structures and systems that will enable diverse employees to play their roles with enthusiasm, with the most suitable people assigned to each position.

Taiyo Nippon Sanso Corporation Employee Training Framework

	Hierarchical	Selective	Optional	Theme-specific	
Senior middle management	Training for new corporate officers Training for new middle management	Training for line managers			
Middle management	Training for new senior staff leaders	Training for global human resources Overseas Trainee Program	Seminars conducted by third parties (full fees for the seminars are paid by the Company) Correspondence courses (50% of fees are paid by the Company)	Mentorship training Life planning seminars TNSC Technical Seminars (organized by the Technological Education Team)	Specialist education for each unit
Fifth year of employment	Strategy and marketing training				
Fourth year of employment	Finance training				
Third year of employment	Training in logical thinking				
Second year of employment	Followership training				
New recruit	Training for new recruits				

Creating a Workplace Environment through Training for
Young Employees and Health and Productivity Management

Taiyo Nippon Sanso Corporation has a distinctive training system that provides training to young employees, starting with a three-month training for new recruits and followed by annual group training with other employees from the same recruitment intake once a year until the fifth year. The program is for all employees, regardless of their type of work, whether it is in business administration or engineering. By learning the skills that they need to function as employees in a company, employees advance through friendly competition and grow, developing a spirit of cooperation that builds better teamwork.

In addition, we believe that consideration for employees’ work styles and health is part of a management strategy for

enhancing individual capabilities, increasing productivity, and raising corporate value. We have therefore been promoting health management, which realizes mental and physical health with a view to being a company where all employees can work with enthusiasm, and work-style reforms, aimed at realizing working environments that are comfortable to all of our diverse employees.

➡ For data regarding users of our various systems for creating comfortable working environments and related information, please refer to P.172.



New recruit training for the first year after joining the Company

Efforts to Develop Globally Competent Human Resources

Taiyo Nippon Sanso Corporation has always placed emphasis on initiatives to develop professional human resources that are able to work with a global perspective, whether in Japan or overseas. Currently, we have stationed or assigned a wide range of employees of all ages, ranks, and job types, mainly in Southeast Asia, China, and North America. Under the holding company structure, Taiyo Nippon Sanso Corporation is the operating company for Japan, but looking at supply chain expansion and ESG, it is becoming increasingly important that each employee acts from a global perspective

rather than focusing inside Japan. To help cultivate this awareness, the Company has implemented training for global human resources and the Overseas Trainee Program, and will continue these efforts going forward.



Global employee selective training

Comments from Employees



Chihiro Takai
Corporate Unit, HR Division,
Taiyo Nippon Sanso Corporation

I learned that industrial gases are used in all kinds of areas of daily life that I hadn’t known existed, which stimulated my interest in the company. Then, through my conversations with other employees I was able to get a feel for the corporate culture, which made me feel confident about joining the company. Currently, I am allowed to work fewer hours after the childbirth leave and childcare leave systems. This has given me a real appreciation of the difficulty of balancing work and home life. Looking forward, I hope to help make our company one where men and women at any location throughout Japan are more able to focus on their home life, childcare, and hobbies as well as their duties. To this end, while I work in the HR Division, I hope to continue being involved in creating systems that value work–life balance. I believe that “The Gas Professionals” in the HR Division are people who can be trusted by other employees, who are approachable and build relationships. It is my aim to fulfill this role as I continue my work here.



Human Resources Development Strategy in Asia and Oceania

In the Asia and Oceania region, Nippon Sanso Holdings Singapore Pte. Ltd. (NSHS) represents the Group in the area around Southeast Asia and will promote human resources development initiatives among all of the operating companies. At NSHS, the management team and the persons responsible for personnel at each of the operating companies in Asia have jointly formulated a Vision, Mission, Values, and Motto, these four elements forming a common awareness that is constantly shared between them. They will continuously promote stronger cooperation within the region by integrating the personnel development policy from the perspectives of demonstrating leadership, promoting human resources development, engagement, and strengthening regional networking and collaboration.

For the Value element among the four, we created the slogan, “ACTIVE,” making reference to the qualities of health, integrity, and resourcefulness used in Japan. Our Vision, Mission, Values, and Motto support a positive organizational culture, as this is an important factor for improving employee productivity. By continuing to deeply entrench these shared values, we will be able to build a robust foundation to promote business growth in Asia. We will continue to recruit and develop appropriate human resources who share the same values as the organization, aiming to develop a rich pool of talent for “The Gas Professionals” across the entire region.

ACTIVE

Accountability:

Taking responsibility for one’s own actions and results in all situations

Creativity:

Promoting change and innovation for continuous improvement

Teamwork:

Encouraging collaboration within and between teams in order to achieve shared business goals

Integrity:

Doing the right thing the right way, even when nobody is watching

Vibrancy:

Being active and full of vital energy

Excellence:

Pursuing a high standard of performance in all our activities

Strengthening the Development of the Next Generation of Leaders

The greatest challenge for developing human resources in Asia is in its cultural and economic diversity. The Asian market is home to diverse cultures, and we must constantly pursue the ability to formulate and execute appropriate strategies in order to succeed in business there. In other words, our challenge is to develop outstanding talent and secure human resources who have leadership qualities.

NSHS has responded by stating a next-generation leader development program from FYE2022. The program aims to develop participants’ awareness of business strategy, engineering, safety, compliance, and global trends in personnel. NSHS aims to develop leaders who will take responsibility for business growth going forward. It will therefore work continuously and rapidly to strengthen and promote the development of and support the next generation of managers in Asia.

Employee Engagement Strategy

In Asia, the companies are located in different countries, and it has been difficult to bring them together as a single region. NSHS has therefore launched the “Unity in Diversity” campaign, a program that aims to increase engagement by integrating employees from all areas online, with a secondary purpose of increasing awareness of DX.

This initiative has been highly rated and has won awards in Asia and Oceania. Receiving a regional award is recognition of the design and development of the personnel programs and initiatives in Asia, and also shows that NSHS is providing highly reliably human resources development services

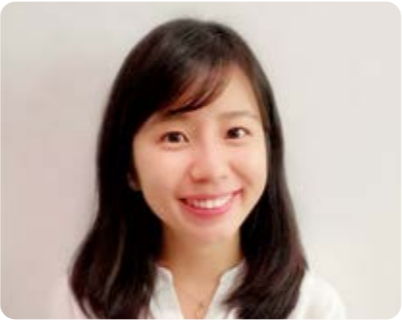
for employees of companies in Asia.

Looking ahead, we plan to conduct engagement awareness surveys and analyze the results, using the networks we have developed to establish a region-wide task force with the goal of further increasing engagement.



Receiving a silver award at
HR Excellence Awards 2020

Comments from Employees



Cheryl Yong

Human Resource & Admin
Nippon Sanso Holding Singapore Pte. Ltd.

Since I joined the workforce, I always aspire to grow and develop my career in a reputable Multi-National Corporation. Therefore, I jumped at the opportunity to join Nippon Sanso Holding Singapore of the NSHD group companies because NSHD is one of the world’s leading industrial gas and engineering companies, supporting a wide range of industrial sectors. I feel very proud to be part of the team to contribute my expertise for the greater good of the community, as I am fully subscribed to NSHD’s corporate resolve in the creation of social value by conducting business with integrity, focus on enhancing human well-being and contribution in sustainable future. In NSHD, I aspire to grow and develop myself into a true-blue HR professional who is able to bring out the best for our Gas Professionals. To me, “The Gas Professionals” means that I must be able to provide outstanding HR services and manage talent strategically through a diverse and all-inclusive work environment so that my company can continue its contribution for the development of all industries and creation of social values with the solution for social issues.



Human Resources Development
at Four Geographic Hubs + Thermos Business

Human Resources Development Strategy in the United States

At Matheson Tri-Gas, Inc. (MTG), the company's core values are memorialized in the acronym TIDES and serves as a standard of conduct for employees. TIDES stands for Teamwork (Work together in the best interest of the greater Organization to deliver business strategies.); Integrity (Treat Teammates and Customers with honesty and fairness and deliver on commitments); Drive (Set aggressive goals and pursue them relentlessly without compromising Safety, Quality, or Ethics); Empowerment (Give Teammates training and authority to make decisions and hold them accountable for results); and Speed (Work with a sense of urgency in decision-making and execution to gain a competitive advantage without compromising Safety, Quality, or Ethics). The company uses these core values to guide its human resources development.

Measures to Realize TIDES

At MTG, we promote our human resources strategy with the following three perspectives. From the perspective of being a preferred employer among job seekers, we introduced measures to improve the overall experience of our employees, such as offering an expanded scholarship program for our employees' children. From the perspective of continuing to retain high human resource capabilities, we seek to identify career paths for human resources with high potential and

motivate management to create diverse teams whose members challenge and complement each other. We also provide training such as seminars on wellness and financial planning. From the perspective of a human resources team itself, human resources lead by example by creating a diverse team of human resources professionals and also promoting digitalization of personnel management following the example of the Group's European companies.

Comments from Employees



Jeremy Holden

Legal
Matheson Tri-Gas, Inc.

I joined Matheson for the opportunity to work on a variety of challenging projects, and be part of an internationally respected company where I could have a meaningful impact on the company's success. It is exciting to be part of a company that is expanding and looking for additional opportunities in new and existing markets. I believe that as an innovative leader in our markets, with a clear Group Vision, NSHD will positively impact the industries and customers it serves, and create greater opportunities for its employees. In my role, I am responsible for understanding the law and how it can be used to help the company achieve its goals, while minimizing risk. Professionally, I would like to expand these skills to support other NSHD companies internationally. "The Gas Professionals" means having a complete understanding of our products and our customers' needs; then working together, regardless of our job, to develop and implement a solution to address those needs.

Human Resources Development Strategy in Europe

Nippon Gases Euro-Holding S.L.U. (NGE) has adopted safety, compliance, and diversity and inclusion as its conduct guidelines. To realize this, employees are required to have an attitude of high integrity, sustainability, and customer focus. In addition, they are required to make innovation through DX, leadership, trust, and respect. The NGE group's companies operate in 13 countries and regions and all of their employees aim to prioritize safety, observe compliance, and respect diversity.

Conducting Various Successor Development Programs

NGE operates a range of programs, such as Growing Our Leadership (GOL) and programs that provide support in the development of women and address the SDGs. These programs are centrally managed by NGE's digital human resources tool, People-Hub. In addition to training programs, People-Hub also has functions for assisting recruitment,

talent management, succession planning and the processes of on-boarding. NGE is currently facing the issue of an aging workforce. To avoid losing veteran skills due to retirement, we are planning to develop a knowledge transfer function in People-Hub.

Comments from Employees



Laura Sigüenza

Human Resources
Nippon Gases Euro-Holding S.L.U.

I joined Nippon Gases just before the pandemic, in January 2020, and since then it has been an amazing journey! What captured my attention was being part of a team that has the opportunity to build the culture and HR processes of the company. I find it fascinating to see how my work affects the company as a whole. During this time I have grown a lot professionally due to the variety of my work and the constant support of my team and colleagues. I was heard and trusted from day 1 and that keeps me motivated to always give the best of me. I am excited to see what is next for me as part of this amazing and inspiring group "The Gas Professionals"!



Human Resources Development
at Four Geographic Hubs + Thermos Business



Human Resources Development Strategy in Thermos

We have formulated the corporate philosophy, “Thermos continues to introduce new kinds of lifestyles that are agreeable to people and society and also environmentally friendly,” and the brand charter, which sets out the mission of Thermos, the ideal for our employees, and our approach to customers. The brand charter is included in the Thermos Handbook issued to all employees, and is circulated among them as the values that they all share. From FYE2022, we have added our management vision, “To grow sustainably and become a value-creating company that is trusted by all.” As a company that contributes to customers’ healthy living and the earth’s environment, we will promote the development of human resources who embody our corporate philosophy, brand charter, and management vision.

Developing and Strengthening Human Resources under the Next Medium-Term Management Plan

Developing and strengthening human resources is one of the priorities in our next medium-term management plan. We will implement measures to promote active roles for women, employment of people with disabilities, and work-style reforms through remote working, staggered shifts, and enhanced systems for supporting childcare. We will also bolster education and training, encourage job promotions and

transfers that are less influenced by long service, and implement measures and activities to maintain motivation among mandatory retirees. Finally, we will adopt IT for personnel-related operations and information. We will also look at revising personnel systems as well as proposing and establishing new personnel systems.

Comments from Employees



Yuki Kondo
Administration Division, Human Resources and
General Affairs Office,
Human Resources and General Affairs Section
Thermos K.K.

I decided to join the company, whose products I have loved for many years since my childhood, with a desire to widely promote the products, which are closely involved in everyday life, and provide people with comfort. Also, my senior colleagues are all extremely kind and the workplace has a welcoming atmosphere, which is another reason that I decided to join. I hope that Thermos K.K. will continue to produce innovative, surprising products that inspire a lot of people. Looking ahead, I intend to acquire more specialized skills and get involved in a wide range of operations, such as new graduate recruitment. I am determined to become someone who can support the company.



Results of Employee Survey



In creating this report, we conducted an employee survey and received a large amount of feedback from employees in Japan, the United States, Europe, and Asia and Oceania. The following is an extract of the free responses received.

How much do the Nippon Sanso Holdings Group Philosophy and Vision resonate with you?

1 I think the Vision is extremely good, and I like it. And, I hope that with my small power, I can contribute as much as possible to making the big world a better place. (China/Sales/Manager or higher) / I think that the Vision should include safety and the environment. (Sweden/Sales/Manager or higher) / The Philosophy and Vision are great, but in my workplace where we produce the same thing every day, it can be difficult to remember them. (United States/Production and Distribution/Manager or higher) / I think it would be better to have a discussion about how we interpret the Vision and what kind of action is expected of us so that we can understand it more deeply and put it into action. (Japan/Sales/Manager or higher) / I think the Vision and Philosophy are fine, but we need a plan about how to achieve them. (United States/R&D/Manager or higher) / The important thing is to incorporate the Philosophy and Vision into the business strategy and human resources evaluation system. I think this would increase employee engagement and contribute to increasing business performance. (Japan/Sales/Manager or higher) / The most difficult part of the Philosophy to achieve is “Innovative.” My view is that we need to powerfully drive continuous R&D and share knowledge regarding application technologies and solutions. (Singapore/Production and Distribution/Manager or higher) / I would like you to use language that clarifies that we are pouring our passion into the gas business. (Germany/Production and Distribution/Manager or higher)

What do you think is the advantage of your company?

2 We focus on sound finances and eliminating unnecessary processes (Italy/Other/Non-Manager) / I think our strengths are that while supporting social infrastructure, we also develop new gas applications, and we are growing steadily, if not rapidly. (Japan/Sales/Non-Manager) / Low attrition rate and continuous growth (United States/Sales/Non-Manager) / We analyze our competitors and come up with appropriate strategies (Vietnam/Back office/Non-Manager) / Employees who have individuality (Japan/Sales/Manager or higher) / Safety first (United States/Production and Distribution/Manager or higher) / We have excellent quality and rigorous management, we treat customers responsibly and never deceive them. (China/Sales/Manager or higher) / We are second to none for customer satisfaction. (United States/Sales/Non-Manager) / We are the first industrial gases manufacturer in Myanmar. (Myanmar/Back office/Manager or higher) / Ultimately, we have great technological capability. (Japan/Back office/Non-Manager) / We aren’t No. 1, but I feel we can offer better service to customers than any other company in the world. (United States/Production and Distribution/Non-Manager) / One of the factors that makes us different from other competitors is that Nippon Gases can supply 100% renewable energy. (Spain/Other/Non-Manager) / My colleagues and boss are all kind, and we talk freely about issues when they arise so that we can find a solution. It’s not political. (Singapore/Back office/Manager or higher) / We are a popular company with the local community. (Japan/Sales/Non-Manager)

How proud are you to work at a Nippon Sanso Holdings Group company?

3 I am very proud to be able to work as a member of the Group and contribute. (Vietnam/Sales/Non-Manager) / This business is difficult to differentiate from other companies, but we manufacture a high-quality product with a sense of pride that it is as good as any. (Japan/Production and Distribution/Non-Manager) / My leader is honest, kind, and skillful. I am proud of them. (China/Sales/Manager or higher) / I feel a strong affinity with Japanese culture, so I am proud to be a member of a Japanese company and share its values. (Belgium/Production and Supply/Manager or higher) / I am proud because the industrial gases business is extremely important for global needs, in particular oxygen supply during the COVID-19 pandemic. (Singapore/Engineering/Non-Manager) / I feel very fulfilled but I think that we should be more proactively communicative (responsive) to changes occurring in the world. (Japan/Back office/Manager or higher) / Matheson Tri-Gas is my second family and my home. I am very proud to work at this company. (United States/Sales/Manager or higher) / I have worked here for about 20 years and I feel love and trust for my company. I hope earnestly for the company’s continued growth in global society. (Thailand/Sales/Manager or higher)

Please comment on what “The Gas Professionals” means to you.

4 That we are a professional group producing, storing, and supplying all kinds of gases, and that we have the inspiration and technology to create the future. (Japan/R&D/Manager or higher) / That we exceed customers’ expectations (United States/Production and Supply/Manager or higher) / People united in spirit who will play a part in resolving social issues. (China/R&D/Manager or higher) / It means that we work in the Nippon Sanso Holdings team, with colleagues who are highly experienced and motivated. (Germany/Manager or higher) / Experienced, friendly, and hard-working people striving to create a better world through gas technology. (United States/Back office/Manager or higher) / Performing as we are expected to do as part of infrastructure. (Japan/Production and Distribution/Manager or higher) / Not compromising on safety or quality. (Malaysia/Back office/Manager or higher) / Contributing to the local community through the power of love for the company. (Japan/Sales/Non-Manager) / Passionately continuing to accumulate experience. (Taiwan/Back office/Manager or higher) / Matheson Tri-Gas (United States/Customer service/Non-Manager) / Safety, experience, and reliability (Italy/Other/Non-Manager)

Roundtable Discussion (3)

Aiming to be a preferred choice for job seekers and a company with highly engaged employees

WATARU In Japan, I feel that there are few employees that take initiative to identify and solve problems or inefficiencies on their own. We have used various approaches such as training to address this issue, but the best approach for developing high-level talent remains our biggest challenge. On the other hand, the style of employment in Japan is based on the concept of membership, and we have systems in place that can develop new employees from scratch. As such, in terms of recruitment, I don't feel this is much of an issue for us, including the combined use of mid-career recruitment. What type of issues do each of you have in your respective areas, and what kinds of measures are you taking to address them?

DE RAEDT At Nippon Gases Euro-Holding S.L.U. (NGE), our biggest

challenge is the aging of our workforce. Currently, there are approximately 3,000 employees in Europe, and 14% of these will reach mandatory retirement age within five years. This 14% is an extremely high ratio, and we are hard pressed to fill vacated positions quickly and adequately. To address this issue, I would like to introduce with the help of IT a database that gathers various knowledge and information, so that we can transfer the accumulated expertise of our leaders to our young employees. We are also considering the introduction of a contract system that would enable retired employees to support younger staff members. By creating these kinds of systems, we aim to create a workplace where all employees can work comfortably and engaged for a long time.

MOLNAR In the United States, our organization has grown rapidly in size over the past 15 years, and our main challenges are securing and retaining high-quality human resources, developing the next generation of managers,

standardizing business processes and integrating cultures, including for integrated companies, and compliance. To address these challenges, we are implementing three main strategies. The first is to be a company that job seekers will continue to choose for a long time, not only by offering career advancement but also by increasing employee satisfaction with workplace environments and well-being. The second is to proactively advance employees in order to lift their level of engagement. And the third is to create teams with diversity. The human resources team that I belong to is truly an example of this. In fact, we benefit from the presence of colleagues from many different racial backgrounds—75% of whom are women—thus making us the most diverse team within Matheson Tri-Gas, Inc. We are also seeking better, systemic methods of personnel management. In this regard, we have begun implementing the same human resources management system as the European human resources team.

PAULINE The Asia and Oceania region is characterized by a large number of developing markets, and the competition for talent is extremely intense. We face a constant challenge of how to attract and retain talent. Moreover, since we have business operations in various countries, there are different cultures embedded in each country and this makes it extremely difficult to try and raise the level of employee engagement across the entire region. At Nippon Sanso Holdings Singapore Pte. Ltd. (NSHS), we conducted gap analysis together with the top management and the leadership team. This gap analysis revealed that there was very little connection and synergy among employees across different business sites. As such, in around 2019 we started promoting DX initiatives and holding online webinars that were open for participation by all employees across different business sites. This created an opportunity for diverse members from different business sites to come together to learn, examine, and discuss emerging global business themes affecting the company as a whole. I consider this to be an important initiative for raising the level of employee engagement.

KOIZUMI The foremost challenge for the Thermos group is the issue of diversity. We have a low level of diversity in regard to gender, nationality, and racial background, and we need to increase it. We also need to develop female leaders. Another area that needs to be addressed is our shortage of human resources with professional skills who can operate in a global context. In light of these challenges, we are about to review our existing human resources system, evaluation system, and so forth with a view to expanding internal human resources development programs and attracting diverse human resources. The Thermos group is a multinational corporation, and



Thermos K.K., where I work, functions as the headquarters for our subsidiary companies. We at the headquarters form the core of the group, and have an extremely challenging task of figuring out how to manage human resources operating all over the world. I believe that we must find the solution through strong leadership.

WATARU Thank you for that. In order to be a "preferred employer," as you have all mentioned, I think that it will become important to have something that motivates both existing employees and new young recruits. I feel that there has been extremely strong interest in the recruitment scene regarding ESG initiatives, such as a commitment to environmental issues. Currently, at Nippon Sanso Holdings we are proceeding with discussions regarding the next medium-term management plan, and I think that we need to incorporate ESG perspectives, such as setting non-financial KPIs in our human resources development strategy and linking them to employee compensation, for example. What are you doing in this regard in Europe?

DE RAEDT In Europe, right now we have three KPIs related to human resources in our sustainability strategy. The first is to achieve a 5% yearly increase in the number of internships and trainees. Young people bring a new wind, ideas, and initiatives to an organization. The second is to promote employees' social contribution activities. We support this in the regions where we have a presence in local

communities and initiatives as much as possible. The engagement level of participants here is extremely high. And the third is to increase diversity, mainly in the ratio of female employees to 30% by 2025. Mainly due to historical reasons (we are a stable company with low turnover and long history), this is something we can improve. We have to rethink our total remuneration strategy, as young employees seem to have a stronger interest in work-life balance, development initiatives, and social engagement than in compensation. The compensation part is also important, of course, but there is extremely strong interest in the nature of our human resources development plans, social responsibility, and in sustainability and the SDGs. I think that setting and implementing non-financial KPIs will create a strong advantage in terms of securing human resources.

Proactively driving diversity and inclusion

WATARU The issue of diversity seems to have appeared in what all of you have said so far. This is also a significant issue for us in Nippon Sanso Holdings Corporation. In Japan, we conduct recruitment targeting a 30% ratio of female recruits. However, it takes time to develop personnel for management positions. Mr. De Raedt, could you tell us about some of the cutting-edge programs for developing female employees that you are implementing in Europe?

Human Resources Required by the Nippon Sanso Holdings Group

The Nippon Sanso Holdings Group comprises operating companies in Japan, Europe, the United States, and Asia and Oceania, as well as the Thermos business, all with different corporate cultures. To grow even further as a global corporate group, how should we secure and develop the human resources that will support the Group going forward? Senior Executive Officer Satoshi Wataru, Executive General Manager of the HR Division, and the persons responsible for human resources in each operating company explore this question.



Our mission is to develop human resources who can participate on a global stage.

Roundtable Discussion (3)
Human Resources Required by the Nippon Sanso Holdings Group

DE RAEDT At NGE, we have been working on the issue of gender diversity since 2010, and we are targeting a 30% ratio of female employees by 2025. In 2010, the ratio was just 14%, but today it has risen to 27%. For example, if we are hiring for a position, we try to ensure that one of the people on the short list is female. We are extremely mindful of ensuring that men and women are treated equally in the areas of pay and performance reviews. Through initiatives like these, we have incorporated a diversity and inclusion perspective in all of our processes. As a result, the ratio of women in middle-management positions has increased, and our employees also feel a sense of diversity in the workplace. As a next step, we started a sponsor program for women in October 2020, aiming to enable them to advance to upper-tier positions. We assigned directors and executive officers to act as sponsors for each of 15 promising female employees. The sponsors talk directly with them about their knowledge and experiences in management to inspire them to further advance their skills going forward. In the nine months since this program started, several of

these 15 employees are already about to advance into more senior roles. I think that this shows how extremely important it is to incorporate diversity into all processes involved in recruitment and development.

WATARU Thank you for your valuable advice. In addition to Europe, there is also a relatively high ratio of female employees in the Asia and Oceania region, particularly in the Philippines and Vietnam, and there are many cases of women working as managers. What is the reason behind this trend?

PAULINE Well, the reason for the high ratio of female employees in the Philippines and Vietnam is that management has promoted diversity and inclusion, and also that women make up a significant ratio of the working populations in these countries. In order to promote cross-cultural awareness and team cohesion, we started a Unity in Diversity campaign in the Asia and Oceania region. At the start of the program in 2018, the main focus of the program was to promote mutual understanding of different cultures in this region. Going forward, as part of continuous improvement to enhance the program, we will be looking to

promoting an age-friendly workplace of the future that is not bound to the concept of age seniority, as well as increasing women’s empowerment. In this way, I hope to further promote diversity and inclusion in this region, while realizing conducive working environments that are comfortable for women as well.

Expanding support for health, integrity, and resourcefulness

WATARU In Japan, we have promoted health, integrity, and resourcefulness as values that we want employees to embrace; but I think that much of this would be supported by all Group employees, not only those in Japan. In our business, we are required to provide customers with safety and security. For me, that means the most important value is integrity. Which of health, integrity, and resourcefulness resonates with you the most? And which other qualities do you think are desirable for human resources?

MOLNAR I am in complete agreement with you about the importance of integrity. I believe that management should

also strive to demonstrate a model of integrity. Moreover, by reinforcing this with a code of conduct and providing various means for anonymously reporting violations, we can realize fair treatment of employees. If team members work sincerely with one another, I am certain this will ultimately lead people to trust in the Company.

DE RAEDT In Europe, we also consider integrity to be of primary importance, but I am sure that all of us here can agree on the importance of all of the values—health, integrity, and resourcefulness. One of the qualities that I think is important in addition to these is flexibility. For example, being able to act flexibly to boldly take on challenges and offer support, even for new projects that we have never experienced before, will lead naturally to increased engagement. So that is a quality that I would like people to be aware of.

PAULINE At NSHS, we referred to the health, integrity, and resourcefulness values promoted in Japan to establish our own core values for Asia and Oceania, called “ACTIVE.” This is an acronym for Accountability, Creativity, Teamwork, Integrity, Vibrancy, and Excellence, which defines the values

that our employees should have. ACTIVE also includes the element of integrity. I think that as “The Gas Professionals” this is a natural value that we should uphold in carrying out our duties so as to maintain a high level of reliability. I am sure that this point has been well inculcated in every region.

KOIZUMI Indeed. I believe that integrity is fundamentally necessary for members of society. Aside from health, integrity, and resourcefulness, I emphasize adaptability and a willingness to take on challenges. I think that these are essential qualities for everyone in our business. In our current environment, changes are occurring extremely rapidly. Therefore, people who have the ability both to learn and unlearn—that is, the adaptability to acquire new knowledge and let go of old knowledge—are going to be needed in the Group going forward. Furthermore, it is important to constantly pursue new concepts and take up new challenges without being bound by old, fixed ideas.

WATARU Right now, we are actually reanalyzing health, integrity, and resourcefulness and reworking the definition. In the course of this, I think that the theme of work–life balance

that came up in our talk today is a key concept. Whether individual employees are able to enjoy their work is the most important point for us to think through properly. Based on your input today, I hope to improve the format of health, integrity, and resourcefulness so as to make it even easier to understand and promote internally. I would like to continue exchanging information and sharing best practices with each Group company, as well as promoting human resource exchanges. Thank you for participating today.

What kind of human resources are needed at Nippon Sanso Holdings?



People with a passion for working together.

Satoshi Wataru
Senior Executive Officer of Group Human Resources & Corporate Secretariat Office, General Manager of Human Resources and Chief Health Officer (CHO) Nippon Sanso Holdings Corporation (Additionally appointed as General Manager of Human Resources and Head of Corporate Unit, Member of the Board, Senior Executive Officer, Taiyo Nippon Sanso Corporation)



Human resources who can make a long-term commitment.

John B. Molnar
Senior Vice President, Human Resources Matheson Tri-Gas, Inc.



People who are multitasked, with several areas of expertise rather than just one.

Pauline Loo
Senior Vice President, Human Resource & Admin Nippon Sanso Holdings Singapore Pte. Ltd



The best people are those who have pride in the Thermos brand and who love Thermos.

Toshio Koizumi
Executive Vice President General Manager, Administration Thermos K.K.



Human resources who can engage at a high level for the company.

Wim De Raedt
Director, Human Resources Nippon Gases Euro-Holding S.L.U.

SECTION 3

OUR STRATEGY

Growth Strategy by Segment

Nippon Sanso Holdings' five business segments are the Gas Business in Japan, the Gas Business in the United States, the Gas Business in Europe, the Gas Business in Asia and Oceania, and the Thermos Business. Each segment executes growth strategies based on its particular market and regional characteristics. With the transition to a holding company, the delegation of authority to each business segment has progressed even further, creating a structure for realizing even faster growth.



At a Glance

The three business domains of Nippon Sanso Holdings are industrial gases, electronics, and Thermos, and these are operated and promoted by the five business segments. We aim to accurately grasp the market characteristics of each region while leveraging the expertise and strengths cultivated in each region across the Group to strengthen its comprehensive capabilities.

	Outline of Business	Main Products and Services (Revenue by product)		Main Customers and Product Applications	
Gas Business in Japan	<p>Taiyo Nippon Sanso Corporation Group</p> <p>Taiyo Nippon Sanso holds the top share of the Japanese industrial gases market at around 40%. It has the main R&D and engineering functions for the Nippon Sanso Holdings group, and a structure that enables it to meet customers’ demands. The company supports manufacturing with a nationwide supply network and stable operations at highly efficient production plants.</p>	<p>Gas</p>  <p>Equipment and installation</p> 		<p>By sharing knowledge and technologies advanced at R&D bases in Japan throughout the Group, we have established a structure capable of meeting market needs in every region.</p>	
Gas Business in the United States	<p>Matheson Tri-Gas, Inc. Group</p> <p>Matheson Tri-Gas is building an industrial gases supply network centered on major manufacturing areas such as California, which boasts the largest state economy, as well as Texas and Louisiana, leaders in the petroleum industry. In 2019, we acquired part of the HyCO business* from former Linde Gas North America, thereby further expanding our product lineup.</p> <p><small>* The HyCO business separates hydrogen (H₂) and carbon monoxide (CO) from feedstock such as natural gas and supplies it to the petroleum refining and petrochemical industries through on-site operations.</small></p>	<p>Gas</p>  <p>Equipment and installation</p> 		<p>The Matheson Tri-Gas group's largest ASU was established to serve the petrochemical industry facing the Gulf of Mexico, where it conducts on-site operations.</p>	<ul style="list-style-type: none">Industrial gases business Example: Steelmakers (welding, etc.), chemical manufacturers (petrochemicals, rubber, etc.), automotive manufacturers (parts, fuel, etc.), hospitals (cancer diagnosis, etc.) →Please see P.38 for details.
Gas Business in Europe	<p>Nippon Gases Euro-Holding S.L.U. Group</p> <p>Nippon Gases Euro-Holding operates in 13 countries, centered in Iberia (Spain and Portugal), Italy, and Germany, and has built a stable and highly efficient business base. The company is developing its business across a wide range of fields to capture growth opportunities, including healthcare in Spain, refrigerants in Italy, and oxygen supplies for aquaculture in Norway.</p>	<p>Gas</p>  <p>Equipment and installation</p> 		<p>The company maintains a strong focus on productivity to ensure a safe, reliable, and efficient supply, and to reduce GHG emissions during transport.</p>	<ul style="list-style-type: none">Electronics business Examples: Semiconductor manufacturers (semiconductors, LCDs, solar cells, etc.) →Please see P.42 for details.
Gas Business in Asia and Oceania	<p>Operating company groups in Asia and Oceania</p> <p>Our industrial gases business operates mainly in Southeast Asia, including Australia, Singapore, and Malaysia, as well as China and India; while the electronics business is focused mainly in China, Taiwan, and South Korea. The group has identified East Asia as an important area for its electronics business due to a high concentration of global semiconductor manufacturers.</p>	<p>Gas</p>  <p>Equipment and installation</p> 		<p>In East Asia, we have built an outstanding supply chain that supplies gases used as materials in the semiconductor manufacturing process with rigorous quality control, safety, and stability.</p>	
Thermos Business	<p>Thermos K.K. Group</p> <p>Thermos K.K. of Japan is the main company in the group, which ships THERMOS brand products to over 120 countries around the world. The group contributes to energy saving through various technologies and creative capabilities, including vacuum-insulation technology cultivated in the industrial gases business. At the same time, it provides new value through products that realize comfortable lifestyles.</p>		 	<p>Stainless steel vacuum-insulated bottles</p> <p>Shuttle Chef® vacuum-insulated cooking pot</p>	<ul style="list-style-type: none">Thermos business Examples: General consumers (household-use, sports, etc.), food manufacturers →Please see P.46 for details.

Gas Business in Japan

Outline of Business

In the more than 110 years since the Company's foundation, it has produced high-quality industrial gases to contribute to the development of Japanese industry. We have developed our business by providing the various effects and benefits of these gases. As demand and production activity decline with the maturation of Japan's economy, and the labor force decreases due to the falling birthrate and aging population, the current state of Japan's economy and society means that high economic growth can no longer be expected.

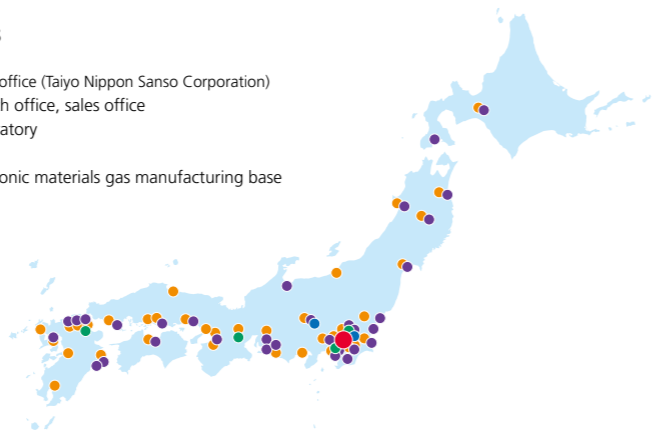
Meanwhile, in the global market, we are using our advanced technological capabilities and rigorous safety and quality controls to our advantage, and will continue to maintain a strong presence in several industries. Our unchanging mission going forward is to meet the demands of these industries. To contribute to their development and expansion, we will leverage the potential of industrial gases to the fullest extent as a solution provider to assist the development of industry in Japan. In this way, we will maximize our business value and drive increases in business productivity and efficiency.

Business History Highlights

- Provided on-site supply (piping) of industrial gases in major industrial areas in Japan
- Provided reliable supply of industrial gases to a major Japanese steelmaker
- Developed the Total Gas Center that supplies total gas and services, such as high-quality nitrogen gas and electronic materials gases for the electronics industry in Japan, such as semiconductor and LCD manufacturers
- Built a high-volume production system for Water-18O stable isotope, which is used as a material for PET testing reagents, using the cryogenic separation method

Bases

- Head office (Taiyo Nippon Sanso Corporation)
- Branch office, sales office
- Laboratory
- ASU
- Electronic materials gas manufacturing base



History

- 1910 ● Nippon Sanso was established under the name Nippon Sanso Ltd. (Founding)
- 1918 ● Toyo Sanso K.K. was established.
- 1935 ● Completed the first air separation unit (ASU) to be produced in Japan
- 1946 ● Taiyo Sanso Co., Ltd. was established.
- 1954 ● Started Japan's first liquid oxygen bulk business
- 1964 ● Started on-site supply business
- 1995 ● Taiyo Toyo Sanso Co., Ltd. was launched. (Merger of Taiyo Sanso Co., Ltd. and Toyo Sanso K.K.)
- 2004 ● Taiyo Nippon Sanso Corporation was launched. (Merger of Nippon Sanso Ltd. and Taiyo Toyo Sanso Co., Ltd.)
- 2020 ● Launched anew as the operating company for Japan following the transition to a holding company structure

Opportunities and Risks

In terms of the business environment and future operation of the Gas Business in Japan, the following could have a material impact on investment decisions. Forward-looking statements in the following section are based on the Group's judgment as of March 31, 2021.

Growth Opportunities	<ul style="list-style-type: none">• Expansion of potential for development of proprietary technologies (combustion, carbon gas recovery, etc.) in conjunction with progress toward carbon neutrality• Expansion of applications for industrial gases such as oxygen and nitrogen due to activities for realizing the SDGs (energy efficiency increase, marine resource protection, food loss reduction, etc.)• Expansion of business opportunities associated with the strengthening of Japan's semiconductor industry for economic security• Expansion of business opportunities in the Company's new business fields (AM business, isotope and marker business, bio business, etc.) following increased level of industry structure• Expansion of business opportunities due to realization of innovative low production costs through DX
Risks	<ul style="list-style-type: none">• Increase in energy cost due to rising electric power charges, etc.• Decrease in industrial gases demand due to elimination and consolidation, overseas relocation, and manufacturing method changes in core industries (steelmaking, petrochemicals, etc.) associated with reduction of GHG emissions• Increase in logistics costs due to work-style reforms and labor shortages in the logistics industry• Stoppage of operations at production and logistics bases due to natural disasters• Supply chain disruptions due to increasingly sophisticated cyberattacks

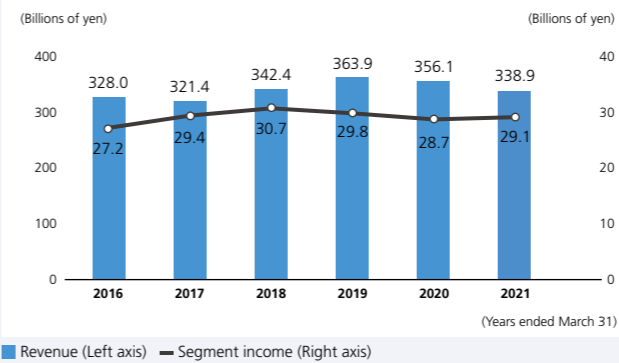
Results for the Fiscal Year

For FYE2021, revenue decreased 4.8% year on year, reflecting a decline in sales volume of separation gases as economic activity was halted by the spread of COVID-19. In this situation, the business environment for electronics-related markets was favorable, with an increase in sales of electronic materials gases and strong sales of equipment related to customers' conversion of their plants into smart factories, such as the new Intelligent Gas Supplying System (IGSS).

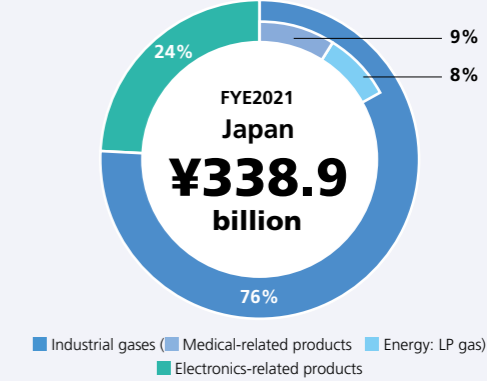
Moreover, in the medical business, Taiyo Nippon Sanso Group company IMI Co., Ltd. saw a surge in shipments of

high-performance ventilators to hospitals. Even under adverse conditions, we succeeded in strengthening our earnings foundation. We did this by focusing on strengthening the foundation of the industrial gases business and opening up new business fields using gas technology as an entry point, minimizing the negative impact of COVID-19 on our business performance while proposing gases and gas-related equipment as solutions for customers' issues.

Revenue and Segment Profit



Percentage of Revenue by Business



Future Outlook

The Japanese economy has been severely impacted by the COVID-19 pandemic. However, in FYE2022 we expect to see the economy begin to move from a recovery phase toward normalization. We will keep pace with the recovery in industrial gas demand, while working to explore and realize business opportunities related to new industrial activity looking ahead to the post-COVID-19 era and carbon neutrality.

Specifically, we will work to capture growth in East Asia, where there is vigorous production and investment activity, and in Japan's domestic electronics industry. At the same time, we will continue to focus on proposing energy-efficiency improvements to energy-intensive industries and on gas applications, such as additive manufacturing (AM) and modified atmosphere packaging (MAP). In tandem, we will proceed with reinforcing our business base by conducting cost reduction

activities in production and logistics and creating new value in our bulk gas business in order to increase the earnings capability of the Gas Business in Japan.



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

Response to COVID-19

With the spread of COVID-19, production activities slumped at our main customers in the steelmaking, chemicals, and mining industries, and the Gas Business in Japan was also significantly affected. On the other hand, in the electronics business, strong activity in manufacturing of semiconductors, LCDs, and so forth resulted in favorable performance for electronic materials gases as well as equipment and facilities.

Even under the state-of-emergency declaration that was issued because of the pandemic, we worked hard to deliver high-performance ventilators in response to urgent delivery requests from the government and medical institutions. Our industrial gases business serves customers in an extremely wide range of fields, which enabled us to minimize the impact of stalled economic and industrial activity due to the pandemic. In addition, we implemented various measures to prevent infection as well as sweeping cost-cutting measures in an effort to secure a profit.

Supply Chain

- Provision of sales information via video and product information via email bulletins
- Building of communication with new customers using the internet
- Blocking of contact with external parties and implementation of staggered shifts
- Construction of new working systems and team configurations to avoid production stops
- Thorough hygiene management, including contactless delivery and recovery of gas canisters to medical institutions

Organization Management

- In February 2020, set up the COVID-19 Crisis Headquarters, formulated a response policy and operation standards, and then quickly disseminated them to employees. Adjusted response measures as necessary in order to respond quickly to changes in case numbers and government requests, etc.
- Promoted the introduction of teleworking and proactive use of web conferencing for internal and external meetings. Decided to extend emergency measures for employees involved in childcare and safety
- Encouraged strong awareness of taking care not to pass on infection, implementing minimal required staff numbers for maintenance of basic industrial gases functions
- Placing first priority on employee health and working environment, prohibited overseas travel in principle as a measure to prevent infection. In addition, took strict measures such as postponing non-essential or non-urgent business travel inside Japan

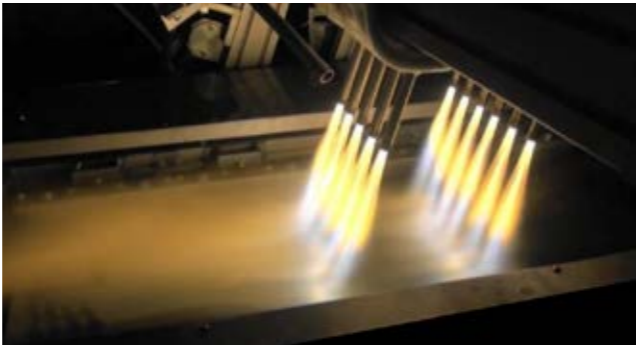
Initiatives to Realize Both Sustainability and Earnings

The Company has agreed with the TCFD recommendations and is actively promoting financial disclosures related to climate change. In addition, we have adopted internal carbon pricing as a factor for decision-making regarding investment and financing plans. These initiatives are part of ongoing efforts to upgrade and reinforce our internal systems for realizing a carbon-neutral society.

We believe that our pursuit of the SDGs (ESG) through these initiatives will lead to the achievement of both corporate sustainability and earnings. Promotion of the SDGs and making a profit are not contradictory goals for a company. Moreover, we believe that a company that does not achieve both will not be able to demonstrate a social reason for its continued existence.

Through our industrial gases business, we have handled source elements that are widely found on earth and provided their efficacy and functions to contribute to the development of various industries. We therefore see this as an industry that has a high degree of affinity with the SDGs, and we believe

that we are called to leverage these characteristics on an even wider scale. In particular, as we work to realize carbon neutrality, we will promote the development of technologies to support the effective use of oxygen, hydrogen, ammonia, and other gases, capturing the resulting business opportunities in an effort to achieve both sustainability and profitability.



Technology using ammonia combustion to help reduce CO₂ emissions from industrial furnaces

Message from Director in Charge of the Gas Business in Japan



We will strive to maximize the value of the industrial gases business by implementing industrial gases as a service (iGaaS).

Kenji Nagata

Member of the Board,
Nippon Sanso Holdings Corporation
Representative Director and President,
Taiyo Nippon Sanso Corporation

The spread of COVID-19 is causing changes not only to companies and industries but also to the behavior patterns of people. Nevertheless, the industrial gases business has developed over 100 years by supplying industrial gases to a wide range of industries, contributing to a better environment for people and the earth. Considering the potential of oxygen, as a compositional element of the earth, it exists in huge quantities, making it a virtually limitless resource. At the same time, its high reactivity enables it to promote chemical reactions in any kind of substance. Nitrogen makes up 78% of the earth's atmosphere, and is essential for all life on the planet. Extremely stable under ordinary temperatures and pressures, it has a very low boiling point of -196°C and is widely used to prevent oxidization and as a coolant. Even as we undergo various changes and transformations, our mission remains unchanged after 100 years: to demonstrate the full potential of industrial gases and constantly press ahead with our contribution to a wide range of industries and solutions to social issues. Pursuing this mission will lead to the sustainable development of the Gas Business in Japan. We have two specific strategies. The first is to strengthen our

base business in industrial gases and so forth. Customers use industrial gases because the efficacy and function of the gases enhances the quality and productivity of the customers' products. Under the iGaaS concept, we propose a solution comprised of gases and relevant services and equipment, which increases the value that we can provide to a new level. In this way, we aim to strengthen our fundamental business and increase our earning capability.

For the second strategy, we will develop new value and business domains by realizing innovation inspired by gases. Currently, in advanced forms of gas control technologies we are focusing mainly on 3D printers, the bio field, stable isotopes, and the field of composite semiconductors, and we will accelerate our technology and product development to expand these businesses. Within the holding company structure, we will seek to maximize the potential of industrial gases, which are the Company's starting point, while flexibly and accurately adapting to changes in Japan's industries and business environment.

Comments from Persons in Charge



Toyoyuki Sato

Senior Executive Officer,
Plant Engineering Center,
Taiyo Nippon Sanso Corporation

We will support iGaaS from the ground up through plant innovation.

The Plant Engineering Center (PEC) is Nippon Sanso Holdings only plant for manufacturing ASUs. Since 1935, the PEC has delivered a total of 1,200 ASUs, and special low-temperature, high-vacuum plants to customers in Japan and overseas. We will pursue the greatest possible cost reductions and shortening of delivery times while maintaining high performance and quality as "The Gas Professionals" of plant engineering, aiming to contribute to the gas businesses in the Group's four geographic hubs. In this way, we will work to strengthen the Group's global competitive capabilities.



Masahiro Takeuchi

Executive Officer,
Research & Development Unit,
Taiyo Nippon Sanso Corporation

We will accelerate initiatives for realizing a decarbonized society.

Through technology development based on vacuum, high pressure, low-temperature, and gas control technologies, the Research & Development Unit will increase productivity, safety, and stability in industry, as well as work in the electronics field to strengthen development of new materials and processes.

Meanwhile, in gas applications it will contribute to regenerative medicine and food loss countermeasures through low-temperature application technologies. It will also bolster decarbonization initiatives through oxygen-enriched combustion technologies and carbon gas recapturing technologies.

Gas Business in the United States

Outline of Business

Matheson Tri-Gas, Inc. was founded in 1927 as a specialty gas company and merged with Tri-Gas, a small regional industrial gas company, in 1999. Since 2005 the company has grown in sales from \$400 million to over \$2 billion with an estimated 10% market share by executing a strategy of vertical integration and product line extension through acquisitions and key capital projects. Vertical integration enables us to offer our customers a full line of cylinder, bulk, and on-site industrial gases along with related distribution and application equipment. In addition, we have a wide range of offerings from acetylene to complement our cylinder gas products, food freezing equipment and dry ice in support of food processors, and world-class production facilities in Korea and the United States to support the electronics and specialty gas business.

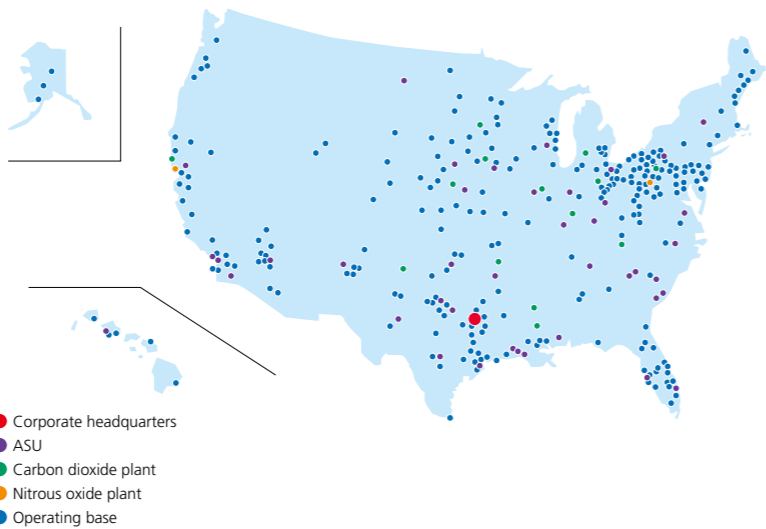
Business History Highlights

- Promoted bulk liquid and packaged gas supply from plants located mainly in the southern United States (1992–2004)
- Expanded bulk gas supply with new and acquired plants in California, Texas, Louisiana, Nebraska, and Iowa (2004–2015)
- Achieved a national supply network in the United States with the acquisition of Air Liquide assets (2016)
- Established supply of on-site hydrogen through the acquisition of Linde's U.S. HyCO business (2019)

History

- 1983 Entered the gas business in the United States after acquiring Matheson Gas Products, Inc., which has a proven track record as a specialty gas manufacturer
- 1992 Acquired Tri-Gas, Inc
- 1999 Merger between Matheson Gas Products and Tri-Gas
- 2004 Acquired six ASUs from Air Liquide
- 2006 Acquisition of BOC Helium business; acquisition of Linweld
- 2009 Acquired Valley National Gases the largest independent gas distributor in the United States to expand business area nationwide
- 2010 Acquired Western International, the largest wholesale supplier of acetylene in the United States
- 2014 Acquired Continental Carbonic Products a major U.S. carbon dioxide manufacturer and made a full-scale entry into the CO₂ and dry ice market
- 2016 Acquired 18 new ASUs and business assets from Air Liquide
- 2019 Acquired Linde's U.S. HyCO business

Bases



Opportunities and Risks

Acquisitions, capital project opportunities, sustainability initiatives, and the constantly advancing electronics segment will continue to positively influence our industry. We have classic business threats of disruptive technology, competition, and keeping up with the speed of change, but perhaps the greatest threat is our own complacency and failing to respond when presented with actionable opportunity or risk. Fortunately, we have been managing this threat well over the past and intend to continue to do so into the future.

Growth Opportunities	We intend to enhance our vertical integration efforts and strengthen our market intensity. We are investing in areas that we expect significant growth such as dry ice and global HyCO. Our focus will also be on markets that are resilient to economic conditions and essential to society such as the medical oxygen and food processing segment.
Risks	Our management team identified two key risks and assigned project teams to devise mitigation measures to minimize them. The main risks are economic and cybersecurity. Cost control, pricing, and cash management are the best remedies for economic risk. To reduce cybersecurity risk, we implement industry best practice processes and challenge our “defenses” regularly to identify vulnerabilities and implement the necessary corrective actions.

Results for the Fiscal Year

Strategies you have pursued in the fiscal year under review

We place extreme focus on the safety and well-being of our Teammates, Customers, and the community in which we operate. After the COVID-19 surge across the United States in the first four months of our fiscal year, the MATHESON business was approximately \$20 million below our operating income goal. Given the significant sales shortfall, we placed intense focus on costs, price management, and closing new business opportunities.

Initiatives (business measures) aligned to the strategy

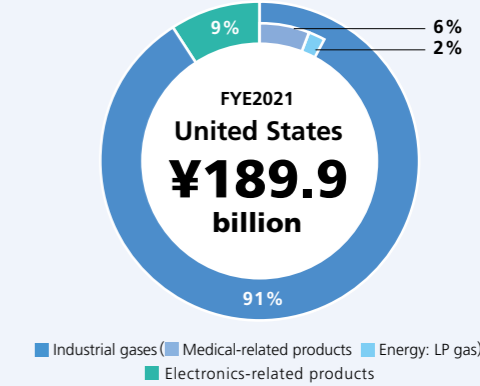
We focused on supplier price reductions, travel expense, distribution optimization, and over one thousand small local

projects saving over \$6 million. We avoided staff reduction where possible, we did not replace staffing lost to attrition unless the role was mission critical to safety, reliability, or customer service. We implemented multiple cost recovery and pricing campaigns to offset the profitability reduction. Over 60 formal sales strategy reviews were conducted by the Executive Management with Business Unit Sales Teams to accelerate new business signings that could generate sales and profit in the fiscal year. A combination of these efforts and a gradual sales recovery throughout the year allowed MATHESON to achieve the original operating income budget for the fiscal year.

Revenue and Segment Profit



Percentage of Revenue by Business



Future Outlook

Safety and Quality continue to be the foundation upon which we are growing the business. Our cost reduction program will be an ongoing effort with emphasis on minimizing supplier price increases through proactive cost-down bids and negotiations. Labor shortages are especially pronounced in the current business environment so special effort is being placed on our recruiting program with the end goal to make recruiting a true competitive advantage. Major efforts are underway to bring on board professional drivers and salespersons. We support our Customers with a broad range of gas applications especially metal fabrication and food processing. Focus

products include electronics and specialty gases, helium, HyCO, On-site & Pipeline. Improved management of cash is important with an emphasis on operating cash flow. We have reorganized both the Safety and Quality Teams to allow for better geographic coverage and support of the local Teams. We have reorganized our Recruiting into two Teams, one focused on drivers and the other on sales, management, and administrative positions. Cash management has been a key initiative particularly on accounts receivable and inventory management.

Response to COVID-19

Results of measures to respond to COVID-19

We have seen over 10% of our Team infected with the virus since the February 2020 timeframe which is in line with the general infection rate in the United States. All indications are infections have been due to close gatherings of family and friends that do not live together. Most tragically, two of our Teammates who contracted the virus passed away.

Measures for adapting to changes in the business environment arising from COVID-19

The past fiscal year was one of significant challenges for MATHESON as it was to the entire NSHD Group. As the danger related to COVID-19 became apparent in mid-March 2020, we moved all administrative and back-office operations to remote work from home status as well as the remote operations center of our ASUs and HyCO facilities. We established a Senior Manager COVID-19 Task Force that met at least weekly to set related policies and assess specific situations. Face coverings, face shields, latex gloves, and personal hygiene materials were issued to all sites and strict social distancing and masking requirements were implemented across our production and distribution operations. Weekly companywide communications were made regarding our status. Virtual meetings internally and with Customers and suppliers became the norm greatly reducing travel expense and saving time. Throughout this time, there were no furloughs or layoffs related to the pandemic downturn. This support of our Team by our Executive Management we

believe was a major factor in the outstanding reciprocal support received from the Team in achieving our pre-pandemic financial operating profit goal.



MATHESON, in partnership with Antelope Valley Hospital and Samaritan's Purse, installed a new Bulk Medical Oxygen System at Antelope Valley Hospital. The system supports a Mobile Tent Field Hospital providing relief for COVID-19 overflow patients from all of Southern California.



Steve Foster

Executive Vice President and CFO
Matheson Tri-Gas, Inc.

Comments from the Chief Financial Officer

Foreseeable issues to be addressed and outlook for the future

Sustainability is evolving to become a fundamental requirement of our customers. Requests to share MATHESON's sustainability policy details are routine. Customers appreciate our practical approach in how we measure our progress and can readily support our priorities in that our accomplishments in this key area help to reduce waste and ultimately drive cost reduction in our business.

MATHESON's pursuit of our vertical integration strategy has enabled significant growth and expansion of the business. Our continued plans and increased outlook for capital project development requires the further scale-up of resources in order to keep up with growing project demands and to assure safe and reliable project execution.

While productivity remains high for the organization with certain teams working remotely, employees' continued expectations for "work from home" and persisting concerns around COVID-19 requires careful, ongoing attention to protect our team. We foresee challenges in the continued development of new management talent due to reduced perspective gained by working remotely.

Overall, the business adapted well to managing through last year's challenges and many of these challenges will remain for some time. The strong commitment demonstrated by the MATHESON team will assure our continued success.

Message from Director in Charge of the Gas Business in the United States



MTG intends to create social value through our innovative gas solutions and contribute to a more sustainable future.

Thomas Scott Kallman

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

There is currently a fair amount of uncertainty in our business with respect to potential changes in corporate tax rates, inflation, labor shortages, and the best manner in which to address the need for sustainability in a rational and effective manner. While the sobering presence of COVID-19 remains, we must assess the safest and most productive approach for our employees to return to offices. The safety of our teammates, customers, and communities along with meeting our financial obligations and sustainability duties to our shareholders are our priorities. The strong performance in 2021 has given us the formula for continued success of the business this fiscal year. The current economy is rapidly returning to pre-pandemic form. For now, sales and operating profit are improving and barring the unforeseen, the business is on track to deliver its financial commitments.

In 2019, MATHESON began to assess our sustainability position and we began to measure our carbon emissions, consumption of water and generation of hazardous waste. We established a baseline of data and will work to improve by becoming more power efficient, more fuel efficient and minimize water consumption and the generation of hazardous wastes, recycling both when possible. Other initiatives include our formal cost reduction program designed to reduce waste and drive efficiencies and implementation of a computerized Human Resources management platform which leverages and standardizes the same platform used by NGE. The collateral benefits of this practical approach will help MATHESON better meet our sustainability responsibilities and improve competitiveness, profitability, and shareholder value.

Our top priority remains safety, which is based on implementation of best practices and procedures and the related drive for continuous improvement. A close second is our focus on quality and providing excellent customer service. Strong performance in these two areas positions MATHESON to deliver results in sustainability and growth. Sustainability

efforts support our cost management initiatives by delivering greater efficiencies in power, fuel, and water consumption and helps MATHESON realize the NSHD Vision. This in turn allows us to be more competitive which helps finance future investments in Safety, Quality, Sustainability, and finally the growth of the business, all in a synergistic cycle. Specific to growth, we are placing additional efforts to extend our ASU and dry ice production network into areas which will strengthen our density. This includes vertical integration in markets we currently serve and want to grow and new markets in which we want to expand. Special interest is in developing a more robust on-site generator business and aggressively competing for global HyCO opportunities.

MATHESON's business model includes controlling operating expenses and has a companywide constant drive to reduce costs. In conjunction with these fundamentals, we closely manage our cash optimizing payment terms for both receivables and payables. This along with our pricing management and sales growth has contributed to steady reduction in debt and allows for acquisitions and capital investments which will drive future growth of the company.

MATHESON's focus on "what really matters and what we can control" is intended to create social value through our innovative gas solutions to increase industrial productivity, enhance human well-being, and contribute to a more sustainable future. The path forward for MATHESON is in complete alignment with the NSHD Vision and our Shareholders.

Gas Business in Europe

Outline of Business

Nippon Gases Euro-Holding S.L.U. (NGE) has a significant market presence in Europe with close to 10% market share overall and more than 16% in the countries where we operate. We enjoy a strong income statement and balance sheet. We are a lean, agile, and flat organization that can react quickly to challenges and we have a highly committed and experienced staff. Our business strategy builds on these realities through 5 pillars: 1) Strong governance, 2) People excellence, 3) Optimization of the base business, 4) Growth, and 5) Operational excellence.

Business History Highlights

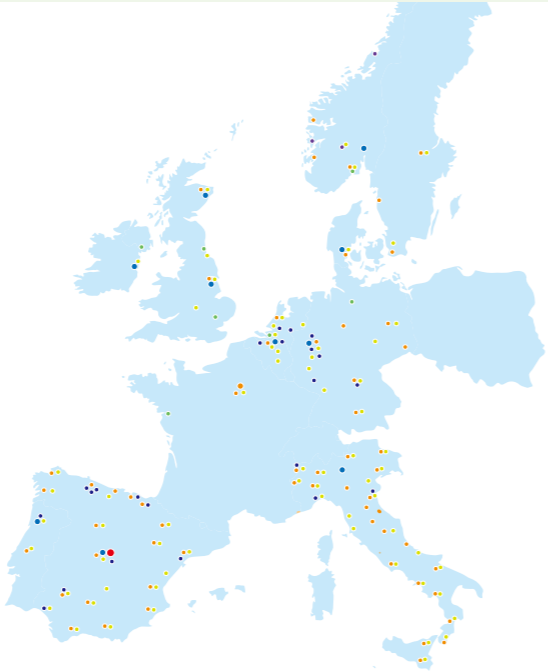
- The European business has nearly tripled its size since the year 2000 through acquisitions in Benelux, Germany, Ireland, Italy, Scandinavia, and the United Kingdom.
- Provides on-site supply (piping) to several major industrial areas in Europe (Belgium, Germany, Italy, and Spain).
- Growing in bulk liquid supply throughout Europe based on customized applications technology offerings for our customers in many diverse markets.
- Recently commissioned a new ASU in Norway to support the aquaculture industry and a liquid CO₂ terminal in Ireland to optimize CO₂ supply
- Customer focus and productivity are at the root of our financial results

History

In December 2018, our company acquired most of the European operations of the U.S. company Praxair, Inc. (industrial gases business in Germany, Spain, Portugal, Italy, Norway, Denmark, Sweden, the Netherlands, and Belgium; carbon dioxide business and helium-related business in the United Kingdom, Ireland, the Netherlands, and France). We are currently expanding our European operations under the NIPPON GASES brand.

Bases

- Head office
- Regional headquarters
- Sales office
- ASU
- Operational base
- CO₂ terminal



Opportunities and Risks

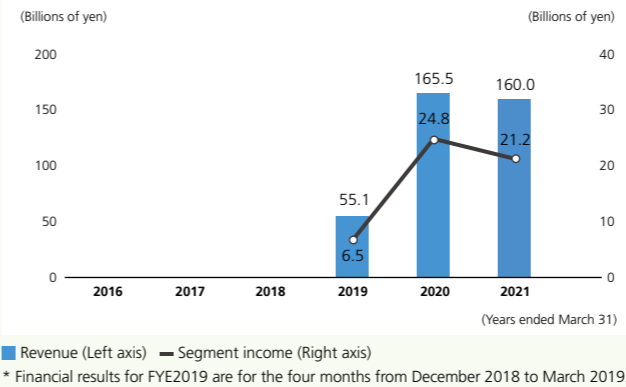
- The major opportunity is the thorough development of our five strategic pillars: 1) Be best in class in safety, compliance, risk management and quality of products and services, 2) Leadership excellence, optimization of talent and motivation of the employees, and optimization of diversity and inclusion, 3) Defend current business, continue to lead in applications technologies, and continuously evaluate markets and portfolios, 4) Seize major opportunities in decarbonization and hydrogen, partner with our customers to help them achieve their sustainability objectives, expand geographical footprint, and consider M&A opportunities, and 5) Take full advantage of DX and achieve sustainability leadership.
- The overall major risk is failing in accomplishing the above. Other risks, today, are: a slower transition than as planned to becoming a global corporation, the continued presence and impact of the COVID-19 pandemic, the potential impact of the electricity transition on our business, increasing cybercriminality, and the slower execution of a well-defined decarbonization strategy that may leave us behind the competition.

Results for the Fiscal Year

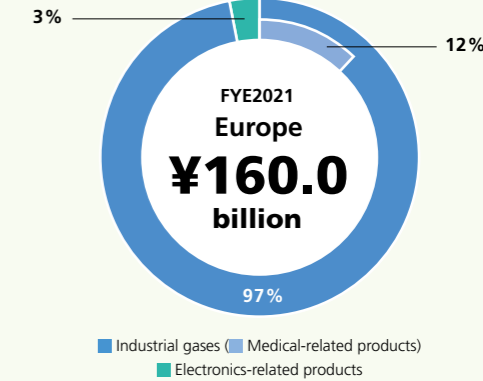
- Sales, in fiscal year ending March 2021, were 1% above the forecast driven by good performance in most lines of business and a strong second half of the year recovery.
- Variable margin was 0.6% above forecast from higher sales, pricing and productivity actions.
 - Strong fixed costs controls mitigated the extra costs related to COVID-19 protection equipment, special cleaning services and bad debt provisions.
 - Operating income was 1.2% above forecast, driven by higher sales, variable margin, and fixed costs savings.
 - We experienced a strong recovery in the second half of the year, with sales and operating income higher than the same period pre-COVID-19.

- Capital expenditures were 3% below forecast and working capital strong due to excellent collection work done in all businesses.
- The main strategies to accomplish these results have been:
 - Fast implementation of COVID-19 measures for the protection of employees, their families, our customers, suppliers, and partners
 - Ensuring business continuity: we have supplied every need of every customer, especially hospitals and clinical centers, even during the worst peaks of the pandemic

Revenue and Segment Profit



Percentage of Revenue by Business



Future Outlook

In the fiscal year ending March 2022, we expect sales to grow more than 7% year on year, driven by the continuation of the recovery in all lines of business with significant volume increases and accelerated applications technologies, oxyfuel combustion, water and wastewater treatment, food and beverage, fish farming, additive manufacturing, decarbonization projects, dry ice, semiconductor gases, and others. We also expect stronger sales from large projects completion (new ASU in Norway, new CO₂ terminal in Ireland, and new healthcare JV in Italy), and strong pricing environment. We expect lower healthcare sales as we expect a lesser impact of the pandemic in the hospitals across Europe.

Operating income to grow 18% year on year, driven by the recovery and the higher volumes, the increased sales,

productivity, pricing, continued fixed costs control, and the total Nippon Sanso Holdings integration project.



ASU Malm, Norway

Response to COVID-19

Our company has contributed and continues to do so, very significantly, to alleviate the suffering associated with the pandemic. The leitmotiv of our industry and our company is and has been “uninterrupted supply of high-quality products.” During the worst peaks of the pandemic the meaning of “uninterrupted, 24/7” supply has been more significant and more essential than ever for the society.

At Nippon Gases,

- We have maintained our operational discipline through the year.
- We created new hygiene and organizational procedures for the safe operations of our plants and we have kept all our plants running.
- We have supplied every need of every customer, especially hospitals and patients even in the worst peak days of the pandemic.
- We sent home everybody that could work from home. This is more than 1/3 of our employee population.

- We have stayed in contact with our customers, suppliers, and partners through remote conferencing technologies.
- We have been transforming our company, making it more advanced and efficient.
- In summary, we have managed our lives and our company through the pandemic storm protecting our employees and their families, our customers and suppliers, as well as other stakeholders.
- Our company together with the industrial gases associations worked hard with the different authorities and governmental bodies across Europe to make sure that vital gases and services were always available there where they were needed.

Initiatives to Realize Both Sustainability and Earnings

At Nippon Gases, we consider that industrial gases are part of the solution to get to the climate objectives of the European Union for 2030 and 2050. We have been part of the solution for many years already. We know the properties of CO₂ and H₂ and know how to deal with them in a safe and efficient way, thus allowing us to bring this knowledge to the CO₂ emitters, as well as to all those using H₂ in the future to reduce their carbon footprint.

So, Nippon Gases has been helping and will increasingly continue to help our customers to reduce their carbon footprint and, consequently, we are helping society as a whole. We are also intensive electrical energy consumers, and we use road transport as one of the major ways to reach our customers. As such, we need to contribute to a decarbonized society from an internal point of view too. We have increased the usage of renewable electrical energy expecting to reach 35% this year. If we consider low carbon energy usage, this year we will reach 65%. We are continuously investing in new technologies to reduce specific energy consumption in our facilities. In the last 10 years, we reduced the specific energy consumption by 8%. In summary, we contribute to a more sustainable world, by sourcing “greener”

energy and by investing in technology to lower the MWh/tonne of product we produce. As for road transport, two approaches: we reduce the impact of our trucks by moving to greener fuels and by investing in sophisticated technologies to reduce the mileage needed to reach our customers. We will reduce our transport GHG intensity more than 5% from 2021 to 2024.



A newly built CO₂ terminal in northern Ireland, enables more efficient supply than transportation by tanker truck. As a result, CO₂ emissions associated with transport can be reduced by 500 tonnes per year.



Message from Director in Charge of the Gas Business in Europe

NGE has set its own Sustainable Development Goals to contribute to a more sustainable future.

Eduardo Gil Elejoste

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

Nippon Gases has set its Sustainable Development Goals to contribute to a better and more sustainable future:

- Company governance and compliance, a strong culture of business integrity and ethics.
- Global environment, a strong drive to reduce emissions and to reduce waste.
- Society, community engagement activities, and sustainability of our customers.
- People, the safest as well as a highly diverse and inclusive company.

Nippon Gases’ priorities are: Safety, Compliance, the Environment, People Excellence, Customer Focus, and Financial Results. Nippon Gases is ultimately a highly experienced team of talented people contributing to the sustainable growth of industry in Europe, because industry is one of the key pillars of any healthy modern society providing qualified jobs, continuous training, and development opportunities for its workforce. Industry is the major contributor to innovation and R&D, the basis of the export potential of every country.

This year, Nippon Gases asked the whole employee population to participate in an Employee Engagement Survey (→P.167). The results of the survey were very encouraging: 81% of the employees participated, giving scores above 80 (from 100 as maximum) for Safety (95), Corporate Social

Responsibility (88), Diversity (88), Sustainable Engagement (86), Empowerment (85), Global Satisfaction (82), Quality (82), and Compliance (81). The Management, Collaboration, Communications, and COVID-19 Measures all scored above 75.

This feedback from our employees shows the way to continue to build a high-performance company. Our company, present in 13 European countries, employs 3,000 people, of which 27% are women. We are a diverse and inclusive company and expect to pass the 30% women milestone within the next five years.

The strategy of Nippon Gases for the foreseeable future is based on the following pillars:

- Grow and improve our business where we are
- Look for opportunities to invest and expand to places where today we are not
- Look for opportunities to invest and expand in adjacent markets to those markets in which we are today.

A final thought: I believe, as a team, Nippon Gases has ended the year wiser, increasingly adaptive and innovative, proactive and collaborative and, consequently, better prepared for the future. During this exceptional year, we had the chance to improve many non-used or “parked” skills. It has been an excellent learning experience for all of us; we had to work hard, innovate, collaborate, and “to mine” the best of our skills. An excellent personal development year for everybody.

Comments from the Chief Financial Officer



Justin Corcho Maters

Vice President and CFO
Nippon Gases Euro-Holding S.L.U.

We will focus on maintaining and strengthening our financial health on a European consolidated basis and conduct a range of sustainability initiatives.

Looking ahead, we are still amidst a global pandemic, the European economy is still contracting, and even though the vaccination pace remains steady, the roll-out seems still to be delayed. Therefore, the timing and shape of any recovery is uncertain and hence, Nippon Gases remains focused on preserving liquidity and transforming its businesses for the future.

In terms of sustainability, we must balance the increased transparency around these non-financial metrics with our ability to identify and measure those metrics and be prepared both internally and externally to show how the company is accounting for and measuring sustainability risks.

This is something we will be working on over the coming year, as our stakeholders are interested in this type of information and I also believe there is a direct link between sustainability metrics and business performance. We will, therefore, focus on maintaining and strengthening our financial health on a European consolidated basis and conduct a range of sustainability initiatives in productivity, efficiency, and strengthening cost management that will contribute to increasing shareholder value.

Gas Business in Asia and Oceania

Outline of Business

The Nippon Sanso Holdings Group's business in Asia and Oceania started in 1982, with an expansion into Singapore. By the 1990s, this initial foray had been followed by expansions into Malaysia, China, South Korea, the Philippines, Taiwan, Vietnam, and Thailand. In the 2000s, we continued expanding into India, Australia, Indonesia, and Myanmar. Our regional holding companies in Singapore and China provide centralized management of compliance and safety in the region, while Singapore also has a regional engineering support function. The main features of the business are a network of ASUs and filling stations, as well as a logistics network, which support the fundamental business of supplying industrial gases. In addition, in East Asia, the Group also has production sites for specialty gases used in electronics, as well as warehouses and sales companies, which play a key role in the Group's Total Electronics business. This area has a higher market growth rate than any other, and the Group must continue to actively make further investments to increase production capacity if it is to keep pace with rising demand and further increase its market share. We are constantly on the lookout for such opportunities.

Business History Highlights

- Contributed to industry development by strengthening industrial gases supply capacity in step with economic development
- Established supply chains since 1990 covering each region in East Asia, where the global semiconductor industry is concentrated
- Centralized information about global electronics users and developed the Total Electronics system for timely and appropriate proposal and promotion of the required gases
- Developed the industrial machinery and safety equipment business, centered on Southeast Asia
- Responded to increased demand in Australia and Thailand by developing the LP gas business for industrial and consumer use

History

- 1982 Established National Oxygen Private Ltd. in Singapore
- 1993 Established Dalian Nippon Sanso Gas Co., Ltd. in Dalian, China, and invested in Air Products Industry Co., Ltd. in Thailand
- 1994 Capital participant in Ingasco, Inc. in the Philippines
- 1995 Established Matheson Gas Products Korea in South Korea
- 1996 Established Nippon Sanso Taiwan Inc.
- 1998 Capital participant in Vietnam Japan Gas Co., Ltd. in Vietnam
- 2002 Established Taiyo Nippon Sanso Trading (Shanghai) Co., Ltd. in Shanghai, China
- 2003 Established Shanghai Taiyo Nippon Sanso Gas Co., Ltd. in Shanghai, China
- 2010 Investment in K-Air India Gases Pvt. Ltd. in India
- 2012 Made Leeden Limited of Singapore into a subsidiary
- 2013 Established PT Samator Taiyo Nippon Sanso Indonesia in Indonesia
- 2015 Acquired Renegade Gas Pty Ltd in Australia
- 2016 Established Taiyo Nippon Sanso Myanmar Co., Ltd. in Myanmar

Bases



Opportunities and Risks

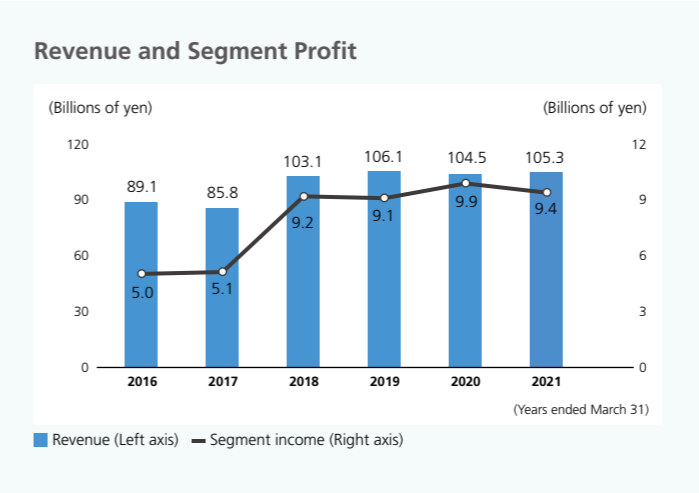
Expanding gas demand in the region presents an opportunity for the Group to continuously increase its production capability. In the business of supplying the electronics sector, which is constantly producing new technologies, the Group needs to accelerate the launch of products for next-generation semiconductors and production investment for short-cycle products. In Asia, there are many market entrants from other industries or local small- to medium-sized companies, creating conditions for a possible price decline. It is therefore important to appeal to customers constantly regarding the value of the Group's safe, secure, and reliable product supply, and to make unstinting efforts to retain commercial rights and expand sales. Statements about the future in this section are based on the Group's judgment as of March 31, 2021.

Growth Opportunities	<ul style="list-style-type: none">Maintenance and expansion of earnings in existing market centered on the bulk gas business in a stable market expected to see sustainable growthSales and investment opportunities in the growth industries of semiconductors and the biotechnology fieldLaunch of environment-friendly products and servicesConcentrated investment of management resources in the growth market of East Asia
Risks	<ul style="list-style-type: none">Underdevelopment of infrastructureSecuring of backup gasesDealing with legal and regulatory systems that change with the political situation and capital restrictions found only in emerging countriesVigorous competition for orders with competitor companies typical of a growth region and risk from exchange and interest rate fluctuationsMarket price volatility for rare gases and heliumCyberattacks growing in sophistication and number each year, and quality incidentsProject delays due to pandemics

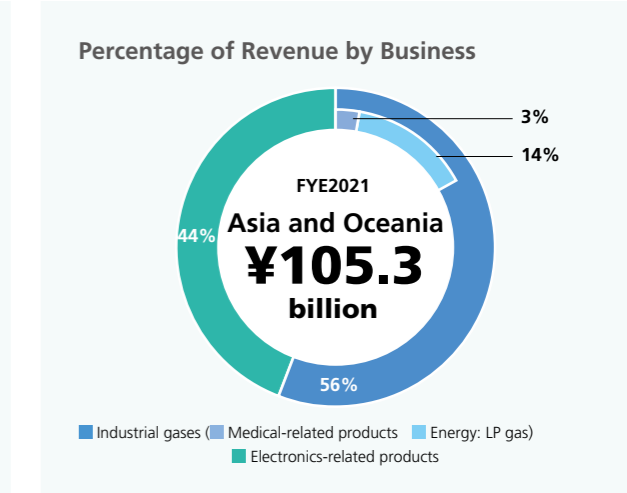
Results for the Fiscal Year

In the industrial gases business, the Group is strengthening its business foundation in Southeast Asian countries through measures such as aggressive sales activities, increasing its bulk gas production capacity, and supplying gases through on-site pipelines. In the electronics business, we are promoting the Total Electronics strategy. We have built a new electronic material gases plant in China (Yangzhou) and worked hard to increase our market share in both East Asia and Southeast Asia, making use of our competitively priced semiconductor materials gases.

By region, in the Philippines and India, we are reaping the benefits from the introduction of excellent productivity enhancement activities sourced from our European team.



In China, in the bulk gas business, we have been working to create a foundation for stable business expansion aiming to increase production capacity in areas where we have expanded already, particularly eastern and northeastern China. In Australia, we implemented rigorous cost management in our mainstay LP gas business, and secured stable earnings, largely unaffected by fluctuations in procurement costs. The carbon dioxide and dry ice production in Oceania that started in 2019 has steadily increased its capacity utilization rate, contributing to earnings growth. On the production front lines, we have promoted *kaizen* (continuous improvement) activities to save costs and promoted an awareness of curbing increases, which has contributed to increasing our profit margin.



Future Outlook

In FYE2022, the Group is forecasting growth in revenue and profit based on expectations for strong performance in the industrial gases and electronics businesses, and for the region overall. In Asia, we have been making capital investments for increasing production capacity in the bulk gas and electronics businesses. Moreover, these investments will support our plans to engage in on-site, large-scale gas supply projects and expand our gas business outside of air separation gases.

In our initiative for increasing productivity, which started in 2019, we will expand the range of target countries and aim to achieve early results by sharing best practices. Furthermore,

we will strengthen management of operating capital, conducting active investments commensurate with the high growth of the region while also creating a base to control interest-bearing debt.

In 2020, the COVID-19 pandemic brought business continuity plan (BCP) risk to center-stage once again. These plans enabled us to deliver an uninterrupted supply of gases to society and industries in the region, we will ensure the safety of our employees while reinforcing our structures for business continuity as an essential business.

Response to COVID-19

The spread of infection had a significant impact on this segment, particularly in the first half of the fiscal year. During the pandemic, our local subsidiaries looked to ensure the safety of their employees while responding to their social mission of providing a reliable supply of industrial gases such as oxygen, which are essential for daily life and economic activities in each country. This situation remains unchanged at the present. From the second quarter, China and Vietnam led the region onto a recovery track, and all countries are now gradually moving out of the shadow of COVID-19. Coming into 2021, India and Indonesia saw temporary spikes in case numbers, and we worked to address this grave social issue locally by engaging in full capacity production and shipment of medical oxygen, providing oxygen enrichment equipment across the entire Group, and lending containers out to meet the need for urgent exports from Group companies in the surrounding countries.

To address supply chain disruption caused by the pandemic, particularly with regard to electronic materials gases, which are a global product, we made every effort to maintain reliable supplies through cooperation within the Nippon Sanso Holdings Group. With the increase of data traffic in every country, including the promotion of teleworking, demand for PCs, tablets, and servers has increased, driving a rapid increase in attendant demand for electronic materials gases for use in electronics. Since before the pandemic, there have been concerns regarding whether we could maintain supplies of U.S.-produced electronic materials gases in China due to trade friction between the two countries. We responded to these

concerns by strengthening our coordination with customers and stockpiling adequate inventories for security. However, during this pandemic, we are striving to provide reliable supplies to meet soaring demand, such as rapidly making logistics arrangements and utilizing air cargo transport within Asia.

In organization management, our top priorities have been to comply with COVID-19-related regulations in each country, and to ensure the safety of our employees and their families. We introduced rotating shifts and telework as soon as the first wave of the pandemic arrived in each country, and implemented rigorous workplace hygiene measures. The early stages of the pandemic was a time of great turbulence for our Group companies in China, and we sent urgent shipments of masks and protective gear from Japan for all our employees and their families, with the entire Group supporting their business operations during the pandemic. In addition, in relation to the Groupwide ban on overseas business travel, we added new provisions to the articles of incorporation of Group companies where necessary to allow Board of Directors' meetings to be conducted by video conferencing and prepared environments for remote operations such as engineering operation support. As a form of communication to take the place of face-to-face meetings, we started monthly reporting meetings connecting with each company by video, among other operating methods for overseas companies under the new normal. Through these efforts, we are employing safe and diverse methods to maintain communication on a par with pre-pandemic levels.

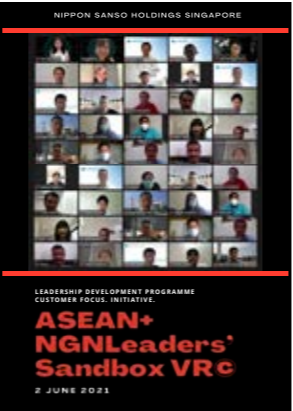
Initiatives to Realize Both Sustainability and Earnings

In Asia, the wave of COVID-19 infections continues as before, and every company has been obliged to continue with remote working, or working in an environment with infection prevention measures in place. While implementing these measures properly and ensuring the safety of employees, we have continued to provide reliable supplies to our customers. We will engage in sustainability centered on making uninterrupted contributions to local communities in each country and promoting business activities that will earn the trust of local customers and companies while providing individual employees with satisfying jobs.

Safety initiatives are still important measures, and we have therefore taken steps such as increasing our personnel and introducing safety equipment, which has led to a decrease in accidents. Looking ahead, in addition to safety, we will focus on training and allocation of human resources with an eye to environmental measures, such as contributing to a carbon-neutral

society and reducing the amounts of waste water and hazardous waste generated.

To ensure employee job satisfaction through human resources development activities, we enhanced the human resources development programs at our Singapore regional holding company. Select members participated in regular seminars, with representatives of local subsidiaries providing lectures based on their personal experiences. These and other activities are part of initiatives to share the management ideas of local top managers.



Human resources development program conducted in Singapore



Message from Director in Charge of the Gas Business in Asia and Oceania

We will continue making growth investments while maintaining our financial structure to contribute to increasing the corporate value of the overall Group.

Tsutomu Moroishi
Senior Executive Officer,
Group Corporate Planning Office*

* 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.

The Gas Business in Asia and Oceania still has room to grow compared to the other three geographic hubs, and each company in the region is still operating its business at the level of an individual company. As such, they do not necessarily each have a full complement of functions, and at this stage it is not realistic to equip them all. Therefore, it is more effective to provide engineering support from Singapore and Tokyo, as well as safety support. At the same time, this region has greater growth potential than others, and the Group is leveraging its comprehensive capabilities to capture the abundant business opportunities accurately and swiftly. This will enable us to maintain a high growth rate going forward. It also means that it is important for us to secure human resources. Fortunately, we have an excellent team of local managers, and the executive class that supports them will also be enhanced over the coming years.

The difficulty in managing the region from the Company's head office is partly due to the wide-ranging, multiregional scope of the operating companies. To address this, we have made efforts to cultivate a sense of unity among the Group companies in the region. For example, after the launch of Nippon Sanso Holdings we shared the Group's corporate philosophy and formulated the management vision reflecting

our ideals and the situation in each country, and promoted the Nippon Sanso brand. In addition, we utilized IT to enable monthly communication with the top management of each company. In this way, we have built an agile management structure that can respond to changes in the business environment.

Opportunities for growth investments abound, with Group companies presenting excellent investment propositions almost every week. For now, management is prepared to shoulder a heavier investment burden. Fund procurement is essential for carrying out investment, but interest rates are generally higher in Asia than in advanced countries, creating a heavy interest burden on borrowings. Therefore, our first priority is to strengthen earnings from existing businesses to supplement operating cash flow, and our second is to take steps to manage and reduce operating capital. To manage receivables, inventories, and payables at each company, we created an optimal structure leveraging the Group's comprehensive capabilities and promoted awareness of capital efficiency among all employees. As a result, we have succeeded in maintaining and improving our financial structure, even while continuing to make growth investments. This will contribute to increasing the corporate value of the overall Group.



Comments from the Person in Charge

We will continue to build relationships with customers and suppliers, aiming to provide high-quality solutions.

Nippon Sanso Holdings' Total Electronics group has been focusing on the global semiconductor industry. Several investments in the semiconductor gas manufacturing business have enabled growth in our business.

The Company has also focused on enhancing its logistic capabilities to meet global demands in different locations. Extensive work has been done to the global quality and safety systems at our manufacturing facilities to ensure standards are consistent at all locations. Going forward the Total Electronics group will work closely with customers to manufacture and source more local products and ensure quality control upon delivery. Strategic Account Managers are continuing to build relationships with customers and suppliers to provide semiconductor gases, chemicals, safety, equipment all at the quality Nippon Sanso Holdings is famous for.

Todd D. Givens
Senior General Manager,
Total Electronics Strategy,
Group Corporate Planning,
Nippon Sanso Holdings
Corporation

Thermos Business

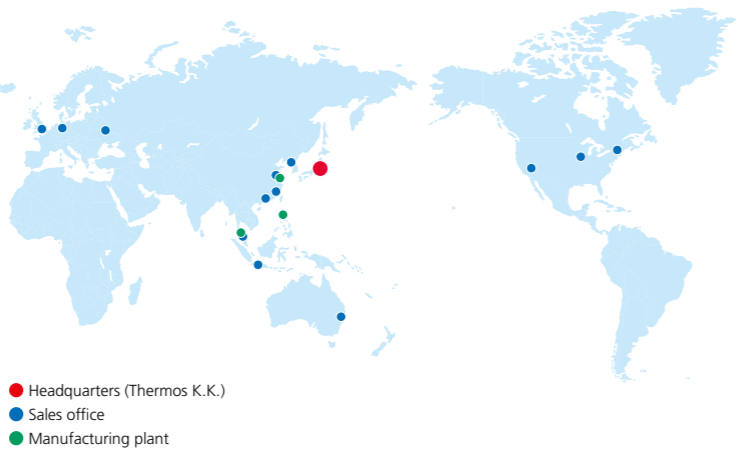
Outline of Business

The Thermos Business is operated by Thermos K.K. in Japan and its Group companies. Thermos K.K. has production subsidiaries in Malaysia and the Philippines, and a sales subsidiary in South Korea. Furthermore, we have affiliated companies in China, the United States, and Germany, among others, and through our regional bases we ship Thermos brand products to over 120 countries around with world. In Japan, where we have been working to expand our product domains, our market share has grown, reflecting expansion of our product lineup with the new categories of tumblers and cooking utensils, mainly frying pans, which corresponded with changes in lifestyles and demand due to COVID-19. Furthermore, the company continues to create new value by flexibly combining vacuum-insulation technologies carefully nurtured as a pioneer in the field of vacuum-insulated bottles designed for lifestyle comfort under the brand concept of “Thermos Magic.”

Business History Highlights

- Pioneered the stainless steel vacuum-insulated bottle market, and led the shift from glass to stainless steel bottles
- Launched Japan’s first sports bottles designed for drinking directly from the bottle for cold drinks. These became a hit product creating a new market
- Strengthened lineup of portable vacuum-insulated mugs (hot and cold use) and used promotions to firmly establish a lifestyle of using personal bottles. The JNL series, which led other companies in weight reduction, became a hit product with cumulative sales over 20 million units
- Launched a portable soup container for hot soup, which achieved strong market penetration due to a boom in residual heat cooking

Bases



History

- 1904 ● Commercialized the world's first glass vacuum-insulated bottle under the Thermos brand
- 1907 ● Thermos Company established in the United Kingdom and the United States
- 1978 ● Nippon Sanso developed the world's first stainless steel vacuum-insulated bottle
- 1989 ● Acquired the Thermos Company of the United Kingdom, the United States, and Canada
Launched the vacuum-insulated cooking pot Shuttle Chef®
- 1998 ● Launched vacuum-insulated sports bottles
- 1999 ● Launched vacuum-insulated portable mugs
- 2001 ● Established Thermos K.K. through a corporate split from Nippon Sanso
- 2009 ● Launched vacuum-insulated food containers
- 2013 ● Launched vacuum-insulated tumblers
- 2014 ● Acquired German high-quality vacuum-insulated bottle brand, alfi
- 2018 ● Launched Thermos brand frying pans

Opportunities and Risks

The company recognizes positive opportunities such as a change in lifestyle focus from the real to the virtual and a social change toward prioritizing environmental preservation. On the other hand, we recognize threats including commoditization of manufacturing and a shift in consumption trends from consumption of products to consumption of services. Statements about the future in this section are based on the Group’s judgment as of March 31, 2021.

Growth Opportunities	<ul style="list-style-type: none">• Expansion of the market for cooking utensils and stainless steel tumblers in response to lifestyle changes• Growth in direct-channel sales through the company's e-commerce website and directly managed stores• Expansion in the market for environment-friendly products• Growth in sales of products related to the expanding outdoors market
Risks	<ul style="list-style-type: none">• Continued loss of inbound tourism demand associated with a decline in visitors to Japan• Contraction of the holiday-related market due to restrictions on holidays, leisure, and other outdoor activities• Decrease in purchasing desire due to a slump in consumer confidence

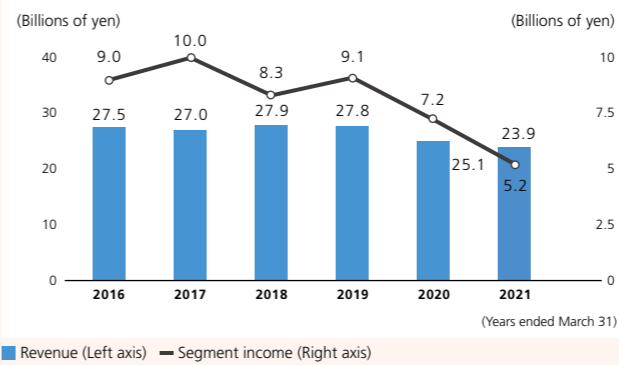
Results for the Fiscal Year

In FYE2021, revenue decreased due to a contraction in demand as the spread of COVID-19 from the start of 2020 resulted in a loss of inbound tourism demand as well as restrictions on travel and going outdoors and school closures due to emergency declarations by national and local governments. In addition, as plants overseas were ordered to close as a measure to prevent infection, the company was obliged to stop production from January to February, causing a halt in the supply of products. This resulted in impacts such as delays in the launch of new products.

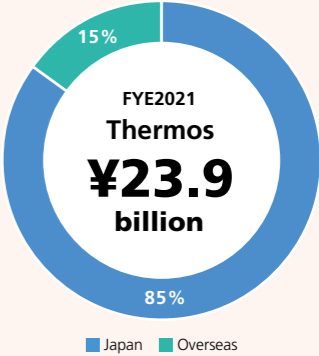
As a result of the above, revenue decreased sharply in the

mainstay portable vacuum-insulated mug category. Amid this, efforts to promote the creation of demand for household goods by expanding the product range resulted in strong growth in tumblers and frying pans due to stay-at-home demand. This led to a strong recovery in operating performance in the second half; however, full-year revenue was lower year on year due to market contraction caused by further state-of-emergency declarations in major centers at the beginning of 2021. Operating profit declined year on year due to the decrease in revenue, as efforts to reduce advertising expenses and other activity expenses were not enough to make up the difference.

Revenue and Segment Profit



Percentage of Revenue by Area



Future Outlook

Our core themes are “increase competitiveness of products,” “expand product range and sales channels,” and “increase brand value.” We will develop products that have the distinctive character of Thermos, and aim to recover sales of our mainstay portable vacuum-insulated mugs and achieve further growth. As the market grows for tumblers, we will stimulate it further by expanding the product range, aiming to establish them as a lifestyle item.

In our sales channels, which have changed due to COVID-19, we will work to respond accurately to the changes by engaging with the growing e-commerce market and integrating it with the real market. In addition, we will increase the value of the Thermos brand even further, carrying out measures to let consumers experience the joy of Thermos products and the pleasure of using them. In addition, in overseas markets, we

will actively optimize our business base in Southeast Asia, and aim to grow and expand after COVID-19 has been controlled. In new business, we will leverage the strengths of our main business to develop and promote new businesses.



Response to COVID-19

We were obliged to close our overseas plants in Malaysia and the Philippines due to strict measures to prevent the spread of infection in each country, which had a sizable impact on product supplies. Currently, we are conducting operations at each plant while complying with infection prevention orders from the respective countries’ governments. Furthermore, we are also looking at options for substitute production to avoid shocks to the supply chain during emergencies. We place the highest priority on managing the health of our employees at every business site, and have implemented measures such as

ensuring mask wearing and disinfection, as well as promoting unrestricted teleworking. Moreover, at directly operated stores where employees have direct contact with customers, we have taken the same measures to prevent infection, and established response processes in the event that an infection does occur. In the retail market, demand for online sales has risen sharply and people are spending more time at home, which has driven strong growth in products catering to stay-at-home demand.

Supply Chain

- Implementation of countermeasures at the manufacturing sites for overseas plants in compliance with strict guidelines of respective national governments
- Optimization of logistics sites in Japan and adoption of multiple sites from a risk management perspective

Organization Management

- Promoting teleworking without restricting the number of days
- Refraining from business meals and meetings (internal and external)
- Basic prohibition on overseas business trips and prohibition of unnecessary or non-urgent domestic business trips
- Enforcing disinfection with alcohol upon entry to all workplaces and mask wearing
- Creation of response processes in the event of infection occurrence

Initiatives to Realize Both Sustainability and Earnings

With its corporate philosophy of “Thermos continues to introduce new kinds of lifestyles that are agreeable to people and society and also environmentally friendly,” Thermos K.K. approaches management with an awareness of sustainability. In its environmental policy, the company is committed to using heat-insulation technology to develop energy-saving products that contribute to reducing society’s environmental impact, proposing an environmentally conscious lifestyle, and promoting awareness activities. The spread of the company’s core product, portable vacuum-insulated mugs, has led to a trend in using personal bottles that is helping to reduce plastic use. Meanwhile, the Shuttle Chef® series of vacuum-insulated cooking pots and vacuum-insulated soup containers help to save energy using a heat-retaining cooking method. The development and spread of these environmentally conscious products has enhanced the brand value for consumers, and we believe this leads to continuous profits in corporate

management. Moreover, we aim to create a society that achieves both abundance and environmental sustainability through initiatives to reduce our environmental impact throughout the entire product life cycle.



Contributing to reduced environmental impact by promoting the use of personal bottles



Message from Director in Charge of the Thermos Business

Faced with dramatic changes in lifestyles and rapid market changes, companies must evolve to keep pace.

Yuji Kataoka
Representative Director and President
Thermos K.K.

The COVID-19 pandemic that has been raging since 2020 has had a significant impact on Thermos K.K.’s business, with huge changes in the market environment and consumers’ lifestyles, as well as the loss of inbound tourism demand from visitors to Japan. Even in this environment, in FYE2021, we managed to grow sales, as a boost from stay-at-home demand for cooking utensils and tumblers sparked by a companywide expansion into new product domains offset a steady decline in sales of our mainstay portable vacuum-insulated bottles.

To achieve our business vision of “be a company that creates new value and grows continuously,” we face the following four companywide challenges that we are currently focused on: (1) strengthening proposal capabilities, (2) developing and strengthening human resources, (3) increasing customer satisfaction, and (4) actively engaging with the SDGs. Our mission is to continue providing products and services that satisfy customers, and we will continuously make improvements, not only to our products but also in our

distribution services and services to consumers. We will also build and effectively utilize CRM systems.

In addition, based on our corporate philosophy of “Thermos continues to introduce new kinds of lifestyles that are agreeable to people and society and also environmentally friendly,” we will work sincerely toward helping resolve various social issues. We have established a dedicated department to promote the SDGs and plan to expand these activities companywide.

With lifestyles changing so dramatically, and markets so rapidly, we recognize that companies must also evolve and change to keep pace. To this end, training employees as part of human resources development has become even more important. Alongside this employee training, the company will also make strategic expenditures for investments in brand advertising. Finally, in our overseas business, we will expand sales in the South Korean market and optimize our business sites in the Southeast Asian markets, which are expected to grow, as we work to establish the Thermos brand there.

Comments from the Person in Charge



Yasuhiro Murakami
General Manager,
Marketing Department
Thermos K.K.

Urgent focus on entering and expanding product domains other than vacuum-insulated bottles

The company’s core business, stainless steel vacuum-insulated bottles, has recorded growing sales up until now. However, a declining population in Japan’s domestic market is expected to cause increasingly adverse conditions going forward. To realize our management vision, we are working daily to tackle various challenges. Among these, while we continue to focus on the task of cultivating and expanding the core business, we also recognize an urgent focus on expanding product domains other than vacuum-insulated bottles, and we are taking our first steps in this direction.

In 2018, the company entered the market for cooking utensils, mainly frying pans, using the Thermos brand, which has built a trusted reputation for quality in vacuum-insulated bottles. In 2020, the COVID-19 pandemic arrived, however sales increased steadily driven by stay-at-home demand, as consumers sought to purchase cooking utensils, and lifestyle changes such as an increase in dining at home. Looking ahead, we will enter and expand new product domains with a view to creating value for customers.

SECTION 4

OUR MANAGEMENT

Corporate Governance

Nippon Sanso Holdings Corporation engages in constructive dialogue with our stakeholders, including shareholders, customers, employees, and local communities. In this way, we build solid relationships while strengthening our management system to ensure transparency and fairness.



Corporate Governance

Principles of Corporate Governance

Nippon Sanso Holdings believes the essence of corporate governance is to respect the rights of stakeholders and to ensure transparency and fairness in decision-making. This definition includes leveraging management resources effectively to increase the vitality of management through swift and resolute decision-making.

In October 2020, we changed our name from Taiyo Nippon Sanso Corporation to Nippon Sanso Holdings Corporation, becoming a holding company. We transitioned to a holding company structure for two main reasons: (1) to speed decision-making and clarify responsibility for business execution through the delegation of authority to each region, and (2) to strengthen the Group's overall capabilities by expanding regional strengths on a global scale.

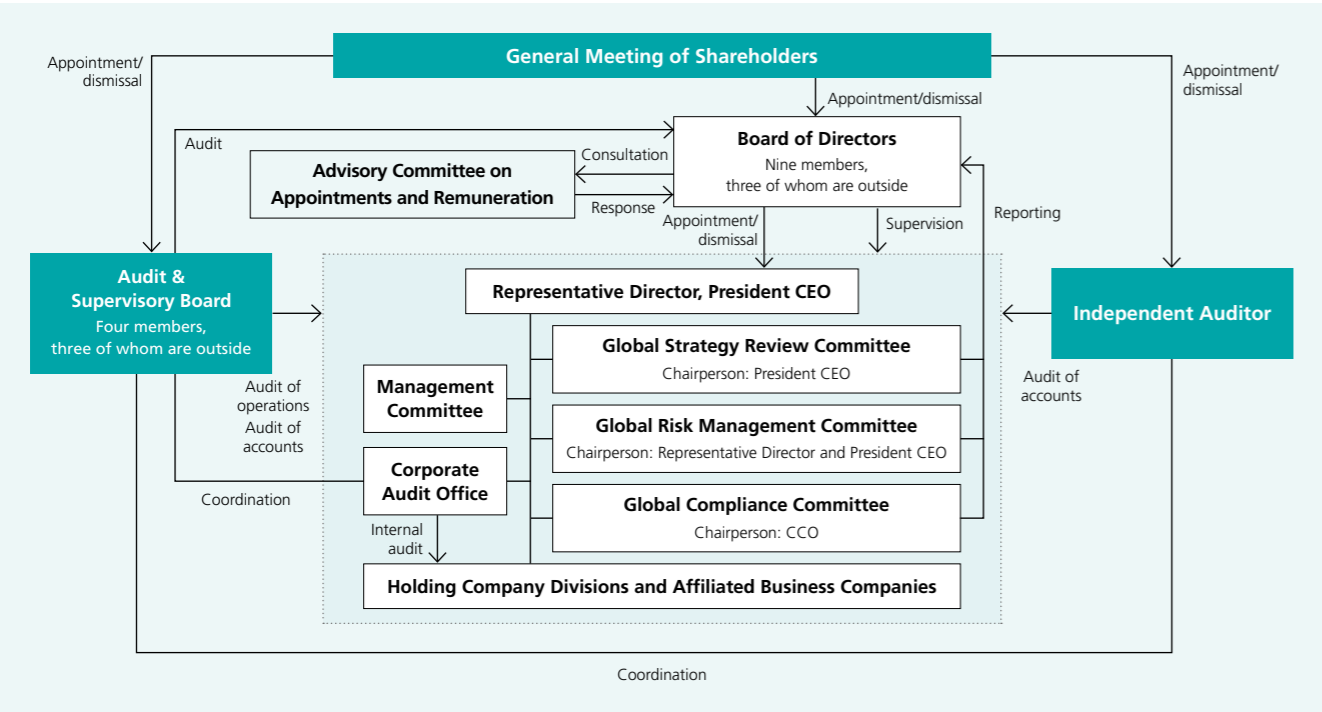
Furthermore, we redefined our Group Philosophy and Group Vision in line with this structural transition. We assigned individuals in each region to communicate our new philosophy and vision to employees to bring them on board with groupwide approval and support. Our new philosophy and vision serve as a base upon which to establish codes of conduct tailored to the characteristics of each region, facilitating wider dissemination and acceptance. We recognize that the role of Nippon Sanso Holdings is to understand and collect information about the situation in each region, acting as a driver for setting goals tailored to each location. We aim to achieve sustainable growth and enhance corporate value through a management structure designed to act with speed.

Corporate Governance Structure

The Nippon Sanso Holdings Board of Directors consists of nine directors, three of whom are outside directors. This Board structure facilitates appropriate management decisions. The Board of Directors meets monthly to discuss important matters and receive reports on the status of Nippon Sanso Holdings' businesses. In addition, the Board consists of directors bringing various skills and experience, and who provide supervision and make decisions from a diverse range of perspectives. In June 2019, we appointed Thomas Scott Kallman,

head of the Gas Business in the United States, and Eduardo Gil Elejoste, head of the Gas Business in Europe, to the Board of Directors as a step toward strengthening our global management structure. Since our transition to a holding company structure in October 2020, the former director in charge of our industrial gases business in Japan has become a member of the Board of Directors serving in the capacity of president of the Japanese operating company. In this way, we have created a more global management structure.

Auditing Structure and Risk Management Structure



Organizational Changes Effective June 18, 2021

Following the Ordinary General Meeting of Shareholders held on June 18, 2021, and subsequent meeting of the Board of Directors, Nippon Sanso Holdings made certain changes to the position of representative director and officers of the Company. Toshihiko Hamada was elected as President CEO, replacing Yujiro Ichihara. Mr. Ichihara was elected as Chairman

of the Board of Directors. The Company also appointed Miri Hara as an outside director. Entering a new fiscal year under the holding company structure adopted in October 2020, we have established a management structure that maximizes the functions and governance of a holding company to enhance corporate value further as a global company.



Comment from the Chairman of the Board of Directors
We are building a management structure capable of responding flexibly to change, and striving to enhance Board effectiveness while improving corporate value.

Yujiro Ichihara Member of the Board, Chairman of the Board of Directors

To begin, I wish to express my heartfelt condolences to those who have lost loved ones due to the COVID-19 pandemic. I also wish to express my sincere wishes for the speedy recovery of those suffering from the illness as well as my deepest gratitude to the professionals in the medical field who are engaged in fighting the spread of infection.

The Company shifted to a holding company structure in October 2020. Since 2014, when I assumed the position of Representative Director, President CEO, we have been enhancing governance in numerous ways to create a holding company structure capable of global management, including the establishment of the Principles of Corporate Governance, the addition of the Advisory Committee on Appointments and Remuneration to complement the functions of the Board of Directors, and reviews of the number and composition of directors (see P.114). Prior to the transition to a holding company, the boards of directors at operating companies needed to spend a significant amount of time not only supervising management but also making decisions on business execution. This approach to managing operations was particularly the case in the Gas Business in Japan. With the transition to a holding company, authority for business execution has largely been delegated to each operating subsidiary. The transition has increased the speed of management decision-making while clarifying the roles and responsibilities of the holding company and our operating subsidiaries. The holding company is free to focus mainly on management supervision. Furthermore, we have begun to make good progress in our efforts on achieving the objectives of the transition: to speed up decision-making, to allocate management resources appropriately, and to strengthen the comprehensive capabilities of the Group.

Looking at the current business environment, however, we expect that the COVID-19 pandemic will not subside completely for some time. Apart from the short-term effects of the pandemic, the social environment has also changed in significant

ways since the COVID-19 outbreak. The relationship between social issues and business has become more challenging than ever. I have high expectations for our new executive team and how they will lead the Group in adapting to a changing environment through our businesses as well as how they will leverage our businesses for enhanced corporate value and better societies. At the same time, I believe the role of the Board of Directors will become increasingly important as a supervisory structure that monitors management performance from a broad perspective.

I stepped down as President CEO upon the conclusion of our medium-term management plan, Ortus Stage 2. Based on the recommendations of the Advisory Committee on Appointments and Remuneration (chaired by an independent outside director), the Board of Directors selected Director Hamada to be my successor as President CEO. The Board made this decision for reasons including strengthening governance, making a generational change with the development of new and talented managers, and encouraging flexible responses to a diverse range of changes. At the same time, we established a new management structure consisting of nine directors, including three independent outside directors, and a newly instituted chairman of the Board position. The Board of Directors is a central organization in our corporate governance, and I believe it is important that we continue to enhance the quality of discussions and pursue greater Board effectiveness. I have led the Company in my capacity as President CEO, reflecting the advice of the Advisory Committee on Appointments and Remuneration. Now, I will serve the Company in a non-executive position as Chairman of the Board of Directors, bringing my many years of experience with the Company to a new position. In this capacity, I intend to leverage my experience in raising the effectiveness of the Board of Directors and striving to enhance corporate value as we explore how best to confront a changing business environment, how our executive team should perceive and respond to issues, and whether our strategies are leading in the right direction.

Features of Our Corporate Governance System

The Board of Directors has created a global management structure, establishing the Advisory Committee on Appointments and Remuneration and having top executives of operating companies in Europe and the United States serve concurrently as directors of the holding company. These policies have resulted in direct and lively discussions at Board meetings.

Even more distinctive is our system that encourages speedy management while delegating decision-making authority to the operating companies at each of the four global geographic hubs and the Thermos Business. We supply a variety of industrial gases, including air separation gases (oxygen, nitrogen, and argon), to a wide array of industries on a global scale. We are also engaged in diverse activities across a wide range of business domains. For this reason, we adopted a corporate governance model incorporating an Audit & Supervisory Board. Under this management structure, the Board of Directors makes decisions on business execution above a certain scale, including M&A and investment. The Audit & Supervisory Board conducts its own audits of the corporate group. In so doing, we have answered the need for the type of multi-vectored evaluations of wide-ranging risks based on expertise linked more closely with our front lines when it comes to management judgment, decision-making, and supervision.

Measures to Strengthen Corporate Governance

2015	June	Reduced the number of members as provided in our Articles of Incorporation (from 20 or less to 15 or less); reduced the number of directors (from 16 to 11); and appointed two outside directors to speed decision-making
	June–July	Established the position of chief compliance officer (CCO) to ensure effective compliance
	October	Established the Internal Controls Office to assist the CCO
2016	June	Established the Principles of Corporate Governance and disclosure policies
	June	Established the Advisory Committee on Appointments and Remuneration (consisting of the Chairman, President CEO, and outside directors) to improve the transparency and objectivity of decisions regarding the appointment and compensation of officers and other personnel
2017	June	Introduced performance-linked executive compensation tied to the results of the medium-term management plan as an incentive for medium-term growth
	June	Reduced the number of directors from 10 to seven (including two outside directors) to establish further separation of business execution and supervision, as well as to strengthen the supervisory function of the Board of Directors
2018	July	Established the Information Management Committee to manage information in cooperation with related departments under an appropriate management system
	February	Appointed a CCO and regional chief compliance officers (RCCOs) in North America, East Asia, Taiwan, Southeast Asia, India, and Australia to strengthen the Group compliance system; established global compliance management regulations, regarded as a unified Group standard; and held a meeting of the Global Compliance Committee, attended by RCCOs under the global CCO to share information on the status of legal compliance within the Group, the progress of legal actions, and other topics
2019	June	Established the Technical Academy to serve as an in-house training facility to provide education on security and disseminate technology from the perspective of technology risk management
	March	Appointed RCCOs in Europe
2020	June	Appointed Thomas Scott Kallman (Chairman and CEO, Matheson Tri-Gas, Inc.), who is responsible for the Gas Business in the United States, and Eduardo Gil Elejoste (Chairman and President, Nippon Gases Euro-Holding S.L.U.), who is responsible for the Gas Business in Europe, as directors to strengthen our global management structure for oversight and decision-making from more diverse perspectives
	October	Transitioned to a holding company structure and changed company name to Nippon Sanso Holdings Corporation
2021	June	Appointed an additional outside director (from two to three outside directors), increasing the ratio of outside directors to one-third of the Board of Directors, and thereby diversifying its composition and strengthening its supervisory function

Meetings, Committees, and Their Respective Functions

Board of Directors
The Board of Directors determines basic management policies, including key management indicators and medium- to long-term management strategies. It also determines important matters regarding business execution and oversees the execution of business by the representative director.

Advisory Committee on Appointments and Remuneration (Chairperson: Independent Outside Director)
The Advisory Committee on Appointments and Remuneration is consulted by and provides advice to the Board of Directors on matters related to the selection of candidates for directors, Audit & Supervisory Board members, and other appointments as well as for the appointment and dismissal of the President CEO and other executive officers. The committee also consults and provides advice related to plans for fostering the next generation of human resources and revising internal rules regarding the remuneration of directors and executive officers.

Audit & Supervisory Board
The Audit & Supervisory Board monitors the Company's internal control structure and status of operations. The board also conducts audits of everyday management activities, including those carried out by the Board of Directors, through operational and financial statement audits.

Management Committee
Based on the Group's basic policies as determined by the Board of Directors, the Management Committee deliberates and makes decisions on important matters related to the execution of duties by the Representative Director, President CEO.

Global Compliance Committee (Chairperson: CCO)
The purpose of the Global Compliance Committee is to ensure

the effectiveness of Group compliance activities. RCCOs meet once a year to share information on the progress of activities in each region, to report any compliance violations and legal actions, and to discuss the annual compliance plan in each region.

Global Strategy Review Committee (Chairperson: Representative Director, President CEO)
The Global Strategy Review Committee meets regularly once a year, or as needed, to deliberate and ensure that we bring the Group's comprehensive capabilities to bear on matters as described below.

- Review and update overall strategies related to global products, technology development, and other Groupwide topics
- Consider appropriate resource allocation across the Group and formulate budgets
- Formulate and manage the progress of Group management plans
- Confirm the status and determine policies regarding sustainability and the environment for the Group
- Confirm the status and determine policies regarding security and quality management for the Group

Global Risk Management Committee (Chairperson: Representative Director, President CEO)
The Global Risk Management Committee meets regularly once a year, or as needed, to deliberate matters as described below for the improvement of risk management across the Group.

- Make decisions on major changes to important risk management policies for the Group and other matters related to risk management
- Submit a report for the current fiscal year regarding important risks in each operating company and the response to said risks; report on plans for the following fiscal year
- Deliberate the selection in response to important Groupwide risks and formulate response plans for the following fiscal year
- Address other matters related to Group risk management deemed necessary by the chairperson



At a meeting of the Board of Directors held in June 2021, we shared the direction we will take to strengthen the Group's overall capabilities under the new structure.

Advisory Committee on Appointments and Remuneration

We established the Advisory Committee on Appointments and Remuneration as a voluntary advisory body to be consulted by and provide advice to the Board of Directors on matters related to the selection of candidates for directors and Audit & Supervisory Board members as well as to the appointment and dismissal of the President CEO and other executive officers. The committee also provides advice related to plans for fostering the next generation of human resources and revising

internal rules regarding the compensation of directors and executive officers. The committee consists of the Representative Director, President CEO, the Chairman of the Board of Directors, and three independent outside directors. At present, Akio Yamada (independent outside director) chairs the committee. This structure ensures independence from the parent company in the selection of our management team as well as the transparency and objectivity of decisions made by the Board of Directors.

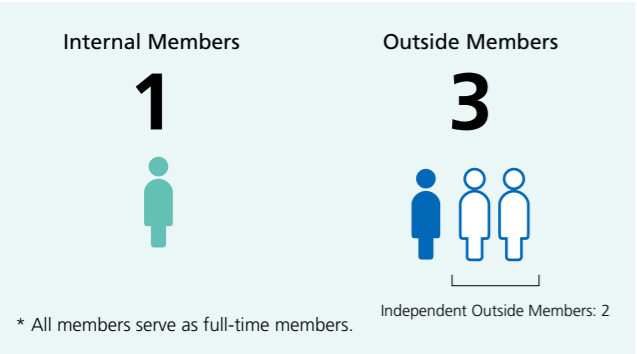
Audit & Supervisory Board

The Audit & Supervisory Board is an independent body entrusted by the shareholders to audit the decision-making process of directors and the state of business execution by management. The board conducts its business in accordance with applicable laws, regulations, the Company's Articles of Incorporation, and other rules.

The Audit & Supervisory Board consists of four full-time members, including three outside members (two of whom are independent outside members). Each member of the board engages in audit activities from a neutral and objective perspective, bringing their expertise to the audit process. The board conducts a detailed discussion of the results of its audit activities, making recommendations as necessary, and striving to ensure sound management.

The Audit & Supervisory Board conducts its activities in accordance with audit policies and plans as determined by the board on an annual basis (see the figure below). The board strives to improve the effectiveness of audits through close coordination with the Company's internal audit division and independent auditor. The board also engages in the regular exchange of information and opinions with outside directors. We have established an independent office for the Audit & Supervisory Board. This office is staffed with full-time employees who assist members of the board in their duties and under their direction.

Audit & Supervisory Board Structure



Scope of Audit

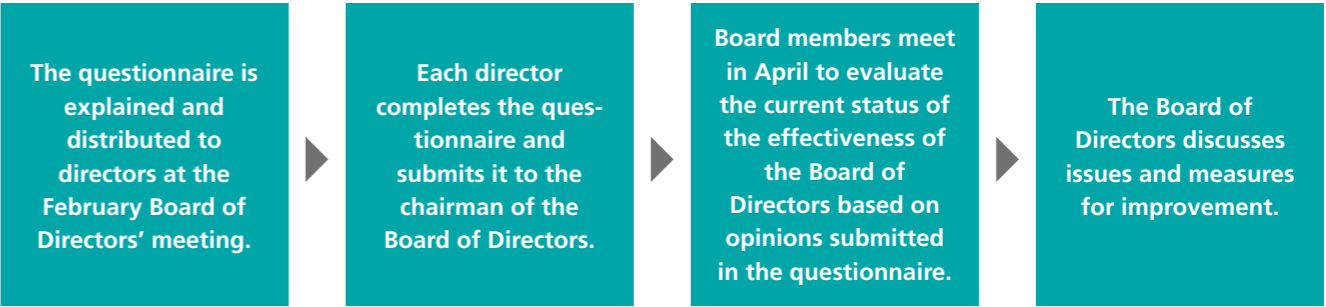
- Attendance at important internal meetings (Board of Directors' meetings, Management Committee meetings, etc.)
- Interviews with directors, executive officers, and other members of senior management
- Inspection of important decision-making documents, etc.
- Audits of domestic and overseas Group companies

Evaluation of the Effectiveness of the Board of Directors

Our Principles of Corporate Governance stipulate that the Board of Directors conducts an annual analysis and evaluation of Board effectiveness, disclosing the results in a timely and appropriate manner. We conduct this evaluation via questionnaires, which are distributed to each director. The questionnaire covers: (1) management supervision in general, (2) the development of internal control systems, (3) the selection, appointment, dismissal, and evaluation of the President CEO and other members of the management team and respective

compensation packages, and (4) the formulation of management strategies and decisions regarding the execution of important business operations. In addition to these topics, the most recent questionnaire asked the opinion of directors regarding which activities were effective or ineffective in relation to the Company's transition to a holding company structure on October 1, 2020. We also asked which areas the Board of Directors of the holding company should focus on in future discussions and monitoring.

Evaluation Process



Overview of Evaluation Results for FYE2021

(1) Summary

As a result of the effectiveness evaluation, we confirmed that the Board of Directors fulfilled its role as required. However, in order to fulfill this role more appropriately going forward, at a meeting held on May 14, 2021, the Board of Directors made the decision to continue deliberations to address required topics for discussion and monitoring as a Board of Directors of a holding company, based on suggestions from the chairperson. The deliberations will be part of the formulation of our medium-term management plan to be implemented in FYE2022. In particular, many directors expressed an opinion regarding the urgency of addressing carbon neutrality. In response, we promptly formed a working group consisting of Group company members from around the world to begin discussions.

(2) Initiatives conducted in response to the results of our previous evaluation

- On October 1, 2020, we transitioned to a holding company structure.
- In conjunction with this transition, we formulated the Group Philosophy and the Group Vision.
- We created various policies forming the basis of Group ESG initiatives.
- We established Taiyo Nippon Sanso Corporation as an operating company in Japan and transferred our domestic businesses to this company via a corporate split. In this way, we created a clear division of responsibility for the Gas Business in Japan segment.
- We nominated a female candidate for director to encourage diversity in the Board of Directors. This candidate was approved by the Ordinary General Meeting of Shareholders held on June 18, 2021.

Global Strategy Review Committee

The Global Strategy Review Committee meets to confirm the details of operating company strategies and discuss optimal resource allocation across the Group prior to the Nippon Sanso Holdings’ budget resolutions for the upcoming fiscal year. The meeting deliberates mainly on the direction of strategies and action plans for the upcoming fiscal year, confirming whether strategies are consistent with each other and whether resources

are being allocated in an optimal fashion. The Global Strategy Review Committee establishes a shared understanding with the Global Risk Management Committee, considering whether resources should be invested from the perspective of risk management. Under this approach, the Global Strategy Review Committee ensures that decisions about Group strategies and risk management are made in an integrated manner.

Major Agenda Items of the Global Strategy Review Committee Meeting Held for FYE2021

- (Basic Assumptions)** Are assumptions regarding the economic and business environments (basis for forming strategies) appropriate?
- (Consistency between Strategies and an Understanding of the Environments)** Are strategies and action plans in line with the environmental recognition above?
- (Consistency with Group Strategy)** Are the strategies sufficiently consistent with each other?
- (Resource Investments)** Are the resource investments under consideration sufficient to achieve stated goals?
- (Consistency with Social Issues)** Do the strategies and actions under consideration contribute to resolving social issues?

Relationship with the Parent Company

We concluded a basic agreement with our parent company, Mitsubishi Chemical Holdings Corporation (MCHC), on May 13, 2014. Under this agreement, MCHC committed to respecting our autonomy, supporting and cooperating with us under the MCHC 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 three 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 established the Advisory Committee on Appointments and Remuneration as a voluntary advisory body. This committee advises the Board of Directors on the selection of candidates for directors and Audit & Supervisory Board members as well as the appointment and dismissal of the President CEO and other executive officers. In this way, the committee ensures independence from the parent company in the selection of a management team. While parent company MCHC is a pure holding company, the Nippon Sanso Holdings Group and Mitsubishi Chemical Corporation, the main operating company of the MCHC Group, engage in transactions, totaling ¥5,330 million in FYE2021.

Fostering the Next Generation of Management Personnel

We recognize that fostering the next generation of management personnel is an important issue in our Group governance structure. The Advisory Committee on Appointments and Remuneration has been discussing a development plan for our next generation of managers. Part of these discussions concerns the qualities required of the next generation of management and policies for training. As the Nippon Sanso Holdings Group expands globally, we must develop human resources who are familiar with not only Japanese business but also overseas business. Given this global perspective on management, we selected Toshihiko Hamada as President CEO in June 2021 due in part to his extensive experience in

overseas operations. We will continue to accelerate our efforts in global human resources development.

We are aware of the small number of female managers in our European operations, and we have implemented an active succession program for women to resolve this issue. In October 2020, each of the 15 participants in this 18-month program was assigned a member of management, including the President CEO, as a mentor. Top managers offer their mentees the benefit of experience, advice on overcoming challenges, and more. The program is designed to develop the next generation of managers, and we intend to introduce the program to other regions based on our success in Europe.

Overview of Management Training

Facing an even faster pace of global business, we offer ongoing management training programs to foster decision-making skills reflecting the broad-based knowledge and insight required of our top managers. One example was a course titled, Business Strategies and Future Projections for the Next 10 Years. We designed this course to enhance skills for responding to future uncertainties, fostering greater judgment capabilities for top management. Participants learned about the emergence of cutting-edge technologies and the changes these technologies will bring about in society. The course also provided a framework for managers to incorporate these emerging technologies in their own business strategies.

Date	Subject	Instructor	Target
Sept. 2016	Overseas Bribery Regulations	Hiromitsu Miyakawa, Attorney, Jones Day	Directors, Audit & Supervisory Board Members, Executive Officers
	Standards of Conduct as a Global Company and Overseas Antitrust Laws	Akio Yamada, Outside Director	
Apr. 2017	Insider Trading Regulations	Takeshi Hosaka, General Manager, Compliance Training Center, Trade Review Department, Japan Exchange Group	Directors, Audit & Supervisory Board Members, Executive Officers
Nov. 2017	Legal Responsibilities of Directors and Audit & Supervisory Board Members: Knowledge of Compliance and Required Regulations	Hiroshi Chiba, Attorney, Chiba Sogo Law Firm	Directors, Audit & Supervisory Board Members, Executive Officers
Mar. 2018	Work-Style Reform	Takehiko Ebata, Attorney, Ishizaki & Yamanaka	Directors, Audit & Supervisory Board Members, Executive Officers
Nov. 2018	Case Studies on Corporate Scandals and Risk Management	Professor Hitoshi Takahashi, Dokkyo University	Directors, Audit & Supervisory Board Members, Executive Officers
Mar. 2019	Business Strategies and Future Projections for the Next 10 Years	Makoto Kawase, MK and Associates	Directors, Audit & Supervisory Board Members, Executive Officers, Others
Nov. 2019	Key Points of the SDGs (ESG) and Strategic Utilization and Engagement	Koichi Yokota, Project Professor, Keio University	Directors, Audit & Supervisory Board Members, Executive Officers
Nov. 2020	Legal Obligations, Responsibilities, and Litigation Risks of Directors and Officers in Connection with Information Security and Mandated Internal Systems	Hiroyasu Kageshima, Attorney, Ushijima & Partners	Directors, Audit & Supervisory Board Members (conducted via Zoom)
Mar. 2021	Human Rights Goals of the SDGs and Case Studies of Initiatives	Koichi Yokota, Project Professor, Keio University	Directors, Audit & Supervisory Board Members, Executive Officers (conducted via Zoom)

Corporate Governance

Risk Management

To respond appropriately to various risks that emerge as we expand our global business, we recognize risks related to business continuity, as well as general risks that affect corporate growth and our ability to execute business strategy. We then strive to mitigate these risks.

On October 1, 2020, we transitioned to a holding company structure and established a new **Global Risk Management Committee (chairperson: Representative Director, President CEO)** to manage risk for the Group. This committee works closely with the Global Strategy Review Committee, meeting once a year and on an as-needed basis to perform comprehensive risk management addressing the management and business activities of each operating company. The Global Risk Management Committee meeting held in February 2021 discussed information about the risks recognized for each operating company and the plan–do–check–act (PDCA) cycle enacted to address these risks. The discussion was motivated by a recognition of the need to identify risks and take action based on forward-looking decisions. In this way, we ensure that the Group will execute the business strategies developed by the Global Strategy Review Committee. In preparation for the next meeting, scheduled in February 2022, we are examining ways to develop an ideal risk management system for the Group.

Risks	Major Initiatives
Overseas Expansion	<ul style="list-style-type: none">• Give due consideration to changes in the business environment and expected profitability in countries and regions overseas when making decisions regarding capital investment and M&A overseas
Capital Investment	<ul style="list-style-type: none">• Give due consideration to expected profitability and changes in the business environment when making decisions regarding capital investment• Identify customer and market environment changes, considering risks and appropriate risk mitigation measures
Manufacturing Costs	<ul style="list-style-type: none">• Incorporate costs into prices based on customer relationships and engage in other means to avoid difficulties in Group business continuity due to manufacturing cost fluctuations
Laws and Regulations	<ul style="list-style-type: none">• Implement measures (employee training, etc.) to prevent legal and regulatory violations and ensure compliance with laws and regulations in countries where we conduct business• Establish and operate an export control system and provide detailed employee education on export regulations
Securing Human Resources	<ul style="list-style-type: none">• Establish a system to secure human resources necessary for maintaining and expanding business activities• Design and operate appropriate human resources-related systems, including recruitment, training, and compensation
Technological Development	<ul style="list-style-type: none">• Engage in R&D based on the Stage-Gate* model to commercialize projects and generate profits• Focus on strengthening collaboration in industry–government–academia projects and in joint development initiatives with other companies* A methodology for narrowing down a large number of product and technology development candidates in an efficient manner
Intellectual Property	<ul style="list-style-type: none">• Establish a system to protect intellectual property necessary for maintaining and expanding business activities• Survey and monitor intellectual property rights of third parties
Product Safety and Security	<ul style="list-style-type: none">• Engage in appropriate management of risks arising from products handled by the Group, including safety and quality control• Provide technical training to personnel engaged in the manufacture and supply of products to ensure appropriate management
Fluctuations in Exchange and Interest Rates	<ul style="list-style-type: none">• Focus on avoiding exchange rate fluctuation risks for transactions denominated in foreign currencies by means of forward exchange contracts, etc.• Consider future interest rate fluctuation risks before procuring funds necessary for capital investment and M&A through loans from external sources
Capital Relationship with Mitsubishi Chemical Holdings	<ul style="list-style-type: none">• The Group recognizes that there is currently no policy to increase or decrease the shareholding ratio.
Goodwill and Intangible Assets	<ul style="list-style-type: none">• Conduct impairment testing each period to measure goodwill and intangible assets with indefinite useful lives• If environmental changes mean that the initial investment recovery can no longer be expected, apply appropriate accounting treatment as necessary
Large-Scale Natural Disasters, Etc.	<ul style="list-style-type: none">• Establish an information collection system based on BCPs, and ensure the continuation of core businesses and a rapid return to normal operations in the event of an emergency
Information Management	<ul style="list-style-type: none">• Establish an appropriate information management system to protect important Group business information, including personal information• Provide ongoing education to employees on information security and related issues
Climate Change and Other Environmental Issues	<ul style="list-style-type: none">• Pursue Companywide environmental management and endorse the recommendations of the TCFD• Survey trends related to GHG emission regulations and other statutes in countries where we conduct business; consider and implement appropriate response measures
Impact of COVID-19	<ul style="list-style-type: none">• Engage in efforts to prevent infection among personnel in manufacturing, supply, and sales• Gather information on supplier production plans and demand trends

Compliance

In accordance with the basic compliance policy established for the Group, we appointed a chief compliance officer (CCO) for the Company and regional chief compliance officers (RCCOs) in every region overseas. The CCO conducts training in line with compliance risks in Japan and overseas, clarifying rules for responding to compliance violations and communicating these rules to all Group companies. The CCO and RCCOs have the authority to instruct and oversee compliance activities, striving to improve and gain support for compliance across the Group.

In addition, we conduct compliance education on an ongoing basis and at all employee levels. Taiyo Nippon Sanso holds annual organization-specific training programs for employees to learn the essentials of compliance, anti-monopoly laws, and anti-harassment laws. These training programs are also designed to instill in our employees an awareness and desire to improve compliance. One unique feature of this training is that it is conducted by compliance staff in each division, branch, and major subsidiary. This framework allows us to communicate and convey the implications and importance of compliance from a perspective closer to the front lines of our businesses. In light of the change in work styles due to COVID-19, we conducted training via online technology and video broadcasts throughout FYE2021. In this way, we are raising compliance awareness in the most time-sensitive and efficient manner possible.

RCCOs are leading our operations in Southeast Asia, working closely with Group company compliance staff. Under this system, each country in the region selects and implements its own education and training program based on risk assessments related to compliance. At the same time, Group companies in the region observe a joint Compliance Development Week (CDW), striving for consistency in regional compliance.



Comment from the CCO
Creating an open workplace environment is essential for encouraging compliance.

Kazuyuki Futamata Managing Executive Officer, Chief Compliance Officer (CCO), (Taiyo Nippon Sanso Corporation Group CCO), with responsibility for groupwide internal control

We understand that compliance is one of our most important management issues. The Nippon Sanso Holdings Group does not consider compliance to be the simple observance of laws and regulations; rather, we believe in compliance in an even broader sense that encompasses customer contracts and agreements with local communities, internal company rules, corporate ethics, and compliance with social norms.

To ensure this kind of compliance, we engage in a number of measures as already mentioned. However, the most important measure we take is education. The RCCOs of each operating company drive effective training based on the situation in each region, using online and other channels to ensure ongoing and regular training for every employee in the Group.

Another important initiative is creating an open workplace culture. Compliance requires a workplace environment in which employees feel comfortable discussing concerns with their supervisors and others. Our goal is to foster a culture of openness throughout the Group, encouraging employees to raise concerns with each other, even in areas not related to their own job or workplace. The role of management in the workplace is the key to achieving this type of culture. We will continue to improve the skills of our managers from this perspective of compliance.

Roundtable Discussion (4)

Akio Yamada
Outside Director

Miri Hara
Outside Director

Mitsuhiro Katsumaru
Outside Director

The Role of Outside Directors in Encouraging Officers and Employees Striving to Solve Issues

In June 2021, our new president, Toshihiko Hamada, was appointed. We also added our first female outside director and established the position of Chairman of the Board of Directors.

What issues need to be addressed regarding the operation of this new management framework for the Nippon Sanso Holdings Group? In this section, our three outside directors talk about issues ranging from carbon neutrality to work styles for women.

Appointment of new president and the Company's first female outside director

KATSUMARU In 2021, there were two major topics related to our management structure. The first is the appointment of Toshihiko Hamada as the new president. The second is having Miri Hara join our management team as an outside director. We have had numerous discussions on appointing women to the Board of Directors, and have met with quite a few candidates. To say that anyone would do as long as they were female would be to get our priorities backwards, and it was rather difficult to find someone we believed to be suitable. With that said, we have now been able to welcome Ms. Hara as the Company's first female outside director, resolving an issue that has been a concern for the past few years. I look forward to hearing advice from a female perspective going forward.

HARA Thank you for inviting me aboard. After graduating from university, I joined a real estate management company operated by my family. It was an environment that afforded me no contact whatsoever with the front lines of manufacturing, such as factories. Subsequently, I married and started a family, and once my children reached a certain age I acquired my tax accountant's qualification and opened a tax accounting office in Yokohama. Through this connection, in 2020 I was appointed as an outside director of a listed company. I was the first female director at that company as well. At the time, I felt that my role was to embody diversity, and at Nippon Sanso Holdings I believe that my role will be similar, promoting diversity and gender equality. As a corporate group operating a global network of four geographic hubs and the Thermos Business, the Company must develop the ability to appoint proper female executives going forward. I hope that I can offer some assistance in this regard.

KATSUMARU At this point, I would like to mention the performance record of our former president, Yujiro Ichihara. Mr. Ichihara was president for seven years, and has now been succeeded by Mr. Hamada our new president. During Mr. Ichihara's tenure we conducted major business acquisitions in the United States and Europe, and Nippon Sanso Holdings grew into a global company—a significant achievement.

YAMADA I think that former President Ichihara's achievements are significant, as you say. He chose the path of geographic expansion to grow the Company. He also made the extremely bold management decision to acquire the business that was ordered to be split off by the authorities as a condition for the merger of Linde and Praxair. In addition, as

part of our new management structure, last year Kenji Nagata was appointed president of Taiyo Nippon Sanso Corporation, our operating company for the Gas Business in Japan.

President Nagata has an extensive knowledge of all fields connected to industrial gases and an extremely ambitious vision. He has led the organization proactively since his appointment.

KATSUMARU To decide on the successor to former President Ichihara, the Advisory Committee on Appointments and Remuneration had numerous discussions over several years. What kind of person is suitable for leading the Group as a global organization? We felt the criteria for the ideal person would be someone with the ability to properly maintain the expanded global structure and continue to develop it, and someone with the requisite ambition, vitality, and drive.

After considering various people, the committee judged that Director Hamada would be the most suitable. He has more than 10 years of experience working in the United States and has a close relationship with director of the Company and Matheson Tri-Gas, Inc. Chairman and CEO Thomas Scott Kallman. He also has an international sensitivity that enables him to work well with director of the Company and Nippon Gases Euro-Holding S.L.U. Chairman and President Eduardo Gil Elejoste. We also expect him to work closely on the challenges facing our core Gas Business in Japan with President Nagata of Taiyo Nippon Sanso Corporation.

YAMADA Right now we are formulating the medium-term management plan under the structure with our new president, Mr. Hamada. Furthermore, with his abundant management experience, former President Ichihara has been appointed Chairman of the Board of Directors and is expected to provide direction on governance in general and play a role in setting the holding company structure on a stable path.

KATSUMARU Mr. Ichihara himself said that he wanted to step down sooner. However, at the same time the major business acquisition projects in the United States and Europe, and the global COVID-19 pandemic occurred. With the economies of Japan and countries around the world currently stalled, we now need to organize our industrial gases businesses in our four geographic hubs and the Thermos Business. We also have to take action on new issues, such as carbon neutrality. To navigate successfully through this phase, we asked former President Ichihara to remain with the Company as Chairman of the Board of Directors and to lend a hand from a position of experience until President Hamada has established a firm footing.

Roundtable Discussion (4)

The Role of Outside Directors in Encouraging Officers and Employees Striving to Solve Issues

Promoting governance, Group synergies, and better management efficiency for the holding company

YAMADA Ms. Hara, you have attended two Board of Directors’ meetings since your appointment. What was your impression?

HARA Everyone spoke out without reserve, and I thought that it was functioning properly as a Board of Directors.

KATSUMARU Mr. Yamada and I came on board six years ago, when the Company was Taiyo Nippon Sanso Corporation. Japan’s Corporate Governance Code had just been issued, and employees at the time were faithfully and steadily implementing it. Now, the Company has implemented the Code as well as any other company. In 2021, the Code was revised, but having steadily implemented it for these past few years I am sure the Company will overcome any new challenges. In this area, I believe that outside directors have an extremely large role to play. I think that our role is to encourage employees to try even harder as they earnestly strive to implement the Code.

YAMADA I also think that the Company has made huge strides in the area of corporate governance. After starting the holding company structure, the Company quickly formed a global team for drafting the Group Philosophy, Group Vision, and Policy, and created them through a process of sincere discussion among the Board of Directors. I would like to see the Company work to promote awareness of these throughout the Group, while flexibly revising them where needed even after their formulation.

I agree with you about the role and responsibilities of outside directors. Also, one of the issues related to governance that has been pointed out previously is the issue relating to listed subsidiaries.

KATSUMARU The Company is a consolidated subsidiary of Mitsubishi Chemical Holdings Corporation, which is the parent company of the Nippon Sanso Holdings Group, as it is the controlling shareholder. In this case, where both the parent and subsidiary are listed companies, the protection of minority interests becomes an issue. However, Mitsubishi Chemical Holdings and the Company have an agreement that the Company’s autonomy over corporate governance is to be respected. Furthermore, there is a systematic guarantee due to the independence of the outside directors. In this regard, the three of us realize that we have an important role to play.

YAMADA Some kind of directive may be issued later based on the revised guidelines from the Tokyo Stock Exchange. If that happens, we will discuss it and respond as necessary.

Changing the subject, what are your thoughts on the

achievement of post-integration synergies and their results? Due to the COVID-19 pandemic, Board of Directors’ meetings have been held online. This has allowed us to listen directly to updates from our top managers at overseas operations, as well as ask questions and exchange opinions with them to gain a better understanding of one another. We have also made progress in delegating authority, allowing each region to operate flexibly, including making investments. Don’t you think this has increased the speed of management? Also, I believe that there have been synergies between the Global Strategy Review Committee and the Global Risk Management Committee, and that global sharing of best practices and risk issues has widened our activities for increasing productivity and avoiding risk.

KATSUMARU The Global Strategy Review Committee and Global Risk Management Committee meetings are also held with the Company’s top managers in Japan, the United States, and Europe, along with other relevant personnel. This year, both meetings were held in February. At the Global Strategy Review Committee meeting, each operating company’s strategies for business, investment, sustainability, development, and so forth were reported and discussed. This is an important meeting for the holding company in determining its basic policies. The report this year from Europe at the Global Risk Management Committee meeting was particularly striking. The meeting participants were all very impressed at how advanced Europe is in terms of its governance structure and its risk management methods and initiatives. The Company has acquired experience in Japan and North America, but it has only just begun operating in Europe. So, the experience and knowledge of Europe are new to the Company, and there is much to learn. I think that post-integration synergies will emerge in various forms like this going forward.

YAMADA Next, turning to medium- and long-term issues, let’s talk about how the Company will approach the realization of a carbon-neutral society by 2050. In the area of hydrogen, which is drawing attention as a substitute for fossil fuels, the Company has developed and sold packaged hydrogen stations for FCVs. In relation to industrial gas supplies, the Company has also had some achievement, such as providing technologies that enhance combustion efficiency for users.

KATSUMARU The use of hydrogen is certainly going to be a major topic for the world going forward. The Group’s acquisition of the HyCO business will deepen its involvement with hydrogen through the business not only in the United States but more widely in other areas as well. As an industrial gases company, I think that we will need to engage with hydrogen, including hydrogen stations. Right now, we are still at the

stage where serious internal discussions have just started, but I believe that the Company’s accumulated technological capabilities will enable it to produce results.

YAMADA There is also some discussion, including among ourselves, about the Company’s response to ESG for promoting sustainable growth. The next medium-term management plan, which is currently being formulated, will include more details about this. I am anxious to see what kind of business opportunities there are for hydrogen energy, and whether it will succeed as a business that can contribute to society.

Moreover, it has been some time since the “Fourth Industrial Revolution” was heralded, but I think that DX is extremely important. It seems that the COVID-19 pandemic has really changed the nature of society. Industrial gases are dangerous if mishandled, and DX enables us to operate and manage them safely and stably from a remote location. I would also like to see the entire Group engage in DX with a view to increasing the efficiency of its production and logistics operations.

KATSUMARU This is not really an issue, per se, but from a sustainability perspective I think that Thermos K.K. is an extremely important company for the Group. The industrial gases business is a B2B business, so even if the business activities are sustainable they don’t really make an impression on ordinary people. By contrast, the Thermos brand has an extremely healthy and sustainable image. At a recent Board of Directors’ meeting, we were saying we should stop providing PET bottles for every seat and just have everyone use their own Thermos. If we did this, it would raise awareness within the Group itself. There is no doubt that PET bottles will disappear eventually. At this time, it is important for Thermos to project a sustainable image, as I believe it is an important brand for lifting the image of the Group overall.

Aiming to be a workplace where women can participate actively

KATSUMARU I would like to ask Ms. Hara about the work style of women. I think this is a theme that you will come up again as a director going forward.

HARA The issues are not yet clear to me since I have only just started here. But the other day I held a Zoom meeting with female employees. They were at different life stages, in their 20s, 40s, 50s, and some were corporate officers. They had various career backgrounds; some had joined as general employees while others had started as temporary staff and then become regular employees. It was an extremely valuable experience. They commented that the gap between men and women has been definitely decreasing compared to the past.

One employee in her 50s stated that long ago some places were considered to be “men’s workplaces,” whereas nowadays there has been a real increase in women in terms of recruitment. One really commendable thing I heard was that while in the past the work of career track, general track, and temporary employees was separated, now even temporary employees are encouraged to offer their opinions, which may also be reflected in operations. I also heard some women say that even if you take maternity leave, your place is reserved and that you can start working right away on your return, and that the Company is comfortable to work in. Some of the employees commented that given the opportunity they would like to ascend further up the career ladder and become officers.

KATSUMARU The Advisory Committee on Appointments and Remuneration has also discussed this. For example, if we were to more strongly adopt a system based more on ability, we may need to completely review the promotion system. Under a personnel policy like that, we would elevate talented female employees. I think this is the kind of system that we should have. Now that the Company has acquired companies in the United States and Europe, I have come to feel that Japan’s productivity is low. This is not to say that Taiyo Nippon Sanso Corporation is performing poorly, or anything like that, just that Japan itself probably has an inefficient system. I think that a radical overhaul of employee compensation and the evaluation system, and a more proactive effort to incorporate ability-based evaluations, would improve productivity. In the process of radically revising the personnel evaluation and promotion systems to make them more efficient, promoting a group of women all at once could be an option.

YAMADA Once you have had the time to better grasp the situation, I hope you will help us to resolve these issues.

Amid the COVID-19 pandemic, the Group’s business has been described as an “essential business.” For example, Nippon Megacare Corporation and IMI Co., Ltd. are subsidiaries that sell medical gases and ventilators, and during the pandemic they have kept up an uninterrupted supply of medical oxygen and so forth to medical institutions. Moreover, industrial gases are supplied as essential inputs for all kind of industries, supporting many industries’ economic activities. At the annual General Meeting of Shareholders, several people expressed the opinion that the Group should use innovative public relations to communicate to the public and shareholders about the status and importance of its business activities in a way that is easy to understand.

HARA I hope to gain a deeper understanding of industrial gases as an essential business, and to contribute to the further development of the Group.

Members of the Board of Directors and Audit & Supervisory Board Members

Members of the Board of Directors



Toshihiko Hamada
Representative Director, President CEO

Number of shares owned: 5,500 shares	April 1981 Joined the Company
Attendance at Board of Directors' meetings: 8 of 8 meetings	July 2002 Executive vice president responsible for Specialty Gas Technology, Matheson Tri-Gas, Inc.
Committee assignments: Advisory Committee on Appointments and Remuneration, Management Committee, Global Strategy Review Committee, Global Risk Management Committee	October 2005 Deputy general manager of Semiconductor Gas Section of Electronics Division, the Company
	April 2006 General manager of Semiconductor Gas Section of Electronics Division, the Company
	January 2010 Subordinate directly to general manager of Electronics Division and general manager of Business Strategy Promotion Section, the Company
	June 2014 Managing director, Nissan TANAKA Corporation
	June 2016 Senior managing director, Nissan TANAKA Corporation
	June 2017 President and representative director, Nissan TANAKA Corporation
	June 2020 Director, executive vice president of the Company (Aide to the President)
	June 2021 Representative Director, President CEO (current)

I joined the Company in 1981, along with many of my peers in senior management. I began my career in planning and sales at our specialty gas business. I also have some experience in the electronics-related business; but my background is chemical engineering, so I am very familiar with nitrogen generators as well as fusion welding equipment. I worked at Matheson Tri-Gas, Inc. on two separate occasions for nearly 14 years in total, and I have been to 44 of the U.S. states for either business or pleasure. I enjoy exercise, particularly swimming and hiking. More recently, however, I have been spending time in my vegetable garden and caring for my bonsai trees.

I do not ascribe to any lofty mottoes, but I try to take responsibility for anything that happens to me, good or bad. I also try to practice mindfulness in observing what happens around me.



Thomas Scott Kallman
Member of the Board,
Chairman and CEO, Matheson Tri-Gas, Inc

Number of shares owned: 0 shares	July 1981 Joined BOC Group, plc
Attendance at Board of Directors' meetings: 10 of 11 meetings	January 2000 Vice president, general manager responsible for Eastern Region, BOC Group, plc
Committee assignments: Global Strategy Review Committee, Global Risk Management Committee	January 2005 Executive vice president responsible for Industrial Gas Group, Matheson Tri-Gas, Inc.
	January 2008 Senior executive vice president and COO, Matheson Tri-Gas, Inc.
	June 2009 President and COO, Matheson Tri-Gas, Inc.
	January 2013 President and CEO, Matheson Tri-Gas, Inc
	June 2017 Chairman, President, and CEO, Matheson Tri-Gas, Inc.
	April 2019 Chairman and CEO, Matheson Tri-Gas, Inc. (current)
	June 2019 Director of the Company (current)

Matheson Tri-Gas (MTG) gave me the opportunity to join their Team in January 2005 as the Executive Vice President of the Industrial Gas Group. My previous assignments within the industrial gas industry included both industrial and electronic and specialty gas sales, on-site plant sales, sales and operations management, and a role as Vice President of a major industrial gas business unit. This combination of broad sales and operations experience has proven to be a solid foundation for overseeing the MTG portfolio of industrial and electronics gas businesses. Having managed these functions at the ground level and higher has provided me the insights into critical aspects of our operations, which is important to ensure the Safety, Quality, Compliance, Sustainability, and Profitable Growth of the business. Though sometimes challenging, I subscribe to the motto of “focus on what really matters and what you can control.”



Yujiro Ichihara
Member of the Board,
Chairman of the Board of Directors

Number of shares owned: 83,100 shares	April 1974 Joined the Company
Attendance at Board of Directors' meetings: 11 of 11 meetings	June 2005 Executive officer, deputy general manager of Business Planning Division and General Affairs Division, and manager of Secretary's Office and Corporate Audit Office
Committee assignments: Advisory Committee on Appointments and Remuneration, Global Strategy Review Committee, Global Risk Management Committee	June 2008 Senior executive officer and general manager of General Affairs Division, with responsibility for Companywide internal control
	June 2010 Managing director and general manager of General Affairs Division, with responsibility for Companywide internal control
	June 2012 Senior managing director and general manager of Corporate Administration Division, with responsibility for Companywide internal control
	June 2013 Executive vice president, director, and general manager of Corporate Administration Division, with responsibility for Companywide internal control
	April 2014 Executive vice president and director, with responsibility for Corporate Administration Division and Corporate Planning & Global Operations Division
	June 2014 Representative Director, President CEO
	June 2015 Representative Director, President CEO
	June 2018 Representative Director, President CEO
	June 2021 Chairman of the Board of Directors (current)

I joined the Company in 1974, transferring to Singapore in my seventh year. At that time, the Company had just made inroads into overseas markets, and I was responsible for developing industrial gas customers in six ASEAN countries. After returning to Japan, I worked for a long time in finance and corporate planning. In addition to my experiences overseas early in my career, I had many opportunities to support corporate management at different times and in various aspects. Looking back now, I think those experiences helped me develop a manager's perspective and eye for the big picture. A motto I keep in mind is “always be positive.” Stick to the basics and be bold when the situation demands.



Eduardo Gil Elejoste
Member of the Board,
Chairman and President,
Nippon Gases Euro-Holding S.L.U.

Number of shares owned: 0 shares	April 1981 Joined Argon S.A.
Attendance at Board of Directors' meetings: 10 of 11 meetings	January 1992 Director of Marketing, responsible for Spain and Portugal, Argon S.A.
Committee assignments: Global Strategy Review Committee, Global Risk Management Committee	September 1996 Director of Business Development, responsible for Europe, Praxair España, S.L.
	January 2000 Director of Marketing, responsible for Europe, Praxair Euroholding S.L.
	October 2004 CEO, Germany, Praxair Euroholding S.L.
	January 2006 CEO, Germany and Benelux, Praxair Euroholding S.L.
	April 2008 CEO, Praxair España S.L. (now Nippon Gases Espana S.L.U.); CEO, Praxair Portugal S.A.
	December 2016 President, Praxair Euroholding S.L.
	December 2018 Chairman and President, TNSC Euro-Holding S.L.U. (now Nippon Gases Euro-Holding S.L.U.) (current)
	June 2019 Director of the Company (current)

I joined the Company in 1981 with a mechanical engineering degree. My career developed in various sales and marketing assignments with increasing responsibilities. In the year 2000, I was appointed Marketing Director of Europe and, after the acquisition of the German business in 2004, I was appointed Managing Director Germany and, in 2006, Managing Director Germany and Benelux. In 2008, I was appointed Managing Director Spain and Portugal and at the end of 2016 President of Europe. I was assigned an active role in the divestiture process of the company during the Linde-Praxair merger. After the successful acquisition through the, then, TNSC group, I was offered the possibility to continue to lead the European business, which I accepted with great enthusiasm and motivation.

I am an avid learner and like to spend time on leadership. A leader needs to believe that people excellence is the foundation of everything else, safety, compliance, environmental consciousness, customer focus, and financial results. As a consequence, we will establish a strong performance and results culture to thoroughly upgrade the quality of the teams, a thorough differentiation process that distinguishes the top performers from the medium performers and the low performers, and will take different actions toward the different groups. A leader has the right balance of strategic thinker and tactical executioner, being able to think ahead or way ahead and, at the same time, delivers monthly and quarterly results.



Kenji Nagata
Member of the Board,
Representative Director and President,
Taiyo Nippon Sanso Corporation

Number of shares owned: 11,000 shares	April 1981 Joined the Company
Attendance at Board of Directors' meetings: 11 of 11 meetings	June 2013 Executive officer, general manager of North Kanto Branch
Committee assignments: Global Strategy Review Committee, Global Risk Management Committee	April 2016 Executive officer, deputy general manager of Industrial Gases Division, general manager of Gases Business Unit, and general manager of Product Management Unit
	June 2016 Senior executive officer, deputy general manager of Industrial Gases Division, general manager of Gases Business Unit, and general manager of Product Management Unit
	April 2017 Senior executive officer, and general manager of Industrial Gases Division
	June 2018 Senior managing executive officer, director, and general manager of Industrial Gases Division
	October 2020 Director of the Company, and president of Taiyo Nippon Sanso Corporation (current)

I joined the Company in 1981. Coincidentally, Mr. Hamada, Mr. Kallman, Mr. Elejoste, and I all entered the industry in the same year.

Since joining, I have worked in two locations, Tokyo and Singapore. My responsibilities covered plant manufacturing, logistics, corporate planning, business planning, gas sales, and management of Group companies. Through my career, I have experienced almost every aspect of the industrial gases business. While I rely on my experience, I do not believe I am bound by it. I always look forward to new plans and challenges.

My motto is “happiness requires earnestness,” which I interpret to mean you must always keep a goal foremost in mind if you are to achieve it.



Akio Yamada
Member of the Board
(Outside Director)

Number of shares owned: 800 shares	April 1967 Joined General Secretariat of Japan Fair Trade Commission
Attendance at Board of Directors' meetings: 11 of 11 meetings	June 2000 Secretary general, Japan Fair Trade Commission
Committee assignment: Advisory Committee on Appointments and Remuneration	December 2003 Commissioner, Japan Fair Trade Commission
	April 2009 Senior advisor to Jones Day
	June 2010 Audit & Supervisory Board member, Daiichi Sankyo Co., Ltd.
	March 2014 Audit & Supervisory Board member, Yokohama Rubber Co., Ltd.
	June 2014 Director, Watahan & Co., Ltd.
	June 2015 Outside director of the Company (current)
	March 2018 Chairman, Fair Trade Institute (current)

Most people have the impression that the Japan Fair Trade Commission is a government agency that engages in anti-cartel controls. However, the institute is actually an economic agency that conducts a wide range of operations, including examinations of business combinations, surveys of business and economic conditions, and reviews of consumer transactions. In my work at the commission, as well as experience in those areas at the commission, I also have considerable experience in external affairs, working at the OECD Delegation in Paris and negotiating structural issues between Japan and the United States. Since retiring from the commission, I have served as a visiting professor in the graduate schools of Kyoto University and Doshisha University, as an outside Audit & Supervisory Board member and outside director for several companies, and as an advisor to several law firms. My motto is “fairness is key in all things.”

Members of the Board of Directors and Audit & Supervisory Board Members

Members of the Board of Directors



Mitsuhiro Katsumaru

Member of the Board
(Outside Director)

Number of shares owned:
500 shares

Attendance at Board of Directors' meetings:
11 of 11 meetings

Committee assignment:
Advisory Committee on Appointments
and Remuneration

April	1978	Appointed as a public prosecutor assigned to Tokyo District Public Prosecutors Office
July	1989	First secretary of Embassy of Japan in Germany
April	2005	Assistant vice minister, Ministry of Justice (responsible for general policy integration)
December	2010	Superintending prosecutor, Takamatsu High Public Prosecutors Office
June	2012	Superintending prosecutor, Hiroshima High Public Prosecutors Office
July	2014	Resigned from superintending prosecutor position
October	2014	Registered as an attorney
June	2015	Outside director of the Company (current)
March	2017	Director of Shimano Inc. (current)

After working for 37 years as a prosecutor at the Ministry of Justice and the Tokyo District Public Prosecutors Office, I registered as a private attorney. While the deceased victims of violence or accidents cannot talk to us directly, we can hear their voices of regret when we listen to the survivors and make a calm study of various evidence at hand. When I served as a prosecutor, my motto was “listen to the deceased.” I believe that striving to listen carefully to the voices hidden below the surface from the perspectives of fairness and impartiality will help companies maintain governance and ensure compliance.



Mlri Hara

Member of the Board
(Outside Director)

Number of shares owned:
0 shares

Committee assignment:
Advisory Committee on Appointments
and Remuneration

June	1988	Director, Hara Estate K.K. (current)
October	2017	Founder and partner, Tax Corporation Yokohama Benten Accounting, Inc. (current)
June	2020	Outside director, SECOM Co., Ltd. (current)
June	2021	Outside director of the Company (current)

I majored in management accounting at university. After marrying and raising my children, I became a licensed tax accountant and started my own tax consulting firm. I am also proud to say that I was the first-ever female director at a publicly traded company. Today, I am the first-ever female director at Nippon Sanso Holdings, and I hope to help the Company from the female perspective.

My motto is “do your best and let nature take its course.” My hobbies are playing golf and watching theater.



Hidefumi Date

Member of the Board,
Director, Managing Corporate Executive
Officer, and Chief Financial Officer,
Mitsubishi Chemical Holdings Corporation

Number of shares owned:
0 shares

Attendance at Board of Directors' meetings:
11 of 11 meetings

April	1982	Joined Mitsubishi Chemical Industries Limited (now Mitsubishi Chemical Corporation)
April	2013	Executive officer, general manager of Consolidated Management Department, Mitsubishi Chemical Corporation
March	2014	Executive officer, general manager of Consolidated Management Department and Finance & Accounting Department, Mitsubishi Chemical Corporation
April	2014	Executive officer, general manager of Finance & Accounting Department, Mitsubishi Chemical Corporation
April	2015	Executive officer and general manager of Corporate Management Office, Mitsubishi Chemical Holdings Corporation
April	2018	Managing corporate executive officer and chief financial officer, Mitsubishi Chemical Holdings Corporation
June	2019	Director, managing corporate executive officer, and chief financial officer of Mitsubishi Chemical Holdings Corporation
April	2020	Representative Director and President of Mitsubishi Chemical Holdings Corporate Staff, Inc. (current)

I have worked at Mitsubishi Chemical Holdings Group companies for approximately 40 years, mostly in accounting and finance, except for a few years each in corporate planning and management at U.S. subsidiaries. I am experienced in all aspects of accounting and finance, including the preparation of financial reports, funds procurement, and M&A due diligence. One of my most memorable experiences was when I traveled from Japan and entered the doors of the U.S. Internal Revenue Service (IRS) for a mutual agreement procedure. That I was able to meet successfully with an American officer without the aid of an interpreter remains a motivation to do my best, even today, 20 years later.

Audit & Supervisory Board Members



Junzo Tai

Audit & Supervisory Board member

Number of shares owned: 9,500 shares
Attendance at Board of Directors' meetings: 11 of 11 meetings
Attendance at Audit & Supervisor Board meeting: 16 of 16 meetings

April	1979	Joined the Company
June	2013	Manager of Corporate Audit Office
June	2014	Executive officer and manager of Corporate Audit Office
January	2015	Executive officer assigned to Mitsubishi Chemical Holdings Corporation
March	2017	Resigned from executive officer position
April	2017	Executive officer, manager of Industrial Gases Strategy Office in Corporate Strategy Division, Mitsubishi Chemical Holdings Corporation
March	2018	Resigned from executive officer position at Mitsubishi Chemical Holdings Corporation
April	2018	General manager of the Corporate Planning Office of the Company
June	2018	Audit & Supervisory Board member (current)

My first assignment was at the Hiroshima branch of Nippon Sanso. Since then, I have fulfilled assignments in the United States twice as well as at Taiyo Nippon Sanso Kanto (formerly Hitachi Sanso) and Mitsubishi Chemical Holdings Corporation (MCHC), mainly working in accounting and finance. In the United States, I was involved in the Matheson–Tri-Gas merger, and at MCHC I worked as the general manager of the Industrial Gases Strategy Office. I am grateful for the experiences I have gained and the responsibilities I have been given. My personal motto is “be sincere in all things.”



Akihiro Hashimoto

Audit & Supervisory Board Member
(Outside Auditor)

Number of shares owned: 600 shares
Attendance at Board of Directors' meetings: 11 of 11 meetings
Attendance at Audit & Supervisor Board meeting: 16 of 16 meetings

April	1983	Joined The Fuji Bank, Limited (now Mizuho Bank, Ltd.)
April	2010	Executive officer and general manager of Americas Financial Products Division of Mizuho Corporate Bank, Ltd. (now Mizuho Bank, Ltd.)
April	2012	Managing executive officer in charge of branches, Mizuho Bank, Ltd. (to July 2013)
April	2013	Managing executive officer in charge of corporate banking, Mizuho Corporate Bank, Ltd.
July	2013	Managing executive officer in charge of corporate banking, Mizuho Bank, Ltd. (Mizuho Bank, Ltd. and Mizuho Corporate Bank, Ltd. merged to form the current Mizuho Bank, Ltd.)
April	2014	Senior general manager, Mizuho Bank, Ltd.
April	2014	Resigned from Mizuho Bank, Ltd.
May	2014	Senior general manager, Sharp Corporation
June	2014	Director and executive managing officer, Sharp Corporation
June	2016	Resigned from Sharp Corporation
June	2016	Senior general manager, Mizuho Bank, Ltd.
June	2017	Resigned from senior general manager position at Mizuho Bank, Ltd.
June		Outside auditor of the Company (current)

I began my working life as a banker in 1983. I spent a total of 12 years in the United States, mainly in charge of development and sales of various types of financial products. I was also involved in bank mergers and the establishment of holding companies. During my time at banks and manufacturers, I saw many instances of corporate growth and success that only became a stumbling block to future growth and success. I think this perspective will become extremely important in this era of rapid environmental change. My favorite sayings are “cool head, but warm heart” and “all things are essentially nothingness.”



Masahiro Osada

Audit & Supervisory Board member
(Outside Auditor)

Number of shares owned: 0 shares
Attendance at Board of Directors' meetings: 8 of 8 meetings
Attendance at Audit & Supervisor Board meeting: 12 of 12 meetings

April	1981	Joined Mitsubishi Chemical Industries Limited (now Mitsubishi Chemical Corporation)
June	2012	Executive officer and general manager of Corporate Management Office, Mitsubishi Chemical Holdings Corporation
April	2015	Executive officer, general manager of Finance & Accounting Department, Mitsubishi Chemical Corporation
April	2017	Managing executive officer (in charge of Corporate Management Department and Finance & Accounting Department), Mitsubishi Chemical Corporation
April	2019	Director and managing executive officer (in charge of Corporate Management Department and Finance & Accounting Department), Mitsubishi Chemical Corporation
March	2020	Resigned from director and managing executive officer position at Mitsubishi Chemical Corporation
April	2020	Advisor to the Company
June	2020	Outside auditor (current)

I began a new corporate life as a full-time Audit & Supervisory Board member in June 2020. In 1981, I joined Mitsubishi Chemical Industries, where I was in charge of transitioning the company to consolidated accounting and the voluntary adoption of IFRS in response to internationalization. In my career, I have been involved deeply in helping establish a pure holding company through stock transfer, in helping that company with subsequent M&A activities to build a strong group foundation, and in other projects implemented by the holding company. I hope to bring these experiences in particular to aid the growth of Nippon Sanso Holdings as a global corporation. I do not ascribe to a particular motto, but I always keep in mind that the final touches are the most important part of any job.



Kazuya Kobayashi

Audit & Supervisory Board member
(Outside Auditor)
Concurrently part-time Audit & Supervisory
Board member, Taiyo Nippon Sanso Corporation

Number of shares owned: 0 shares
Attendance at Board of Directors' meetings: 8 of 8 meetings
Attendance at Audit & Supervisor Board meeting: 12 of 12 meetings

April	1985	Joined The Fuji Bank, Limited (now Mizuho Bank, Ltd.)
April	2012	Executive officer, general manager of Corporate Banking Division No. 13, Mizuho Corporate Bank, Ltd. (now Mizuho Bank, Ltd.)
April	2014	Managing executive officer, head of Investment Banking Unit, Mizuho Financial Group, Inc. Managing executive officer, head of Investment Banking Unit, Mizuho Bank, Ltd.
April	2016	Managing executive officer in charge of Specific Business of Global Corporate Company, Mizuho Financial Group, Inc. Managing executive officer, head of Global Corporate Division, Mizuho Bank., Ltd
April	2017	Senior general manager, Mizuho Financial Group, Inc.
March	2019	Resigned from senior general manager position at Mizuho Financial Group, Inc.
April	2019	Audit & Supervisory Board member (full-time), Mizuho Human Service Co., Ltd.
March	2020	Resigned from Audit & Supervisory Board member (full-time) position at Mizuho Human Service Co., Ltd
April	2020	Senior general manager, Mizuho Financial Group, Inc. (current)
June	2020	Resigned from senior general manager at Mizuho Financial Group, Inc.
June		Outside auditor of the Company (full-time)
October	2020	Audit & Supervisory Board member of Taiyo Nippon Sanso Corporation (current)

I was appointed a full-time Audit & Supervisory Board member in June 2020. Prior to that, I was involved in overseas business for a long time at Mizuho Bank, where I was stationed in New York for 10 years and worked as the head of the international division at the head office after serving in overseas sales planning and other capacities. The global financial crisis in 2008 made clear the importance of identifying the essence behind credit decisions, which has become an important backbone for my own business decisions. I like to cook to relax, which has the advantage of being both a hobby and a practical habit.

Director Skills Matrix

Nippon Sanso Holdings believes that for the Board of Directors to function effectively it must consist of a diverse collection 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 seven categories: (1) Corporate management and business

strategy, (2) Finance and accounting, (3) Legal and regulatory affairs, (4) Governance and risk management, (5) Sales and marketing, (6) Development and technology, and (7) Internationality and diversity. We will strive to enhance the effectiveness of the Board of Directors further by assigning people with knowledge and experience in these categories to the right places at the right time.

Name	Positions	Classification Committee positions	Corporate management and business strategy	Finance and accounting	Legal and regulatory affairs	Governance and risk management	Sales and marketing	Development and technology	Internationality and diversity	Career Highlights
Toshihiko Hamada	Representative Director, President CEO	Member of the Advisory Committee on Appointments and Remuneration	●			●	●	●	●	Mr. Hamada joined the Company in 1981. He was appointed executive vice president, Specialty Gas Technology at Matheson Tri-Gas, Inc., in 2002. After serving as general manager of the Semiconductor Gas Section of the Electronics Division at Nippon Sanso, he was named president and representative director of Nissan TANAKA Corporation in 2017. He was appointed director, executive vice president of the Company (Aide to the President) in 2020. In 2021, Mr. Hamada was appointed Representative Director, President CEO of Nippon Sanso Holdings (current).
Yujiro Ichihara	Member of the Board, Chairman of the Board of Directors	Member of the Advisory Committee on Appointments and Remuneration	●	●		●			●	Mr. Ichihara joined the Company in 1974, after which he went on to be named executive officer, deputy general manager of the Business Planning Division and the General Affairs Division, and manager of the Secretary's Office and the Corporate Audit Office in 2005. After serving in various capacities, including general manager of the General Affairs Division, general manager of the Corporate Administration Division, and executive vice president of the Corporate Administration Division and the Corporate Planning & Global Operations Division, he was appointed Representative Director, President CEO in 2014. Mr. Ichihara was appointed Chairman of the Board of Directors of Nippon Sanso Holdings in 2021 (current).
Kenji Nagata	Member of the Board, Representative Director and President, Taiyo Nippon Sanso Corporation		●			●	●		●	After joining the Company in 1981, Mr. Nagata was appointed executive officer and general manager of the North Kanto Branch in 2013. After serving in various capacities, including senior executive officer, deputy general manager of the Industrial Gases Division, general manager of the Gases Business Unit, and general manager of the Product Management Unit, he was appointed senior executive officer, general manager of the Industrial Gases Division in 2017. In 2020, Mr. Nagata was appointed director of Nippon Sanso Holdings and president of Taiyo Nippon Sanso Corporation (current).
Thomas Scott Kallman	Member of the Board, Chairman and CEO, Matheson Tri-Gas, Inc.		●			●	●		●	Mr. Kallman joined the BOC Group, plc., in 1981, and was appointed vice president and general manager, U.S. Eastern Region in 2000. He was appointed executive vice president of the Industrial Gas Group, Matheson Tri-Gas, Inc. in 2005, president and COO of Matheson Tri-Gas in 2009, president and CEO of Matheson Tri-Gas in 2013, and chairman and CEO of Matheson Tri-Gas in 2019 (current). Mr. Kallman was also appointed director of Nippon Sanso Holdings in 2019 (current).
Eduardo Gil Elejoste	Member of the Board, Chairman and President, Nippon Gases Euro-Holding S.L.U.		●			●	●		●	After joining Argon S.A. in 1981, Mr. Elejoste was appointed director of marketing for Spain and Portugal in 1992. In 1996, he was appointed director of Business Development for Europe, Praxair España S.L.U. (now Nippon Gases España S.L.U.), and later CEO for Germany and Benelux. In 2018, Mr. Elejoste was appointed chairman and president of TNSC Euro-Holding S.L.U. (now Nippon Gases Euro-Holding S.L.U.) (current). In 2019, he was appointed director of Nippon Sanso Holdings (current).
Akio Yamada	Member of the Board (Outside Director)	Independent outside director Chairman of the Advisory Committee on Appointments and Remuneration			●	●			●	Mr. Yamada joined the General Secretariat of the Japan Fair Trade Commission in 1967. He was subsequently appointed secretary general of the Japan Fair Trade Commission in 2000. After serving variously as outside Audit & Supervisory Board member at Daiichi Sankyo Co., Ltd., outside Audit & Supervisory Board member at Yokohama Rubber Co., Ltd., and outside director of Watahan & Co., Ltd., and in other positions, Mr. Yamada was appointed outside director of Nippon Sanso Holdings in 2015 (current). In 2018, he was appointed chairman of the Fair Trade Institute (current).
Mitsuhiro Katsumaru	Member of the Board (Outside Director)	Independent outside director Member of the Advisory Committee on Appointments and Remuneration			●	●			●	After being appointed as public prosecutor assigned to the Tokyo District Public Prosecutors Office in 1978, Mr. Katsumaru was appointed first secretary of the Embassy of Japan in Germany in 1989. He served as assistant vice minister, the Ministry of Justice (responsible for general policy integration), superintending prosecutor of the Takamatsu High Public Prosecutors Office, and superintending prosecutor of the Hiroshima High Public Prosecutors Office, after which he became a registered attorney in 2014. In 2015, Mr. Katsumaru was appointed outside director of Nippon Sanso Holdings (current). In 2017, he was appointed outside director of Shimano Inc. (current).
Miri Hara	Member of the Board (Outside Director)	Independent outside director Member of the Advisory Committee on Appointments and Remuneration	●	●		●			●	In 1988, Ms. Hara was appointed director of Hara Estate K.K. (current). In 2017, she became founder and partner of Tax Corporation Yokohama Benten Accounting, Inc. (current). In 2020, she was appointed outside director of SECOM Co., Ltd. (current). Ms. Hara was appointed outside director of Nippon Sanso Holdings in 2021 (current).
Hidefumi Date	Member of the Board		●	●		●			●	Mr. Date joined Mitsubishi Chemical Industries Limited (now Mitsubishi Chemical Corporation) in 1982. He was appointed executive officer and general manager of the Consolidated Management Department at Mitsubishi Chemical Corporation in 2013. After serving as executive officer and general manager of the Finance & Accounting Department at Mitsubishi Chemical and managing corporate executive officer and chief financial officer of Mitsubishi Chemical Holdings Corporation, he was appointed director, managing corporate executive officer, and chief financial officer of Mitsubishi Chemical Holdings in 2019 (current). Mr. Date was appointed director of Nippon Sanso Holdings in 2019 (current).
Junzo Tai	Audit & Supervisory Board member		●	●		●			●	Mr. Tai joined the Company in 1979, and was appointed as manager of the Corporate Audit Office in 2013. In 2014, he was appointed executive officer and manager of the Corporate Audit Office and executive officer assigned to Mitsubishi Chemical Holdings Corporation. After serving as executive officer and manager of the Industrial Gases Strategy Office in the Corporate Strategy Division at Mitsubishi Chemical Holdings, Mr. Tai was appointed full-time Audit & Supervisory Board member of Nippon Sanso Holdings in 2018 (current).
Akihiro Hashimoto	Audit & Supervisory Board member (Outside Auditor)	Independent outside director	●	●		●			●	After joining The Fuji Bank, Limited (now Mizuho Bank, Ltd.), in 1983, Mr. Hashimoto was appointed executive officer and general manager of the Americas Financial Products Division at Mizuho Corporate Bank, Ltd. (now Mizuho Bank, Ltd.) in 2010. Having served in various capacities, including managing executive officer in charge of corporate banking at Mizuho Bank and director and executive managing officer at Sharp Corporation, Mr. Hashimoto was appointed outside Audit & Supervisory Board member of Nippon Sanso Holdings in 2017 (current).
Masahiro Osada	Audit & Supervisory Board member (Outside Auditor)		●	●		●			●	In 1981, Mr. Osada joined Mitsubishi Chemical Industries Limited (now Mitsubishi Chemical Corporation) and was subsequently appointed executive officer and general manager of the Corporate Management Office of Mitsubishi Chemical Holdings Corporation in 2012. After serving in various roles, including director and managing executive officer in charge of the Corporate Management Department and the Finance & Accounting Department at Mitsubishi Chemical Corporation, Mr. Osada was appointed outside Audit & Supervisory Board member of Nippon Sanso Holdings in 2020 (current).
Kazuya Kobayashi	Audit & Supervisory Board member (Outside Auditor)	Independent outside director	●	●		●			●	After joining The Fuji Bank, Limited (now Mizuho Bank, Ltd.) in 1985, Mr. Kobayashi was appointed executive officer and general manager of Corporate Banking Division No. 13 at Mizuho Corporate Bank, Ltd. (now Mizuho Bank, Ltd.). Having served as managing executive officer in charge of Specific Business of Global Corporate Company of Mizuho Financial Group, Inc., as managing executive officer, head of the Global Corporate Division at Mizuho Bank and in other roles, Mr. Kobayashi was appointed outside Audit & Supervisory Board member of Nippon Sanso Holdings (current) and Audit & Supervisory Board member of Taiyo Nippon Sanso Corporation (current) in 2020.

* Details on the definition of table headings
Corporate management: Career as a full-time officer
Business strategy: Persons who have held positions in management strategy and corporate planning divisions
Internationality and diversity: Persons who are non-Japanese, women, persons who have experience with overseas assignments or working overseas, and persons joining the Company mid-career (experience at other companies)

Corporate Data

Company Overview (As of March 31, 2021)

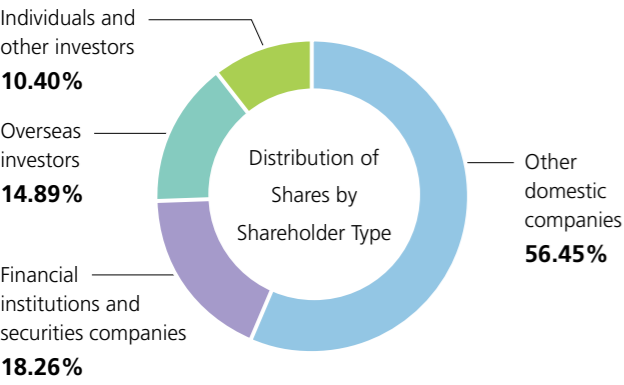
Company name: Nippon Sanso Holdings Corporation
Date founded: October 30, 1910
Paid-in capital: ¥37,344 million
Head office:
1-3-26 Koyama, Shinagawa-ku, Tokyo 142-0062, Japan
Number of employees: 19,357
Independent public accountants:
Ernst & Young ShinNihon LLC
Stock exchange listing: Tokyo

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, 2021)

Status of Shares

Number of shares authorized: 1,600,000,000
Number of shares issued: 433,092,837
Number of shareholders: 18,901



Major Shareholders

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

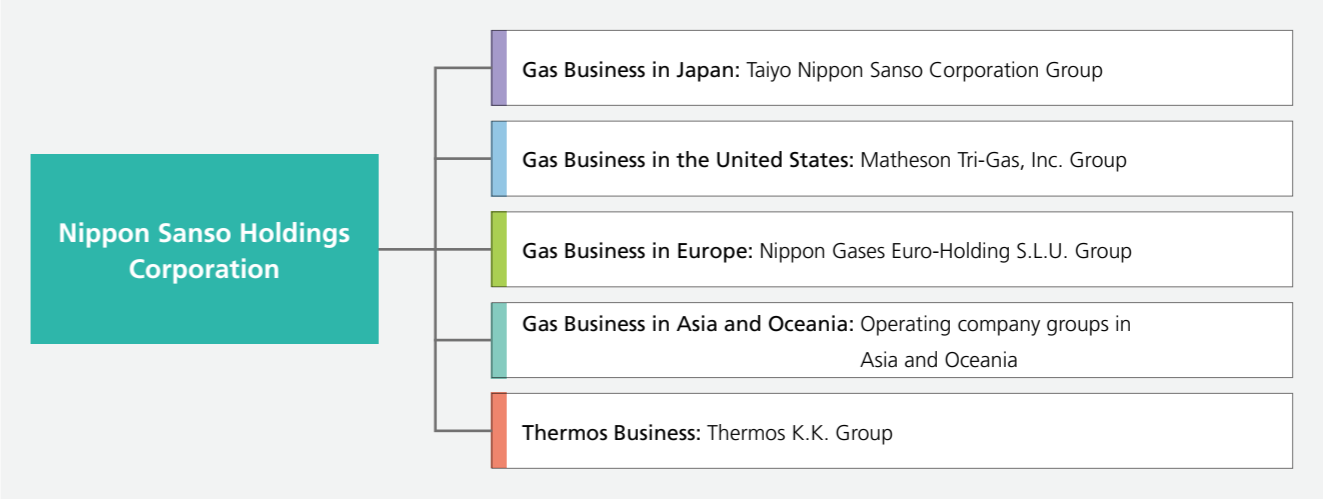
	Thousands of shares owned	Percentage of total (%)
Mitsubishi Chemical Holdings Corporation	218,996	50.59
Taiyo Nippon Sanso Client Shareholding Society	17,617	4.07
The Master Trust Bank of Japan, Ltd. (Trust account)	14,946	3.45
Custody Bank of Japan, Ltd. (Trust account)	13,294	3.07
Meiji Yasuda Life Insurance Company	10,007	2.31
Mizuho Bank, Ltd.	8,182	1.89
The Norinchukin Bank	7,000	1.62
Shareholding Association of Nippon Sanso Holdings Corporation	3,282	0.76
STANDARD LIFE ASSURANCE LIMITED PENSION FUNDS	3,067	0.71
IBIDEN Co., Ltd.	3,004	0.69

* Our company holds 182,000 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, 2021)



Main Affiliated Companies (Company names as of March 31, 2021)

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.
Orense, 11, 9th Floor,
Madrid 28020, 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.
3rd Floor, No. 2 Bldg. BaoWu Tower 1859,
Expo Boulevard, Shanghai, P.R. 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

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

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

11-Year Financial and Non-Financial Summary

								(Millions of yen)					
Japanese GAAP								IFRS					
	2011.3	2012.3	2013.3	2014.3		2015.3	2016.3	2016.3	2017.3	2018.3	2019.3	2020.3	2021.3
Revenue	—	—	—	—		—	—	594,421	581,586	646,218	740,341	850,239	818,238
Net sales	483,620	477,451	468,387	522,746		559,373	641,516	—	—	—	—	—	—
Selling, general and administrative expenses	126,265	125,526	125,503	138,052		149,151	182,051	161,169	165,071	178,690	204,789	242,129	233,276
Core operating profit* ¹	—	—	—	—		—	—	47,456	54,736	60,033	65,819	90,337	87,251
Operating profit	35,468	31,067	24,884	31,489		35,297	43,362	48,925	53,664	59,862	66,863	93,921	88,846
Profit attributable to owners of parent	—	—	—	—		—	—	29,030	34,740	48,919	41,291	53,340	55,214
Profit (loss)	12,736	21,200	(2,071)	20,194		20,764	25,845	—	—	—	—	—	—
Total equity attributable to owners of parent	—	—	—	—		—	—	320,457	351,576	386,457	406,602	409,344	513,164
Total equity	207,416	219,611	224,253	298,475		341,207	337,974	—	—	—	—	—	—
Total assets	—	—	—	—		—	—	787,505	924,281	931,047	1,771,015	1,751,732	1,836,294
Total assets	617,676	607,024	615,820	731,677		782,357	783,248	—	—	—	—	—	—
Interest-bearing liabilities	256,358	241,121	253,424	278,063		266,276	274,424	266,215	359,528	326,959	1,005,402	998,389	949,242
Net interest-bearing liabilities* ²	211,808	206,524	228,681	219,727		212,855	223,638	215,492	304,308	274,968	945,782	898,384	858,183
Cash flows from operating activities	65,897	45,986	33,964	56,716		58,615	81,555	73,347	74,596	83,199	98,685	150,084	149,231
Cash flows from investing activities	(44,834)	(32,748)	(37,225)	(55,295)		(30,583)	(82,130)	(74,252)	(147,082)	(52,088)	(754,969)	(62,629)	(59,686)
Cash flows from financing activities	(3,343)	(23,536)	(8,181)	27,884		(33,866)	(1,825)	(2,385)	80,777	(39,859)	664,925	(46,242)	(103,159)
Free cash flow	21,063	13,238	(3,261)	1,421		28,032	(575)	(905)	(72,486)	31,111	(656,284)	87,455	89,544
Cash and cash equivalents	44,549	34,596	24,743	58,336		53,420	50,785	50,723	55,220	51,991	59,620	100,005	91,058
Capital expenditures* ³	31,991	31,452	31,715	32,532		35,201	53,611	52,657	43,796	62,569	76,657	81,017	74,697
Investment and loans receivable* ²	15,171	8,035	5,672	35,749		5,710	32,941	25,507	102,034	4,556	691,126	733	1,361
Depreciation and amortization	32,167	30,471	29,400	33,507		35,568	44,864	39,696	40,048	43,266	56,111	83,798	86,380
Amortization of goodwill	3,635	2,472	2,719	3,668		4,959	7,352	—	—	—	—	—	—
Research and development costs	3,924	3,458	3,177	3,170		3,430	3,348	3,238	3,323	3,255	3,494	3,389	3,315
Profit (EPS) (Yen)	31.86	53.33	(5.25)	49.42		47.98	59.72	67.08	80.28	113.04	95.42	123.26	127.59
Annual dividends per share (Yen)	12.0	12.0	12.0	12.0		13.0	16.0	16.0	20.0	23.0	25.0	28.0	30.0
Dividend payout ratio (%)	37.7	22.5	—	24.3		27.1	26.8	23.9	24.9	20.3	26.2	22.7	23.5
Core operating profit margin (%)	7.3	6.5	5.3	6.0		6.3	6.8	8.2	9.2	9.3	9.0	11.0	10.9
Operating profit margin (%)	—	—	—	—		—	—	8.0	9.4	9.3	8.9	10.6	10.7
Overseas revenue ratio (%)	23.6	24.3	27.6	31.4		35.0	44.4	40.7	40.8	43.3	47.9	55.5	56.1
Selling, general and administrative expenses / revenue	26.1	26.3	26.8	26.4		26.7	28.4	27.1	28.4	27.7	27.7	28.5	28.5
Return on equity (ROE) (%)* ⁴	6.5	10.8	(1.0)	8.4		7.0	8.2	9.1	10.3	13.3	10.4	13.1	12.0
Return on capital employed (ROCE)* ⁵	7.8	7.0	5.5	6.2		6.2	7.4	8.1	8.4	8.4	6.2	6.4	6.1
Net debt-to-equity (D/E) ratio (Times)	1.10	1.03	1.12	0.80		0.67	0.71	0.67	0.87	0.71	—	—	—
Adjusted net D/E ratio (Times)* ⁶	—	—	—	—		—	—	—	—	—	1.54	1.45	1.15
Share price (March 31) (Yen)	693	584	638	812		1,639	1,068	1,068	1,302	1,611	1,686	1,601	2,104
Price earnings ratio (PER) (Times)	21.75	10.95	—	16.43		34.16	17.88	15.92	16.22	14.25	17.67	12.99	16.49
Number of employees (Consolidated)* ⁷	10,269	11,588	11,468	12,955		13,142	14,127	14,107	15,860	15,345	18,974	19,341	19,155
Gas Business in Japan	—	—	—	—		—	—	—	—	5,985	6,171	6,292	6,295
Gas Business in the United States	—	—	—	—		—	—	—	—	4,820	4,916	4,724	4,534
Gas Business in Europe	—	—	—	—		—	—	—	—	—	2,589	2,794	2,884
Gas Business in Asia and Oceania	—	—	—	—		—	—	—	—	3,161	4,026	4,195	4,114
Thermos Business	—	—	—	—		—	—	—	—	1,379	1,272	1,336	1,328
Female employees as a percentage of total labor force (Consolidated) (%)	—	—	—	—		—	—	—	—	17.8	19.1	19.6	20.1
Employee turnover rate (Consolidated) (%)	—	—	—	—		—	—	—	—	7.6	6.2	6.1	5.7
Energy consumption (TJ)* ⁸	—	—	—	—		44,620	47,599	47,599	62,516	67,613	72,014	109,512	104,142
Waste generated (including valuable materials) (Tonnes)* ⁹	—	—	—	—		—	—	2,834	2,917	2,910	3,023	3,762	14,273
Fresh water withdrawn (Ten thousands of m ³)	—	—	—	—		791	816	816	1,014	1,092	1,362	3,002	4,335
GHG emissions (Scope 1) (Thousand tonnes CO ₂ e)* ¹⁰	—	—	—	—		—	—	—	9	19	14	1,061	987
GHG emissions (Scope 2) (Thousand tonnes CO ₂ e)* ¹⁰	—	—	—	—		—	—	—	3,363	3,838	4,056	4,747	4,664
GHG emissions (Scope 3) (Thousand tonnes CO ₂ e)* ¹⁰	—	—	—	—		—	—	—	—	3,671	3,634	3,662	4,340


*1 Core operating profit is calculated by subtracting losses (non-operating items) produced by non-recurring factors from operating profit. Non-recurring factors include structural reform charges, including costs associated with business downsizing or withdrawal; special severance payments; losses due to disasters or major accidents; and other factors such as the disposal of idle assets.

*2 The standard changed in FYE2019 compared to previous fiscal years. *3 The figures are based on construction, in accordance with the presentation in the annual securities report. *4 Return on equity (ROE) is calculated as profit attributable to owners of parent divided by average shareholders' equity. Average shareholders' equity is the average of shareholders' equity at beginning of period and shareholders' equity at end of period; where shareholders' equity is calculated as net assets – non-controlling interests. *5 Return on capital employed (ROCE) = Core operating profit / (outstanding interest-bearing debt + equity attributable to owners of parent) *6 Adjusted D/E ratio = (Net interest-bearing debt – equity-type debt) / (equity attributable to owners of the parent + equity-type debt). Equity-type debt is debt procured through hybrid financing that has been recognized as equity credit by ratings agencies (50% of the procured amount); hybrid financing is a form of debt financing that has features resembling equity, including 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

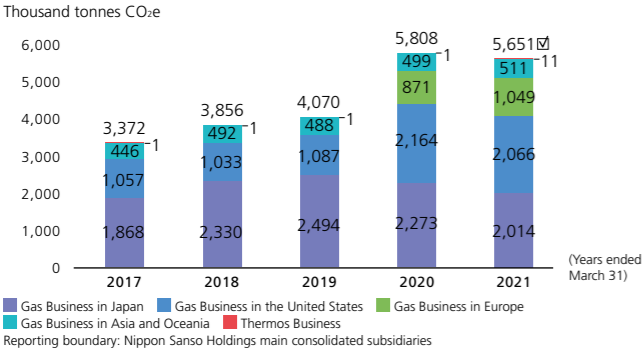
conditions are met. *7 From FYE2018, we aggregated the actual results as of the fiscal year end of each Group company. Due to differences in the fiscal year ends, the aggregated data includes some results as of December 31. To reflect a revision of this aggregation method, we have retroactively revised the figures presented in the previous fiscal year for FYE2018 to FYE2020. *8 The energy of the consumed fuels is calculated based on the gross calorific values specified in Japan's Act on the Rational Use of Energy. Purchased electricity and purchased steam are converted into primary energy amounts. *9 Beginning FYE2021, main overseas consolidated subsidiaries are included in the reporting boundary for the amount of waste generated. *10 GHG emissions in Japan are calculated using emission factors provided in Japan's Act on Promotion of Global Warming Countermeasures (for electricity, the basic emission factors for each electricity 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, while Scope 2 emissions are calculated using country-specific emission factors published by the International Energy Agency (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, resulting in an increase in Scope 2 emissions of approximately 244 thousand tonnes CO₂e compared with using emission factors provided by the IEA. See P.187–188 for details on the calculation method of Scope 3 emissions.

For information about the reporting boundaries for environmental data please refer to Non-Financial Highlights (→P.136).

Non-Financial Highlights

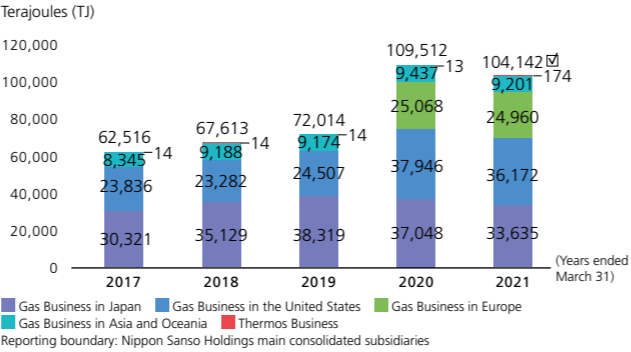
Indicators with  mark have been assured by KPMG AZSA Sustainability Co., Ltd.

GHG Emissions



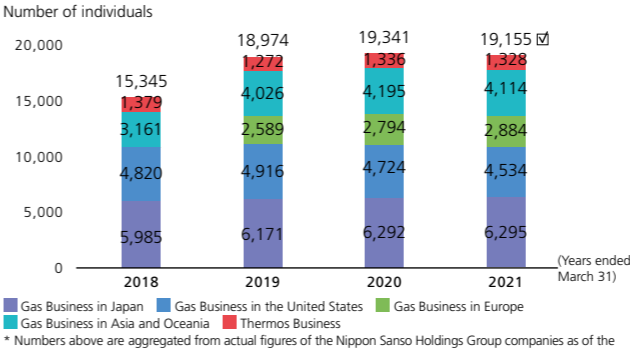
The majority of GHG emissions of the Nippon Sanso Holdings Group is emissions from ASUs and the HyCO business. Optimal operation of ASUs and the impact of COVID-19 resulted in a year-on-year decrease to 5,651 thousand tonnes CO₂e.

Energy Consumption



In the energy usage of the Nippon Sanso Holdings Group, approximately 86% is electricity used by ASUs and approximately 10% is fuel for the HyCO business. Optimal operation of ASUs and the impact of COVID-19 resulted in a year-on-year decrease to 104,142 TJ.

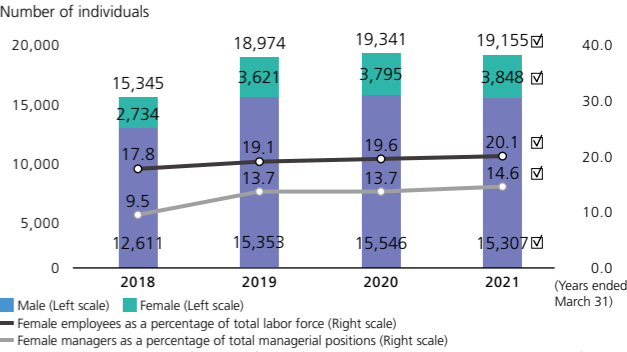
Number of Employees by Segment (Consolidated)



* 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. Due to a revision of this aggregation method, figures presented in previous fiscal years have been retroactively revised.

The consolidated number of employees for FYE2021 was 19,155. Investments in the European business through M&A resulted in the addition of European personnel in FYE2019. Despite changes in each segment since then, the overall number has remained level.

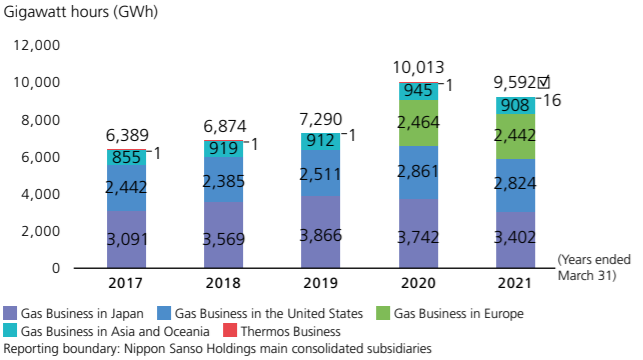
Number of Employees by Gender (Consolidated)



* 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. Due to a revision of this aggregation method, figures presented in previous fiscal years have been retroactively revised.

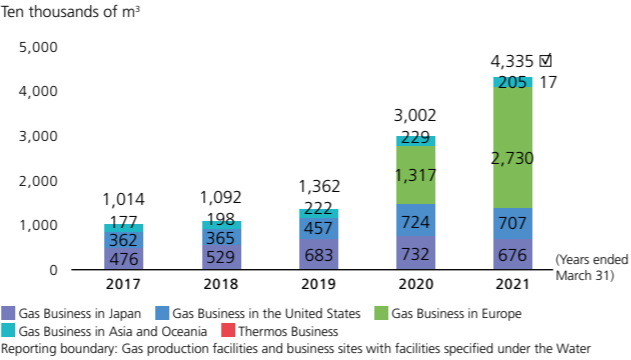
As of the end of FYE2021, the consolidated labor force comprised 15,307 male employees and 3,848 female employees. The Nippon Sanso Holdings Group has actively promoted career opportunities for female employees, and the percentage of female employees out of total labor force raised 0.5 percentage point from the previous fiscal year-end. The percentage of female managers raised 0.9 percentage point from the previous fiscal year-end. Hereafter, we will continue various measures to promote career opportunities for female employees, such as improving working environments and improving systems.

Electric Power Consumption



Production processes for industrial gases use a significant amount of electric power. The bulk of the Nippon Sanso Holdings Group's electric power consumption goes to the operation of ASUs. Optimal operation of ASUs and the impact of COVID-19 resulted in a year-on-year decrease to 9,592 GWh.

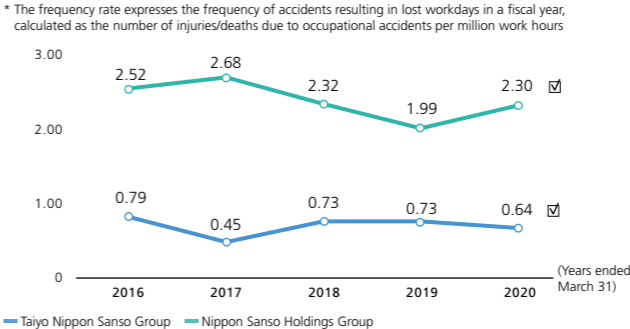
Fresh Water Withdrawn



* In FYE2020, business sites with facilities specified under the Water Pollution Prevention Act belonging to consolidated subsidiaries in Japan were added to the reporting boundary.

Nippon Sanso Holdings Group's fresh water withdrawn increased significantly since FYE2020 due to acquisitions of the HyCO business and the Gas Business in Europe. Furthermore, from FYE2021, the addition of HyCO and liquid carbon dioxide plants of the Gas Business in Europe to the reporting boundary resulted in a year-on-year increase to 43.35 million m³.

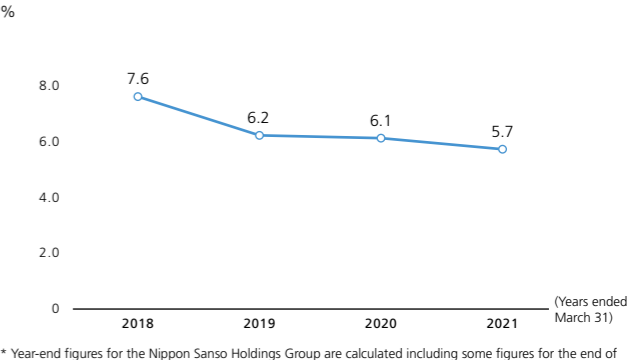
Frequency Rate of Occupational Accidents Resulting in Lost Workdays*



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

The lost-time work injury frequency rate in FYE2021 decreased to 0.64 at Taiyo Nippon Sanso Corporation, while increasing to 2.3 for the Nippon Sanso Holdings Group overall. We continue to promote measures to prevent occupational accidents, including the analysis of causes of occupational accidents and proposal of countermeasures, as well as providing education for increasing employees' ability to recognize danger.

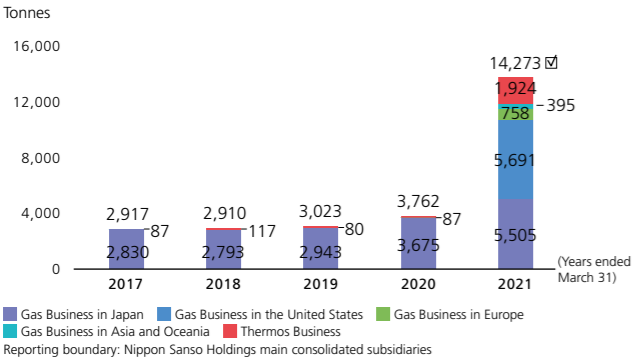
Employee Turnover Rate (Consolidated)



* Year-end figures for the Nippon Sanso Holdings Group are calculated including some figures for the end of December 2020 because some subsidiaries' accounting period ends are at the end of December.

The employee turnover rate in FYE2021 was 5.7%, an decrease of 0.4 percentage point from the previous fiscal year-end. Hereafter, we will continue taking steps to retain human resources by executing measures to enable employees to feel a sense of worth and achievement in their work to improve employee engagement.

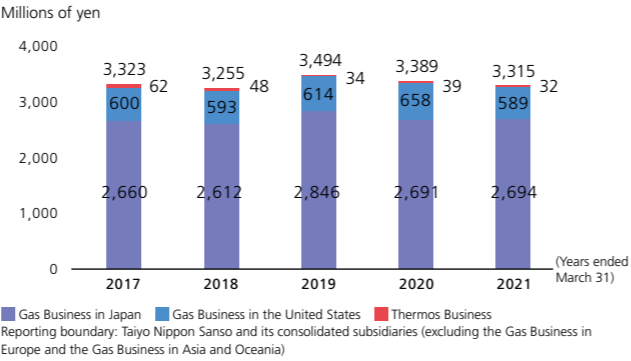
Waste Generated (Including Valuable Materials)



* In FYE2021, main overseas consolidated subsidiaries were added to the reporting boundary. In FYE2021, industrial waste generated by main overseas consolidated subsidiaries were added to the reporting boundary. Of the industrial waste generated by the Nippon Sanso Holdings Group, a large amount was generated by specialty gas plants, mainly in the Gas Business in the United States, and there was a one-time aggregated amount of waste generated by the Gas Business in Japan. As a result, the amount increased year on year to 14,273 tonnes.

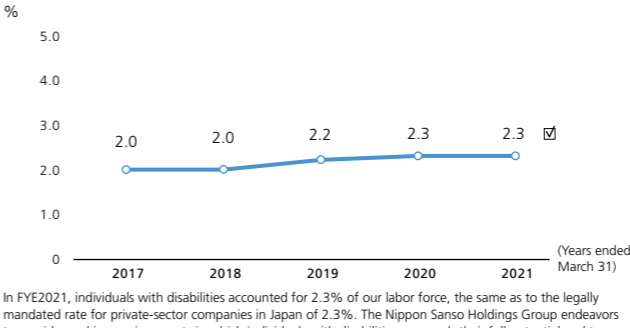
* Waste generated by the Gas Business in Japan is the volume for which the Company issued a manifest.

Research and Development Costs



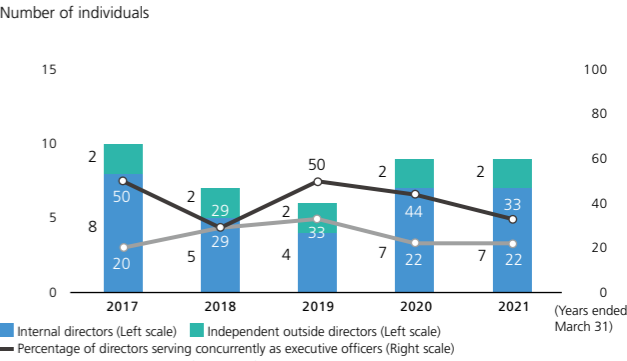
Research and development costs in FYE2021 were level year on year at ¥3,315 million. In R&D, we work on the development of new products and technologies for various fields, based on our proprietary gas technology, which will contribute to earnings growth.

Employment Rate of Persons with Disabilities (Taiyo Nippon Sanso; as of June 1 each year)



In FYE2021, individuals with disabilities accounted for 2.3% of our labor force, the same as to the legally mandated rate for private-sector companies in Japan of 2.3%. The Nippon Sanso Holdings Group endeavors to provide working environments in which individuals with disabilities can reach their full potential and to support the realization of a society that enables individuals with disabilities to play an active role that leverages their abilities.

Directors and Outside Directors



* Regarding the number of directors and outside directors, the President CEO is counted as an executive officer. In FYE2021, the Board of Directors comprised seven internal and two independent outside directors, with directors serving concurrently as executive officers accounting for 33% of the Board as a whole and independent outside directors accounting for 22%. The Advisory Committee on Appointments and Remuneration, which is chaired by an independent outside director and comprises the President CEO and independent outside directors, was established to improve the transparency and objectivity of procedures for appointing and determining remuneration for directors.

GHG emissions: GHG emissions in Japan are calculated using emission factors provided in Japan's Act on Promotion of Global Warming Countermeasures (for electricity, the basic emission factors for each electricity 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, while 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, resulting in an increase in Scope 2 emissions of approximately 244 thousand tonnes CO₂e compared with using emission factors provided by the IEA.

Energy consumption: The energy of the consumed fuels is calculated based on the gross calorific values specified in Japan's Act on the Rational Use of Energy. Purchased electricity and purchased steam are converted into primary energy amounts.

For information on main subsidiaries, please see Sustainability Data (→P.183).

Awards

Japan

Designated as a 2021 Health & Productivity Management Outstanding Organization (Large Enterprise Category) (“White 500”)

Taiyo Nippon Sanso Corporation was recognized as a corporation that implements particularly outstanding health and productivity management by Nippon Kenko Kaigi.



Designated as a Sports Yell Company

Taiyo Nippon Sanso Corporation was designated as a Sports Yell Company by the Japan Sports Agency, in recognition of initiatives such as the Sergio Soccer Clinic, which it has run since 1990, and the Walking Rally held by the Health Insurance Association.

Received the Minister of Economy, Trade and Industry Award

The Oyama Plant of Japan Fine Products Corporation received the Minister of Economy, Trade and Industry award as a workplace with particularly outstanding safety measures in regard to the structure, equipment, and manufacturing methods of each facility in the manufacture of high-pressure gases.

Received the Chiba Labor Bureau Chief’s “Excellence Award”

Chiba Sano Center Co., Ltd.’s Sodegaura Plant received this award in recognition of its long period free from recording of accidents or disasters—18,500 days (over 50 years) since the start of its operations—as well as its health and safety activities.

United States

Award certificate received from HDT Global

Matheson Tri-Gas, Inc. received an award certificate from HDT Global, Inc. for providing reliable supplies during the COVID-19 pandemic.

Letter of appreciation received from the United States Department of Defense

Matheson Tri-Gas, Inc. received a letter of appreciation from the United States Department of Defense, recognizing its contribution to the Department’s maintenance of industrial infrastructure by maintaining its supply chain during COVID-19.

Award received at the 2020 Safety Awards

The Compressed Gas Association (CGA) is an organization that promotes and develops safety standards in the industrial, medical, and food gas sectors. Matheson Tri-Gas, Inc. was awarded the Environmental Award, Fleet Safety Excellence Award, and Safe Facility Performance Awards at the annual general meeting of the CGA in recognition of its initiatives to reuse toxic gas and its excellent safety performance.

Europe

Received the Welfare Champion 2020 award

Nippon Gases Italia S.r.l. was selected as a Welfare Champion 2020 in recognition of its various initiatives placing basic values such as the health, welfare, and safety of employees and their families at the center of the company’s goals.

Received Supplier Award 2020

Nippon Gases Germany received the Supplier Award 2020 from the major German healthcare equipment bulk purchasing organization Prospitalia Group in recognition of its performance in reliable and safe supplies, product quality, services, and communications.



Received the EcoVadis Silver Medal

Nippon Gases Industrial S.r.l. received the Silver Medal in the CSR certification by EcoVadis, evaluating corporate management systems in four themes (environment, labor and human rights, ethics, and sustainable materials procurement).

Designated as Distinction Level in the International Safety Award

Nippon Gases Offshore and Nippon Gases UK Ltd was designated as Distinction Level in the International Safety Awards, the most authoritative award system for evaluating corporate health and safety initiatives by the British Safety Council.

Operating Company Groups in Asia and Oceania

Received the Strategic Partner Award

Taiyo Nippon Sanso Trading (Shanghai) Co., Ltd. received the Strategic Partner Award from Corning (Hainan) Optical Communications Co., Ltd. in recognition of its outstanding quality, supply systems, and service.

Received a commendation for legally compliant management
Matheson Specialty Gas (Xi’an) Co., Ltd. received a commendation for outstanding performance in the evaluation for legal compliance held twice annually by Samsung China Semiconductor Co., Ltd.

Selected for Shanghai Xinzhuang Industrial Zone Top 100 Companies

Shanghai Taiyo Nippon Sanso Gas Co., Ltd. received a commendation for being selected as one of the top 100 companies in the Shanghai Xinzhuang Industrial Zone, proactively adapting to market changes, promoting technological innovation, fulfilling its social responsibility, and proactively contributing to the economic and social development of the industrial zone.



Editorial Note

Publication Process of This Report

In publishing “Nippon Sanso Holdings Integrated Report 2021,” we held 12 planning meetings based on the results of investor survey questionnaires and feedback and requests received from stakeholders. In addition, a production project team headed by CFO Alan David Draper was formed in 2021. This production team has played a central role in gathering and collating information on initiatives in each business and region for the entire Group.

Overview of the 12 Planning Meetings

Main Participants at the Meetings

(Position, and organization as of September 1, 2021)

- Nippon Sanso Holdings Corporation
Representative Director, President CEO Toshihiko Hamada;
Senior Executive Officers Satoshi Wataru, Tsutomu Moroishi, and Takeshi Miki;
Executive Officer Alan David Draper;
Group Internal Control Office, Group Legal Office,
Group Human Resources & Corporate Secretariat Office,
Group Corporate Planning Office, Group Finance and Accounting Office, and Group Technological Affairs & Environment Office
- Edge International, Inc.

Main Discussion Themes

- Consider the direction for Integrated Report 2021
- The uniqueness of our Group in comparison with other companies
- Aspirations for our Group
- Human resources of our Group
- Nippon Sanso Holdings Group’s business domains (Industrial gases business, Electronics business, and Thermos business)
- Corporate governance of our Group
- Our Group’s technological capabilities and R&D strategy
- Sustainability of the Nippon Sanso Holdings Group

People Who Helped to Produce This Report (in no particular order)

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Nippon Sanso Holdings Corporation	Hiroaki Hijino
Nippon Sanso Holdings Corporation	Todd D. Givens
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Taiyo Nippon Sanso Corporation	Toyoyuki Sato
Taiyo Nippon Sanso Corporation	Chihiro Takai
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IMI Co., Ltd.	Emiko Shimada
Taiyo Nippon Sanso Gas & Welding Corporation	Yudai Ishizaki
Nippon Ekitan Corporation	Ryuta Takahashi
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Matheson Tri-Gas, Inc.	Kelvin Dixon
Matheson Tri-Gas, Inc.	Lisa Kratz
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Matheson Tri-Gas, Inc.	Steve Foster
Continental Carbonic Products, Inc.	Sally Perez
Western International Gas & Cylinders, Inc.	Stephen Thompson
Nippon Gases Euro-Holding S.L.U.	Inaki Uriarte
Nippon Gases Euro-Holding S.L.U.	Justin Corcho Maters
Nippon Gases Euro-Holding S.L.U.	Laura Sigüenza
Nippon Gases Euro-Holding S.L.U.	Wim De Raedt
Nippon Gases Belgium NV	Ann Schauwers
Nippon Gases España S.L.U.	Cristina Gómez
Nippon Gases Italia S.r.l.	Paolo Ronzi
Nippon Sanso Holdings Singapore Pte. Ltd.	Hitoshi Ishihara
Nippon Sanso Holdings Singapore Pte. Ltd.	Cheryl Yong
Nippon Sanso Holdings Singapore Pte. Ltd.	Pauline Loo
Nippon Sanso Ingasco, Inc.	Maricar D. Santos
Nippon Sanso Taiwan, Inc.	Richard Hsu
Nippon Sanso Vietnam JSC	Pham Van Huu
Leeden National Oxygen Ltd.	Janice Lee
Dalian Taiyo Nippon Sanso Gas Co., Ltd.	Yang Di
Thermos K.K.	Yuji Kataoka
Thermos K.K.	Kana Kibashi
Thermos K.K.	Toshio Koizumi
Thermos K.K.	Yuki Kondo
Thermos K.K.	Masataka Sakamoto
Thermos K.K.	Hideyuki Sumida
Thermos K.K.	Yasuhiro Murakami
Thermos K.K.	Masashi Yamada
Vacuumtech Philippines Inc.	Rubylyn Sandoval Manalo

Editorial Note

Thank you for taking the time to read “Nippon Sanso Holdings Integrated Report 2021” in its entirety. Nippon Sanso Holdings Corporation transitioned to a holding company structure in October 2020. Personally, I feel that various changes have started to emerge that will strengthen the Group’s comprehensive capabilities. To enable us to communicate these changes to as many readers as possible through this integrated report, in producing it we asked for direct and indirect input from an even greater number of Nippon Sanso Holdings Group members than before. Naturally, we aimed to communicate the ideas and business strategies of our top management, but we also hope that by involving the people who will implement these strategies, the report will offer stakeholders inside and outside the Company a sense of the potential of Nippon Sanso Holdings and its function in society. However, only one year since its transition to a holding company, Nippon Sanso Holdings has only just made a start. I believe there is much more that we have not been able to include in the report. As we continue our dialogue with stakeholders going forward, I hope that we will achieve a deeper mutual understanding. I thank you for your continued support.

Takayoshi Umehara

General Manager, Investor Relations, Group Finance and Accounting Office, Nippon Sanso Holdings Corporation

MORE INFORMATION ON SUSTAINABILITY

Nippon Sanso Holdings creates new value for society through innovative gas solutions, contributing to the development of all manner of industries and fostering more comfortable futures for humankind, for society, and for the earth. This aspiration is embodied in our Group Vision, shared by our employees and serving as motivation for the Group to work together for sustainability management. The Group engages in a wide variety of sustainability initiatives across the globe. We believe that working to help resolve issues for humankind, for society, and for the earth leads to higher levels of social value and economic value, while also enhancing the corporate value of the Nippon Sanso Holdings Group.

* The following operating companies are engaged in the activities highlighted in the More Information on Sustainability section in each geographic hub (Japan, the United States, Europe, and Asia and Oceania) and in the Thermos Business.

NSHD: Nippon Sanso Holdings Corporation
TNSC: Taiyo Nippon Sanso Corporation
MTG: Matheson Tri-Gas, Inc.
NGE: Nippon Gases Euro-Holding S.L.U.
NSHS: Nippon Sanso Holdings Singapore Pte. Ltd.
Thermos: Thermos K.K.

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Sustainability Data

Stance on Sustainability

In the main text of this integrated report, we discussed a wide range of our activities and social roles, including the characteristics of the Nippon Sanso Holdings Group, our aspirations, and value creation. We have also addressed the opportunities incorporated into the Group sustainability strategy for contributing solutions to climate change and other global issues by providing innovative gas solutions.

In More Information on Sustainability, we provide more information in detail to a degree not covered in the main text of the report. In this way, we hope to encourage a deeper understanding of Nippon Sanso Holdings Group sustainability management among our stakeholders. This section focuses on topics related to the global sustainability activities of the Nippon Sanso Holdings Group that we believe will lead to a greater appreciation of the activities we conduct worldwide. We believe readers will gain a better understanding of sustainability management when reading this section in conjunction with the main body of the report. This section alone, however, provides sufficient context and information about activities.

Read on to learn more about sustainability activities at the Nippon Sanso Holdings Group.



Takeshi Miki
Senior Executive Officer,
Technology and Environment
Office Manager,
Chief Sustainability Officer (CSO)
Nippon Sanso Holdings Corporation
(Additionally appointed as
Senior Executive Officer,
Head of Technological Affairs Unit,
Taiyo Nippon Sanso Corporation)

Message from the CSO

We contribute to achieving a carbon-neutral society, aiming for sustainable growth and higher levels of corporate value.


As stakeholders demand solutions to global-scale environmental problems and social issues, corporations are under increasing pressure to contribute to the United Nations Sustainable Development Goals (SDGs). Both financial and non-financial initiatives are important for the sustainable development of a company. In particular, environmental, social, and governance (ESG) management is essential.

The Nippon Sanso Holdings Group possesses numerous technologies that it has cultivated over many years. We use these technologies to provide products and services that help resolve environmental and social issues. Examples include technologies to increase combustion efficiency and technologies that use hydrogen and ammonia, substances that do not emit CO₂. In October 2020, we made a fresh start under a holding company structure. As a corporate group active around the globe, we will continue to engage in more effective sustainability initiatives from a broader perspective than ever before.

ESG Materiality

With the aim of contributing to the realization of a sustainable society, Nippon Sanso Holdings works to ensure a solid grasp of its impact on the earth, society, and people (the Company and its organizational structure) through all of its business processes, that is, across the entire value chain. To this end, we have defined the roles we are expected to play in addressing issues we have identified as being of material importance, which are grouped under four themes, including management issues.

(→ See P.58 to 61 in this integrated report for more about ESG materialities and our process for identifying materialities.)

Theme	Materiality (Material Issues)	Principal Initiatives	Relevant SDGs
 Management Issues	<ul style="list-style-type: none">• Compliance• Corporate governance• Process safety	<ul style="list-style-type: none">• Reinforcement of systems based on Japan's Corporate Governance Code• Initiatives to ensure safe and reliable supply• Continuous implementation of compliance training	 
 The Earth	<ul style="list-style-type: none">• Efficient use of resources and energy• Climate change• Securing of clean water resources• Preservation of biodiversity	<ul style="list-style-type: none">• Promotion of environmental management• Initiatives to protect the global environment	  
 Society	<ul style="list-style-type: none">• Contribution to maintenance of physical health• Contribution to medical care• Response to food- and agriculture-related issues• Increase in consumer satisfaction• Contribution to upgrading and expanding social infrastructure• Response to smart societies	<ul style="list-style-type: none">• Development of products that contribute to solutions for environmental and social issues• Reinforcement of quality assurance and management systems	 
 People (The Company and Its Organizational Structure)	<ul style="list-style-type: none">• Respect for human rights• Occupational health and safety• Human resources development and training• Diversity and inclusion• Product and service reliability• Promotion of measures to improve information security and privacy• Stakeholder engagement• Contribution to communities• Promotion of sophisticated information and communications technology (ICT) use• Participation in initiatives and demonstration of leadership• Promotion of sustainability in the supply chain	<ul style="list-style-type: none">• Thorough internal promotion of the "Policy on the Prevention and Eradication of Harassment in the Workplace"• Employee education and training• Maintenance and improvement of information security systems• Promotion of sophisticated ICT use• Dialogue with shareholders and investment analysts• Initiatives to ensure safe and reliable supply• Creation of environments to promote innovation and diversity• Social contribution activities• Health management initiatives• Enhancement of information disclosure	   

Sustainability Topics

Management Issues

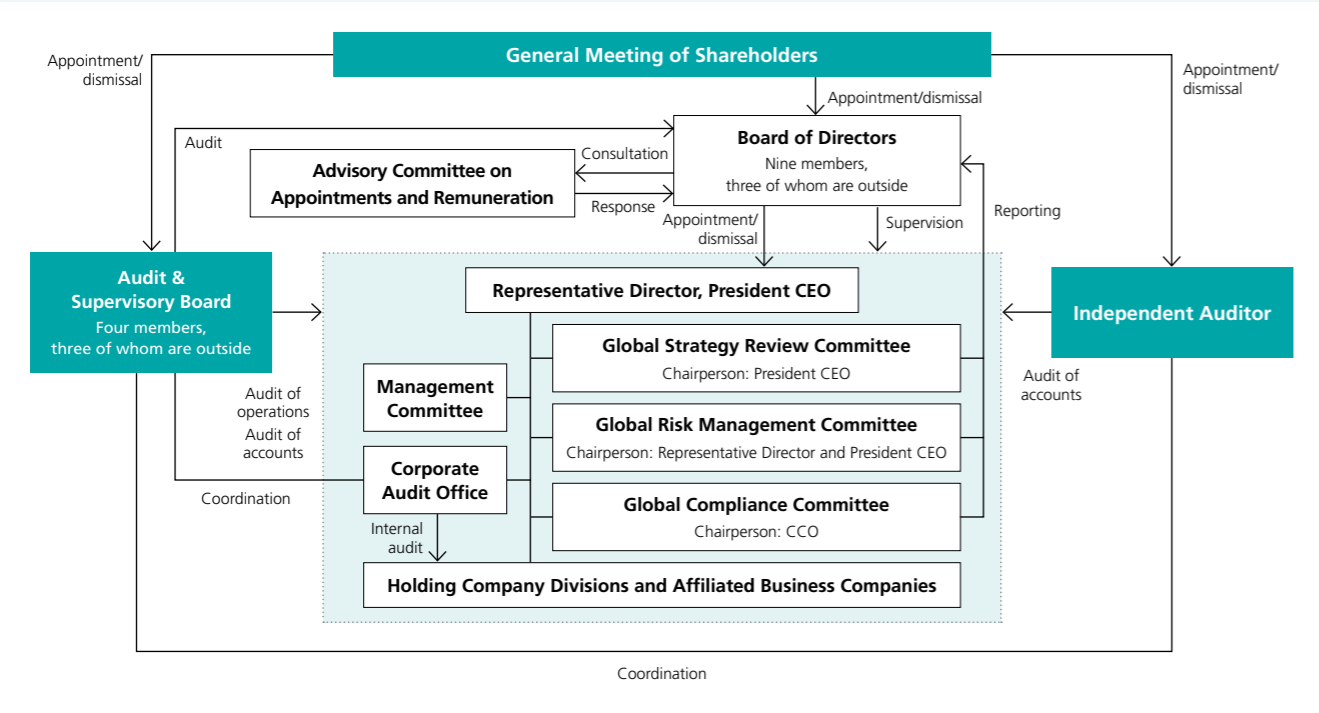
We strive to engage in corporate activities in a fair, impartial, and honest manner based on the highest ethical standards. To this end, we pursue compliance, stronger corporate governance, and security and safety for the continued reliable supply of gases as important management issues, and we are strengthening our efforts in these areas. As “The Gas Professionals,” we are responsible in particular for the safe and reliable supply of industrial gases to our customers across all manner of industries. In accordance with our belief that selling gases is commensurate with selling safety, we follow the presidential policy of practicing safety under our own higher standards, establishing a safety management system headed by the president to ensure comprehensive safety management.

NSHD Strengthening of Corporate Governance

In March 2015, the Financial Services Agency and the Tokyo Stock Exchange collaborated to issue Japan’s Corporate Governance Code. We take the principles of the Code seriously, and we have endeavored to make our systems more effective based on the intent of the Code. We will continue striving to improve compliance as we aim to achieve sustainable societies. We have established the Principles of Corporate Governance, believing that the essence of corporate governance is to ensure transparency and fairness in decision-making from the stance of our stakeholders and the perspectives of sustainable Group growth and long-term corporate value improvement. Our approach includes leveraging management resources effectively to increase the vitality of management through swift and conclusive decision-making.

(→ See pages 112 to 131 in this integrated report for more about the Group’s corporate governance.)

Auditing Structure and Risk Management Structure



NSHD Reporting Based on the Recommendations of the Task Force on Climate-related Financial Disclosures (TCFD)

Nippon Sanso Holdings announced its endorsement of the TCFD in November 2019. As a group, we have worked hard to reduce our environmental impact, engage in energy-saving activities, and expand our lineup of products that contribute to the reduction of greenhouse gas (GHG) emissions. Based on the final recommendations of the TCFD, we will strive even harder to make progress in these initiatives, expanding information disclosure in stages as we endeavor to improve Group corporate value. We have also established a governance structure with respect to climate change issues. Here, we are clarifying the roles and activity policies of each board and committee in our efforts to address climate change.

Board/Committee	Roles	Activities for FYE2021
Board of Directors	<ul style="list-style-type: none">Formulate basic management policiesReceive business status reports and supervise overall management	<ul style="list-style-type: none">Reported on GHG emissions (first half and second half business status reports, Technological Risk Management Committee reports)Selected MOS indexes for climate change issues; reported on activities conducted in the previous fiscal yearDeliberated and made decisions on various policies, including the Nippon Sanso Holdings Group Code of Conduct
Management Committee, etc. (Global Strategy Review Committee, Global Risk Management Committee, etc.)	<ul style="list-style-type: none">Discuss risks and opportunities related to climate change and decide policies for important climate change issues referred to the Global Strategy Review CommitteeHold meetings between Nippon Sanso Holdings and the Technological Risk Liaison Committees of each operating company to decide and implement globally those matters resolved by the Global Strategy Review Committee	<ul style="list-style-type: none">Reported on the FYE2020 GHG emissions and GHG emission reduction targets of each company within the Nippon Sanso Holdings GroupDeliberated FYE2031 GHG emission forecasts for Nippon Sanso Holdings Group companies
Board meetings of each operating company (Japan, the United States, Europe, Asia and Oceania, Thermos)	<ul style="list-style-type: none">Pursue and report on sustainability activities at each operating company	<ul style="list-style-type: none">Reported the status of initiatives in each region to Nippon Sanso Holdings

TNSC Compliance Education Initiatives

We provide compliance education and training on an ongoing basis for employees at all levels. Organization-specific compliance training helps employees learn the essentials of compliance, anti-monopoly laws, and anti-harassment laws. Our training is also designed to instill an awareness and desire to improve compliance in our employees. One unique feature of this training is that they are conducted by compliance staff in each division, branch, and main subsidiary. This framework allows us to communicate and convey the implications and importance of compliance from a perspective closer to the front lines of our businesses. In light of the change in work styles due to COVID-19, we conducted training via online technology and video broadcasts throughout FYE2021.

Sustainability Topics:
Management Issues

TNSC/NSHD Technical Academy: An Education Center for Improving Technical and Safety Capabilities

The mission of the Group is to provide industrial gases reliably and safety to our customers on a continued basis. We strive diligently to prevent industrial accidents by improving the technical and safety capabilities of our employees in accordance with our belief that selling gases is commensurate with selling safety. The Technical Academy serves as a center for employee education and offers technical seminars for employees to learn the basic technologies related to industrial gases and a wide range of specialized technologies. Certain training sessions involve the use of equipment that simulates high-pressure gas-related hazards, offering an environment in which employees learn the basics of safety. The academy uses virtual reality (VR) to simulate accidents, such as falling or caught-in accidents, to make employees aware of the dangers lurking in their daily work and to promote safe work practices.

The Technical Academy has been holding seminars online to improve risk awareness during the COVID-19 pandemic. These seminars are conducted via live streaming, and instructors use the same equipment used for regular hazard simulation training in their demonstrations. Instructors emphasize

two-way dialogue with participants to increase an awareness of risks, simulating potential workplace accidents and considering responses. Many employees that have participated in these seminars comment on the real sense of danger they felt during the lecture, an element not normally expected from an online course. More than 550 employees from domestic and overseas Group companies have participated in these online seminars, and the Technical Academy will continue to use these seminars as a pillar of safety education, continuing online courses in conjunction with live hazard simulation training.



VR-based hazard simulation device

TNSC CCPS Evaluation Correspondence (High-Pressure Gas Version)

Taiyo Nippon Sanso Corporation has developed its own accident intensity standards, based on the Center for Chemical Process Safety (CCPS) evaluation method* and in consideration of the potential impact of high-pressure gases. The company evaluates accidents in Japan based on a five-level scale and five characteristics: (1) physical injuries, (2) property damage, (3) potential impact of high-pressure gases, (4) environmental impact, and (5) social impact and media coverage. The evaluation results in an overall number of points by which the company quantifies intensity.

* This is a method proposed by the U.S. Center for Chemical Process Safety to prevent process-related accidents and disasters.

Intensity		Characteristics							
Level	Points	Physical Injuries	Property Damage	Potential Impact of High-Pressure Gases				Environmental Impact	Social Impact and Media Coverage
				Spewing and Leakage Inert Gases, Flammable Gases	Spewing and Leakage Flammable Gases, Toxic Gases	Spewing and Leakage Specialty High-Pressure Gases	Explosion/Fire, Rupture/Breakage, Other		
1	27	Multiple job site deaths Death of one or more persons off-site	Internal damage of ¥1 billion or more	Potentially fatal leakage Impact on wide area off-site	Potentially fatal leakage Impact on wide area off-site	Potentially fatal leakage Impact on wide area off-site	Potentially fatal Impact on wide area off-site	Environmental response costing ¥250 million or more	Significant impact on local community Large-scale investigation and monitoring by government, etc. National media coverage lasting several news cycles
2	9	Single job-site death Multiple lost-time on-site injuries	Internal damage of between ¥100 million and ¥1 billion	Leakage with the potential for serious injuries Impact off-site	Leakage with the potential for serious injuries Impact off-site	Leakage with the potential for injuries Impact off-site	Potential for serious injuries Impact off-site	Environmental response cost of between ¥100 million and ¥250 million	Local evacuation required Investigations and monitoring conducted by prefectural governments and police Brief coverage by national media
3	3	Lost-time injuries affecting one or more persons off-site Lost-time injury affecting one person on-site	Internal damages of between ¥10 million and ¥100 million	Leakage with the potential for minor injuries Leakage with the potential to cause site-wide damage on-site	Leakage with the potential for minor injuries Leakage with the potential to cause damage within the facility	Leakage with no physical injury or property damage (including minor leakage)	Potential for serious injuries Site-wide impact on-site	Environmental response cost of less than ¥100 million	Request to evacuate residents living around the plant as a precautionary measure Investigations and monitoring conducted by the company Local media coverage
4	1	Lost-time accident off-site affecting one or more persons Lost-time accident on-site affecting one or more persons	Internal damages of between ¥2.5 million and ¥10 million	Leakage with no physical injury but potential for property damage or other impact inside the facility	Minor leakage with physical injuries or property damage		No physical injury but impact inside the facility	Short-term remedial action required	Long-term investigations or monitoring by the company not needed Brief coverage by local media
5	0.3	First aid required for one or more persons on-site	Internal damages of between ¥250,000 and ¥2.5 million	Minor leakage with no physical injuries or property damage			Incident with no physical injuries or property damage Explosion or fire: Sound of explosion and/or small fire Rupture or destruction: Sound of rupture sound and/or deformation		

NGE Filling Station Safety Conferences (Safety Activities)

High-pressure gas filling stations require attention to safety at all times. Filling station safety is a minimum prerequisite for us, our colleagues, customers, and others to work in a safe environment. Not only are we reminded of the importance of safety every day, but we also strive to improve safety-related communications.

For example, we held a Safety Excellence Journey event, attended by employees from plants, offices, workplaces, and their own residences. The facilities manager served as the instructor for this training provided to all operators. The purpose of this safety seminar was to help employees understand and recognize the rules for maintaining and improving safety with respect to the following three important matters:

- 1) The proper use of personal protective equipment (PPE)
- 2) The importance of inspecting cylinders before filling
- 3) The safe handling of cylinders.

We hold these safety seminars and display safety posters at filling stations to raise safety awareness among all employees working at filling stations across Europe.



The safety poster displayed at filling stations

Asia Safety Conferences

Leeden National Oxygen Ltd. (Leeden NOX) has been holding annual safety conferences since 2017, completing four such events through 2020. Participants are mainly plant equipment supervisors, safety officers, and managers from company subsidiaries. The purpose of the conference is to encourage a strong safety culture in the workplace, emphasizing the safety and health of workers. The ultimate goal is to share experiences among Leeden NOX group companies and pursue the group's common safety policy, As Low As Reasonably Practicable (ALARP), to reduce and eliminate risks.



3rd safety conference

MTG Safety Activities at Matheson Tri-Gas

Matheson Tri-Gas, Inc. (MTG) formulates and follows an annual safety activity plan to reduce and prevent accidents. MTG pursues a culture of safety through common safety standards and internal audits, conducted in conjunction with subsidiaries Continental Carbonic Products, Inc., and Western International Gas & Cylinders, Inc.

MTG also fosters safety culture through safety training activities to prevent slips and falls when handling gas cylinders and getting on or off vehicles. In the future, MTG will play a central role in further safety initiatives with a view toward creating an integrated safety organization with the aforementioned subsidiaries.



Device introduced to prevent injuries when moving gas cylinders

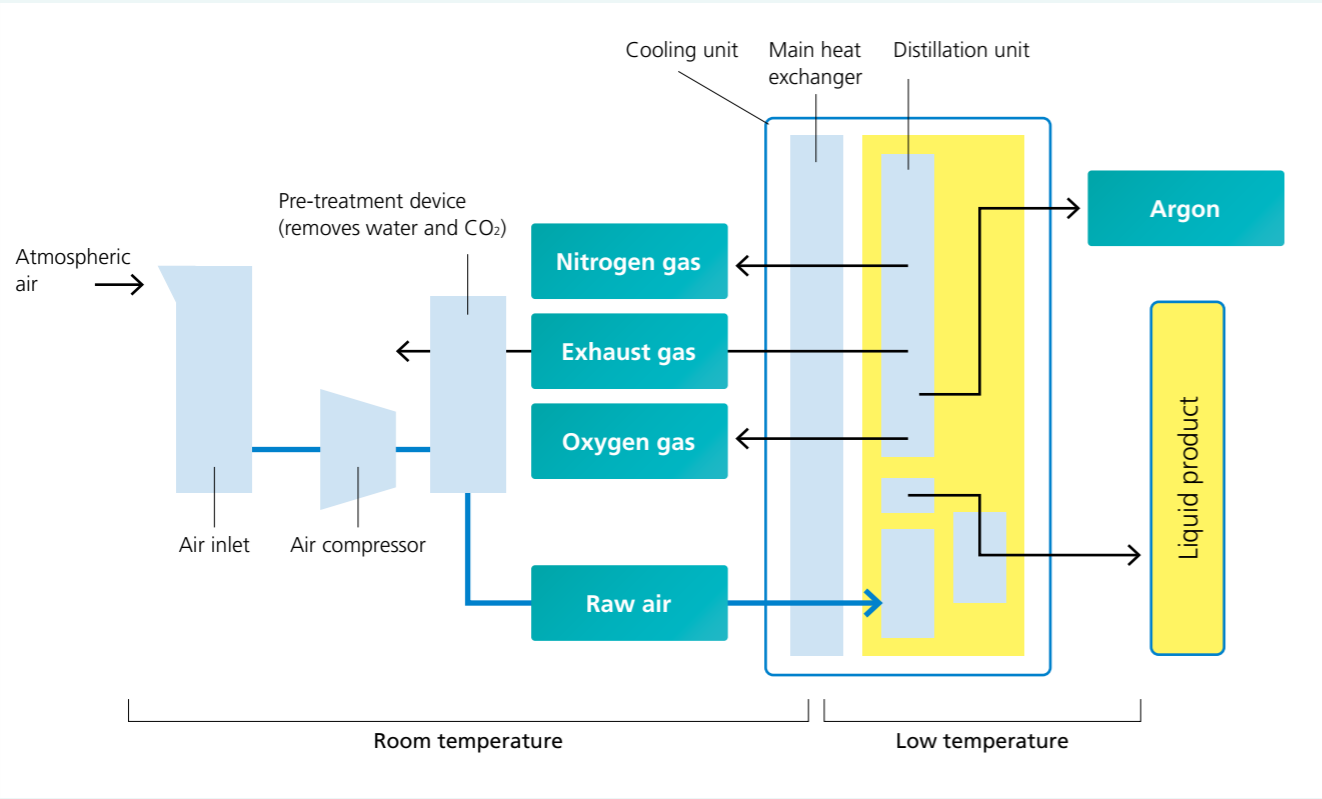
The Earth

The Nippon Sanso Holdings Group responds to climate change, working under the main banner of preventing global warming. In this regard, our efforts include reducing energy consumption per unit of production at gas production plants, encouraging energy conservation in our offices, and increasing the transport efficiency of our tanker trucks. The Group brings visibility to the environmental impact associated with manufacturing its mainstay products and with the processes supporting its business activities. We calculate our total GHG emissions and reduction contribution, using this information to reduce our environmental impact further. In addition, we develop and market products that contribute to global environmental conservation through lower environmental impact.

Environmental Impact of Oxygen, Nitrogen, and Argon Manufacturing Processes

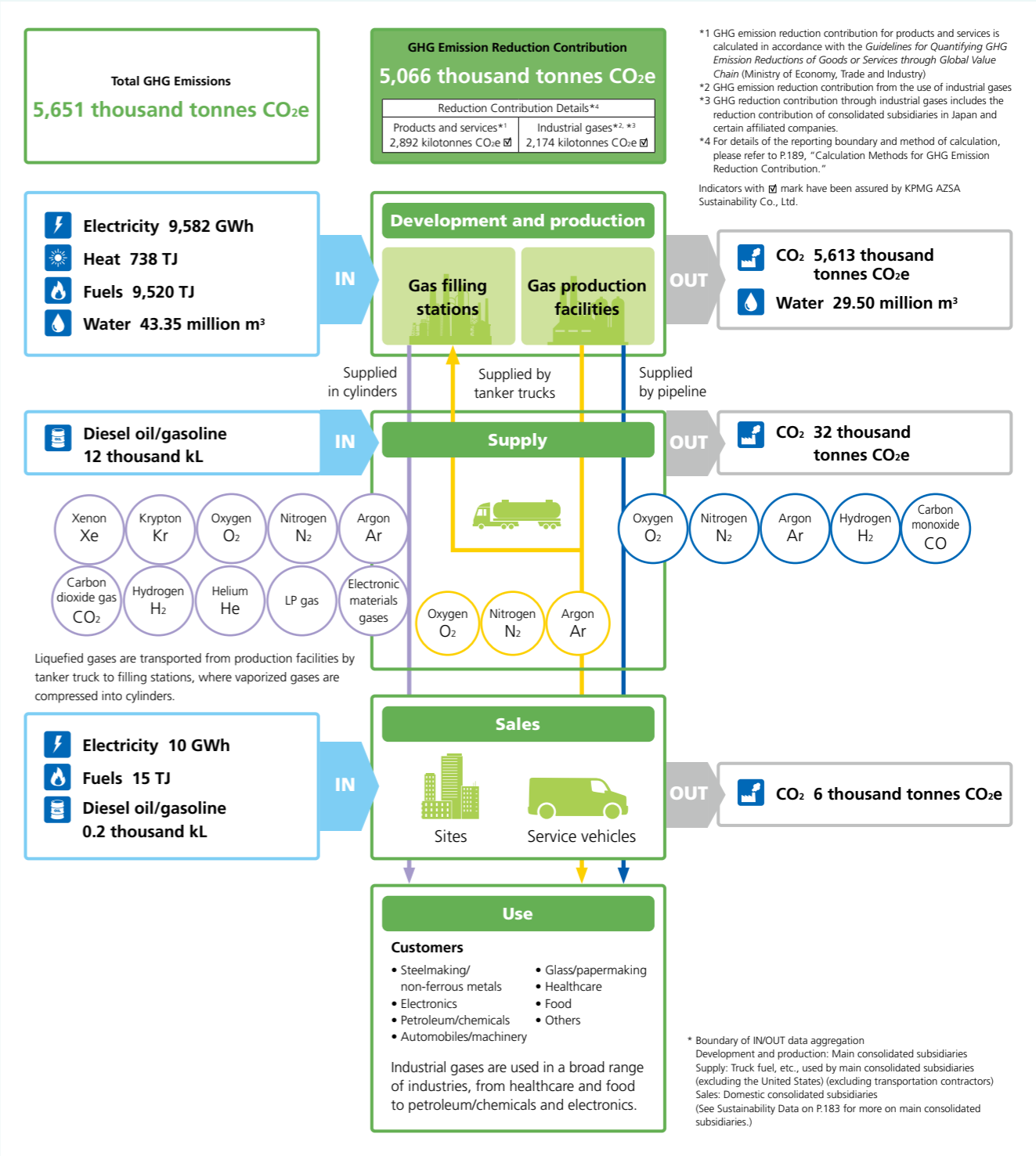
The production of oxygen, nitrogen, and argon, which constitute the main products of the Group, requires a tremendous amount of electricity. Oxygen, nitrogen, and argon are manufactured by separating air in deep-cooled air separation equipment. First, we compress air, which is the raw material. Compressing air requires much energy and much electricity. Then, we cool the compressed air to near liquefaction temperature and send it to the distillation unit. Inside the distillation unit, gaseous air and liquid come into contact, causing distillation and separation. Nitrogen, which has a low boiling point, is extracted from the top layer. Oxygen, which has a high boiling point, is concentrated into a liquid and extracted from the bottom layer. Argon is extracted from the middle.

Structure of a Deep-Cooled Air Separation Unit (ASU)



Material Balance of the Nippon Sanso Holdings Group

The main products of the Nippon Sanso Holdings Group are oxygen, nitrogen, and argon. We manufacture these products using air as the raw material, which we return mostly to the atmosphere. Since both raw material and finished product are gases, we generate little waste. Since the raw material is air, we do not need to procure any other raw materials. In other words, the industrial gases business model of separating and selling air is a sustainable, resource-recycling business that consumes essentially no raw materials and generates no waste.



Sustainability Topics:
The Earth

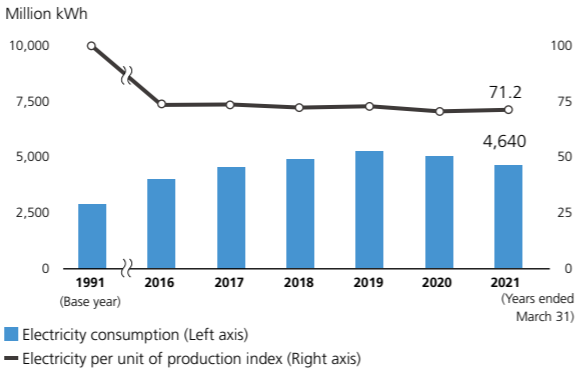
Efforts and Achievements in Preventing Global Warming

The process of producing industrial gases requires significant amounts of electricity. The Nippon Sanso Holdings Group takes measures to reduce the risk of climate change through initiatives to reduce the environmental impact of its business activities. These measures include reducing energy consumption per unit of production at gas production plants, undertaking energy conservation in our offices, improving tanker truck transport efficiency, and expanding the use of energy from renewable sources.

We also strive to increase disclosures and expand the scope of data collection related to non-financial information. We disclose information by calculating and publishing our GHG emission reduction contribution associated with environment-friendly products and support the TCFD.

* See Response to Environmental and Social Issues on page 66 for more on TCFD disclosures.

Trends in Electricity Consumption and Energy Consumption per Unit Index



Reporting boundary: Gas production plants of consolidated subsidiaries in Japan, including Taiyo Nippon Sanso Corporation, and certain affiliated companies

Other Major Initiatives

Issues and Targets	Major Initiatives	Achievements	Target Companies
Implement energy conservation at Company business locations: Reduce electricity usage (annual average of 1% over the medium to long term)	<ul style="list-style-type: none">• Turned off unnecessary office automation equipment; turned off unnecessary lighting• Replaced air conditioning, office automation equipment, lighting equipment, and shared facilities with energy-saving equipment• Implemented <i>No Overtime Days</i> and <i>Cool Biz</i>	5.0% reduction (vs. FYE2020)	All business locations of Taiyo Nippon Sanso Corporation (excluding gas production plants)
Pursue more efficient tanker truck transportation: Reduce fuel consumption per unit of product transported	<ul style="list-style-type: none">• Optimized delivery routes• Revised delivery intervals• Conducted more in-person weight• Introduced new tanker trucks• Implemented consistent eco-driving training	27.4% reduction (vs. FYE1991)	Taiyo Nippon Sanso Corporation group logistics companies and major transportation contractors
Contribute to the environment through products: Expand sales of products that contribute to the environment	Expanded sales of hydrogen stations, SCOPE-Jet®, MG Shield®, SF ₆ recovery services, Thermos products, nitrogen gas supply systems for laser processing, combustion-type gas treatment equipment, and new refrigerants	Reduction contribution*2 of 2,892 thousand tonnes CO ₂ ☑	Main consolidated subsidiaries of Nippon Sanso Holdings Corporation*1
Contribute to the environment through products: Expand sales of industrial gases	Oxygen-enriched combustion in blast furnaces	Reduction contribution*2 of 2,174 thousand tonnes CO ₂ ☑	Consolidated subsidiaries and certain affiliates of Nippon Sanso Holdings Corporation*1

*1 For details about the reporting boundary and calculation method, please refer to page 189, "Calculation Methods for GHG Emission Reduction Contribution."

*2 We calculated CO₂ reduction contribution based on the *Guidelines for Quantifying GHG Emission Reductions of Goods or Services through Global Value Chain* (Ministry of Economy, Trade and Industry; March 2018) and other standards.

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

TNSC Hydrogen Filling System at the Kawasaki-Mizue Business Base

The Kawasaki-Mizue Business Base of Taiyo Nippon Sanso Corporation applied for recognition as a regional renewable energy hydrogen station enterprise, which is a project under the auspices of the Ministry of the Environment. The plant constructed a CO₂-free renewable energy hydrogen filling facility as a model for on-site hydrogen filling stations in accordance with the Kawasaki Hydrogen Strategy for the Realization of a Hydrogen Society in Kawasaki City. This project is just one measure to reduce the environmental footprint of business activities in the local community. The plant generates renewable energy (solar panels) to power the facility, using this electricity to produce hydrogen via a water electrolysis hydrogen generator. In addition, the plan works to optimize the series of related systems, from pressure boosting to pressure storage and filling. Fuel cell forklifts filled with CO₂-free hydrogen as fuel transport objects within the plant premises.



Hydrogen filling system at the Kawasaki-Mizue Business Base

TNSC Hydrogen for Racing Cars at the Fuji 24 Hours

The Gas Engineering Center and the Chubu Branch Office filled hydrogen engine cars with hydrogen gas at Fuji Speedway during the qualifying round of the Fuji 24 Hours, the third round of the Super Taikyu (S-Tai) Series 2021. The entry of a hydrogen-fueled racing car was a world first for Toyota Motor Corporation, which is looking for ways to offer exciting motor sports even in a carbon-neutral society. We used a commercial mobile filling station for the gas pit. However, we discovered certain issues unique to racing, including the need to fill and store gas as quickly as possible. We will continue to work toward a decarbonized society through various hydrogen gas engineering services, addressing issues as they arise.



Filling a hydrogen-fueled racing car

TNSC Training and Workshops Link SDGs Contributions to Business Opportunities

Many of our customers are engaging in measures to combat climate change. For Nippon Sanso Holdings to meet the needs of these customers and propose the right Group applications, every sales representative must be aware of the significance of the SDGs and the role of the Group. To this end, Taiyo Nippon Sanso Corporation holds sales training sessions and workshops to further an understanding of the SDGs and the link between our products and services. We will continue to contribute to society by providing the best solutions for our customers as they respond to the SDGs.



Seminar on the SDGs and related business opportunities

Sustainability Topics:
The Earth

TNSC Recycling Project in Collaboration with Business Partners

Taiyo Nippon Sanso Corporation is a co-sponsor of the BLUE SEED PROJECT, a project headed by business partner SEED Co., Ltd. Plastic waste has been discovered widely throughout the world's oceans, and the volume of plastic waste continues to increase steadily, becoming an extremely serious problem for the marine environment. In response, SEED launched a project to collect and recycle disposable contact lens blisters (empty cases). By supporting this project, we aim to contribute to environmental improvement and help achieve sustainable societies.



Collecting disposable contact lens blisters

NGE CO₂ Recycling Equipment to Reduce CO₂ in the Atmosphere

Nippon Gases Iberia has agreed to partner in the construction and operation of a CO₂ capture unit in Cartagena. The facility will run on 100% renewable energy and is expected to be operational in spring 2022. The CO₂ captured will play an important role in the circular economy by avoiding wasteful emissions of this gas into the atmosphere.

NGE New Initiative to Reduce Plastic Bottles and CO₂ Emissions

Nippon Gases Euro-Holding S.L.U. (NGE) won a contract to supply the CO₂ used to make the carbonated water supplied to public water fountains. Under the agreement, NGE supplies carbonated water to more than 200 water fountains in and around the city of Rome, Italy, including the gardens of the Quirinal Palace, the official residence of the President of the Republic of Italy. The supply of carbonated water to these water fountains has reduced the use of plastic bottles by 1,800 tonnes. NGE has also contributed to a reduction in CO₂ emissions on the order of 5,000 tonnes.

NGE Construction of First Full-Scale Liquefied Coal Import Terminal in Ireland to Reduce CO₂ Emissions

The annual demand for CO₂ in Ireland is 40,000 tonnes. To date, the country has been heavily dependent on transport from the United Kingdom. NGE developed plans to build a liquefied coal import terminal at Warrenpoint, Ireland's fifth largest port. Warrenpoint is located between Ireland's two largest cities, Belfast and Dublin, and the terminal is expected to reduce transportation costs.

The terminal became fully operational in January 2021 and has already contributed significantly to improving the supply chain in the Irish market, reducing Ireland's carbon footprint by 560,000 km and CO₂ emissions by about 500 tonnes.



Warrenpoint terminal

NGE Oxygen Usage Technology in Aluminum Scrap Processing Reduces CO₂ Emissions

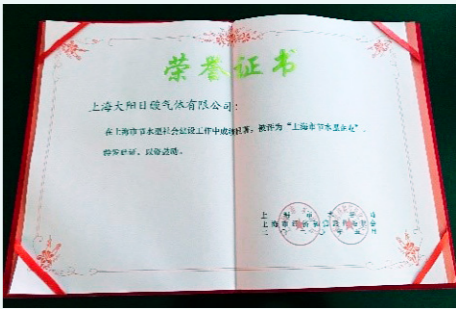
In Germany, the presence of paint, oil, and plastic residue on processed aluminum scrap is a constant issue faced by customers. When these scraps are melted in an aluminum melting furnace, the impurities evaporate to form hydrocarbons, which exit the furnace together with exhaust gases and cause air pollution. One solution to this problem is the use of oxygen gas to remove environmentally harmful components from the exhaust gas of aluminum melting furnaces. The use of oxygen gas also conserves the natural gas used in heating the melting furnace.

Together with customers, we have introduced laser technology that measures the concentration of hydrocarbons in a furnace instantly, allowing for the control of oxygen burners to ensure complete combustion of hydrocarbons. The resulting energy reduces the natural gas consumption of the process by up to 10%.

In addition, this technology allows customers to increase the ratio of contaminated scrap, or to use even dirtier scrap, for recycling. In this way, we offer an environmental benefit for all our customers.

Asia Commendation by the Shanghai Water Authority as a Water-Saving Company

Shanghai Taiyo Nippon Sanso Gas Co., Ltd. has been engaged in the efficient use of industrial water. As part of these efforts, the company has upgraded water meters, installed more water meters to better understand the status of industrial water use, and modified water pumps to save water. The Shanghai Water Authority recognized the company for its outstanding work in the conservation and efficient use of industrial water, and Shanghai Taiyo Nippon Sanso Gas will continue striving to save water and improve efficiency to reduce the environmental impact of its businesses.



Certificate for water conservation received from the Shanghai Water Authority

ISO 14001 Status

Nippon Sanso Holdings strives to secure ISO 14001 certifications, an international environmental management system standard, for companies throughout the Group. To date, certifications have been acquired by 13 gas businesses in Japan, one gas business in the United States, 15 gas businesses in Europe, 12 gas businesses in Asia and Oceania, and two Thermos businesses.

Gas Business in Japan

Taiyo Nippon Sanso Corporation
Shizuoka Sanso Inc.
Japan Fine Products Co., Ltd.
Sogo Kariya Sanso Corporation
Taiyo Nippon Sanso Engineering
Taiyo Nippon Sanso Gas and Welding
Taiyo Nippon Sanso Higashikanto
Daichikaimei Co., Ltd.
Nippon Ekitan Corporation
Nissan Tanaka Corporation
Funtaigiken Co., Ltd
Kyokuyo Semiconductors Co. Ltd
Taiyo Nippon Sanso Engineering Taiwan, Inc.

Gas Business in the United States

Matheson Tri-Gas, Inc.

Gas Business in Europe

Nippon Gases Belgium NV
Nippon Gases Denmark A/S
Nippon Gases Deutschland GmbH
Nippon Gases España S.L.U.
Nippon Gases France SAS
Nippon Gases Industrial S.r.l.
Nippon Gases Norge AS
Nippon Gases Offshore Asia Pacific Pte Ltd
Nippon Gases Offshore Ltd
Nippon Gases Operations S.r.l.
Nippon Gases Pharma S.r.l.
Nippon Gases Refrigerants S.r.l.
Nippon Gases Sverige AB
Nippon Gases UK Ltd
Oximesa S.L.U.

Gas Business in Asia and Oceania

Ayutthaya Industrial Gases Co., Ltd.
Leeden National Oxygen Pte. Ltd.
National Industrial Gases. Ltd.
Nippon Sanso (Thailand) Co., Ltd.
Nippon Sanso Ingasco Clark, Inc.
Nippon Sanso Ingasco Philippines, Inc.
Nippon Sanso Vietnam Joint Stock Company
Shanghai Taiyo Nippon Sanso Gas Co., Ltd.
Nippon Sanso Taiwan, Inc.
Dalian Taiyo Nippon Sanso Gas Co., Ltd.
Matheson Specialty Gas (Xi'an) Co., Ltd.
Yangzhou Taiyo Nippon Sanso
Semiconductor Gases Co., Ltd.

Thermos Business

Thermos K.K.
Top Thermo Mfg. (Malaysia) Sdn. Bhd.

Society

The Nippon Sanso Holdings Group proposes solutions that combine gas and gas-related equipment, working together with our customers and other stakeholders to develop and market a wide range of products for sustainable societies. In this section, we highlight Group initiatives, focusing on products and services that contribute solutions to the environment and society.

We will also discuss quality control and quality assurance activities that ensure our products are used safely and with confidence by our customers.

Products and Services That Contribute Solutions to Environmental and Social Issues

TNSC Operational Efficiencies through the New IGSS Gas Supply System

Taiyo Nippon Sanso Corporation has developed the Intelligent Gas Supplying System (IGSS). IGSS is a new gas supply system that combines advanced digital technologies such as robotic process automation (RPA), the Internet of Things (IoT), and artificial intelligence (AI) to improve operational efficiency at semiconductor plants and other facilities that use high-pressure gas. IGSS integrates multiple systems, including Cdrive®, which manages container transportation; LUMsystem®, which manages containers; Ceyes®, which is a daily inspection system; and TELEOS-i®, which is a gas monitoring system. Operators use tablet devices to monitor information centrally. This system automates the transportation of high-pressure gas containers and the inspection of related facilities based on aggregated information. In this way, IGSS offers labor savings, energy conservation, and reduced operating risks.



Cdrive®, a robotic system for automated conveyance of gas containers

TNSC Oxygen Combustion Technology That Contributes to Energy Savings and Lower CO2 Emissions

Taiyo Nippon Sanso Corporation is developing oxygen combustion technology for use in a variety of applications. Compared to regular air combustion, oxygen-enriched combustion reduces the amount of exhaust gas and exhaust gas heat loss. At the same time, this type of combustion increases the formation of nitrogen oxide (NOx) as the flame temperature rises. Controlling NOx formation is essential when using oxygen-enriched combustion in high-temperature furnaces or smelters. Innova-Jet®, offered by Taiyo Nippon Sanso Corporation, reduces the generation of NOx significantly, while also lowering fuel consumption by more than 50%.



Innova-Jet® swing produces a flame that heats a wide area efficiently and uniformly using automated oscillation

TNSC SF6 Gas Recovery Service Created Using Proprietary Technology

Sulfur hexafluoride (SF6) gas is a type of GHG. It is one of the gases targeted for global warming prevention and emission control, as its global warming potential (GWP) is high at 23,900 the gas remains in the atmosphere over a long period of time. GWP is the ratio of the effect of a GHG on global warming compared to carbon dioxide. Work sites using SF6 gas have reported issues including a loss of purity after recovery, preventing reuse. To address this issue, we provide a service that collects SF6 gas using Taiyo Nippon Sanso Higashikanto Corporation's own proprietary technology. Through this service, work sites can reuse or detoxify and recycle the gas on a consistent basis. The recovered SF6 gas is decomposed in a treatment plant and converted back to calcium fluoride (CaF2), with the resulting material used as a raw material for fluorine products. In this way, we contribute to a recycling-oriented environment.



Providing a full range of equipment and services related to SF6 recovery

TNSC Creation of a New-Energy Society through the Hydro Shuttle® Package-Type Hydrogen Refueling Station

The Hydro Shuttle® package-type hydrogen refueling station integrates the four major components of a hydrogen refueling station—dispenser, pre-cooler, hydrogen compressor, and storage—into a single unit. These compact (9 m × 2 m × 2.6 m) units can be used not only as permanent stations but also as truck-mounted mobile stations. The package format significantly reduces the cost of installation, while the simplification of components means the cost of fabrication is only half that of conventional permanent stations. Because it can be used as a mobile station, a single Hydro Shuttle® offers promise for multiple applications, including on-site stations equipped with hydrogen production facilities, off-site stations that supply hydrogen produced at facilities elsewhere, and traveling stations that transport hydrogen from one location to another.

In 2017, Taiyo Nippon Sanso started operation of Nimohyuss Hydrogen Station Minami-Rokugo and Nimohyuss Hydrogen Station Setagaya, operated by Nippon Mobile Hydrogen Station Services, LLC (nicknamed “Nimohyuss”). Looking ahead, we will continue working to realize an energy-conscious society.



Hydro Shuttle® mobile hydrogen station

TNSC Contribution to Reliable Supply and Energy Conservation through New High-Performance PSA Nitrogen Gas Generators

The pressure swing adsorption (PSA) nitrogen gas generator is a device that supplies nitrogen gas. The generator uses the properties of adsorbents and a repeating cycle of pressurization and depressurization to adsorb oxygen from the air to generate nitrogen on a continual basis. The Taiyo Nippon Sanso Nitrocube® RE-LT Series nitrogen generators use a new adsorbent that conducts separation efficiently, even at raw air press of less than 0.7 MPa. The RZ Series of nitrogen generators is equipped with a new feature called Heat Drive that provides reliable production gas even at high temperatures in the surrounding area.



Nitrogen gas supply system for laser processing equipment (LT-F)

Sustainability Topics:
Society

TNSC Solutions Provided through More Efficient Nitrogen Production Equipment

We use nitrogen production equipment at the point of demand to produce and supply nitrogen to customers who consume large volumes of nitrogen gas. This equipment uses a non-fluorocarbon process that eliminates the use of chlorofluorocarbon (CFC) refrigerators that had been necessary in the former manufacturing process. The JN model is equipped with standard noise-reduction measures, while the MG model is a highly efficient unit that improves nitrogen yield by improving the process. This MG model also reduces the power per unit required for gas production by approximately 20% compared to the previous equipment offered by Taiyo Nippon Sanso Corporation. Furthermore, this large-volume model provides power savings of nearly 30% compared to older models.

This nitrogen production equipment can also produce an appropriate amount of oxygen gas for customers who are large users of nitrogen gas and who also use oxygen gas. This feature eliminates the need to ship oxygen gas by tanker truck, as had been necessary in the past, contributing to a more reliable supply and greater transportation efficiency.



Nitrogen generator

TNSC Sun Cutter® Fuel for Gas Cutting Reduces Environmental Impact and Improves Work Efficiency

Gas cutting is a method used widely for cutting steel using flammable gas and oxygen. Taiyo Nippon Sanso Corporation has developed and markets the Sun Cutter® HL-1, which uses hydrogen as the main combustible gas. The product is defined by its low environmental impact, emitting almost zero carbon dioxide, and low radiant heat, making for a more comfortable operating environment. In addition to environmental performance, Sun Cutter® HL-1 offers superior cutting performance at 1.4-times the speed of conventional products, reduced heat distortion, and improved cutting surface quality.



Sun Cutter® HL-1 in use

TNSC VPSA Biogas Purifier

Vacuum pressure swing adsorption (VPSA) biogas purifiers use vacuum regenerative PSA technology to recover methane gas and carbon dioxide from biogas. These purifiers can produce methane gas at over 90% purity and carbon dioxide concentrations of more than 99%. VPSA biogas purifiers are used as a source of biogas for sewage treatment and other small- and medium-sized distributed treatment facilities.

The highly pure methane gas separated and refined from biogas is used as an alternative fuel to city gas in power generation equipment and boilers. This use as alternate fuel contributes to global environmental conservation as a carbon-neutral, locally produced/locally consumed energy source.

At the same time, the purified carbon dioxide generated by VPSA biogas purifiers can be used as a raw material for liquefied carbon dioxide gas, used for algae and agricultural applications (CCU), or used for carbon dioxide storage (CCS).



VPSA biogas purifier

TNSC Bistranza® Food Technology Contributes Solution to Food Waste

The Group has a long track record in food technologies, starting in 1962 with the introduction of technology for rapid freezing by a continuous freezer unit. This technology has been refined over many years and commercialized under the Bistranza® brand. In addition, the past few years have seen a rapid uptake of modified atmosphere packaging (MAP) in major convenience stores and supermarkets. By injecting gases used for food preservation, such as nitrogen, into food packaging, food can be kept fresh for longer without the use of chemical preservatives. Expiration dates can be extended significantly, reducing food waste due to expiration as well as energy used in waste processing, ultimately reducing CO₂ emission.



Liquid nitrogen tunnel freezer Bistranza-FZT

TNSC Gas Exchange Equipment Helping to Reduce Food Loss

MAP has seen rapid uptake in the food industry. By injecting gases such as nitrogen into food packaging, food can be kept fresh for longer without the use of chemical preservatives. Expiration dates can be extended by 1.5 to 3 times, reducing food waste due to expiration as well as energy used in waste processing, ultimately reducing CO₂ emissions.



MAP technology Bistranza® MAP enables food to be kept fresh for longer

NGE Supply of High-Purity Oxygen for Salmon Farming in Norway

Increasing the oxygen concentration in fish ponds promotes the growth and vitality of farmed fish. In addition, injecting nitrogen gas during package sealing is an effective means to maintain freshness during food processing. NGE has installed two ASUs to meet demand for industrial gases in Norway, which has a flourishing fisheries industry. As global demand for fish increases, Norway expects to grow its farmed salmon production by an average of 6% annually.



Norwegian marine aquaculture facility

Sustainability Topics:
Society

Thermos Contributions to Energy Conservation with World-Renowned Proprietary Vacuum-Insulation Technology

The Thermos business of subsidiary Thermos K.K. capitalized on its vacuum-insulation technologies cultivated in the industrial gases business to develop the world’s first stainless steel vacuum-insulated bottle in 1978. The Thermos lineup also includes portable vacuum-insulated mugs for hot and cold beverages and sports-use vacuum-insulated beverage bottles, as well as the Shuttle Chef® series of vacuum-insulated thermal cooking pots, which continue to cook food with residual heat after being heated for only a short time. All of these products have earned certification under Japan’s Eco Mark program.

In line with its goal of providing solutions that enhance lifestyles and are environment friendly, Thermos continues to promote the development of a variety of products that reduce resource use and contribute to environmental protection.



Asia and Oceania Products and Services That Contribute to the Environment for Asia and Oceania

In Asia and Oceania, where significant economic growth is expected, we are developing products and services that contribute to the environment. This effort targets various industry sectors, including welding and insulated windows. In addition to contributing to the environment, we are also expanding our products and services that contribute to social issues such as food loss and healthcare front lines.

	Application	Major Countries and Regions
Products and services that contribute to the environment	Blast furnace (Oxygen)	Singapore
	Electric furnace (Oxygen)	Thailand, Philippines, Vietnam, and China
	Welding (Argon and helium)	Singapore, Thailand, China, Vietnam, Philippines, and Australia
	Filling inside multilayered glass windows (Krypton)	Philippines
	Combustion exclusion devices	Taiwan
Products and services that contribute to society	Food freezing and preservation (Nitrogen)	Thailand, Australia, Philippines, Myanmar, and Malaysia
	Aquaculture (Oxygen)	Philippines, Thailand, Vietnam, and Myanmar
	MRI equipment (Helium)	India, China, and Singapore
	Medical (Oxygen)	India, Myanmar, Australia, Philippines, Thailand, and Singapore

Improvements in Product and Service Reliability

NSHD Quality Management System

The main products of the Group are oxygen, nitrogen, argon, the air separation unit to produce these gases, and facilities to store and supply them. In addition, we provide semiconductor-related equipment and construction work, medical gases and equipment, helium gas, and hydrogen gas. Group companies involved in these businesses have acquired ISO 9001 certification, which is the international standard for quality management systems.

At the same time, we strive to raise customer satisfaction and make continual improvements through the effective operation of these systems. Taiyo Nippon Sanso Corporation acquired ISO 9001 certification for its sales and logistics departments related to liquid oxygen, liquid nitrogen, liquid argon, and specialty gases. The company leverages this certification not only in product quality but also in establishing systems and support for the reliable supply of these products. In addition, the Taiyo Nippon Sanso Group has established an internal system we call the accreditation system for analysis ability of industrial gas manufacturing plants. We apply this system to production plants that analyze and ship industrial gases, including oxygen, nitrogen, argon, hydrogen and helium. The purpose of this system is to maintain and improve the accuracy of analyses by certifying facilities possessing a certain level of analysis and control technology.

As of March 2021, 108 Nippon Sanso Holdings Group companies have acquired ISO 9001 certification. We will continue to strive for the effective operation of our quality management systems, aiming to raise customer satisfaction and accomplish continual improvements.

NSHD Product Safety

In accordance with the Product Safety and Quality Policy to reduce risk throughout the product life cycle and to provide safe and reliable products, the Nippon Sanso Holdings Group established a product safety management system to ensure that customers use its products with peace of mind.

The Taiyo Nippon Sanso Group examines its many products from the early design stages to reduce risks and ensure safety throughout the product life cycle, from manufacture to transport, repair, and disposal. Product safety reviews are conducted, and qualified in-house personnel evaluate product safety, after which a representative of each unit, center or affiliated company issues a Declaration of Conformity for Product Safety. This is the process by which we ensure product safety.

Sustainability Topics:
Society

Contributions to Medical Care

TNSC Contribution to HOT

Japan’s coming super-aged society is driving demand for a better system of home healthcare. As such, we are taking steps to enhance our home healthcare services, which center on home oxygen therapy (HOT). HOT is a medical treatment involving the provision of high-concentration oxygen using oxygen concentrators, cylinders, and other devices in non-hospital settings used primarily in the management of chronic obstructive pulmonary disease (COPD), a cause of chronic respiratory insufficiency, HOT is also used in the treatment of a variety of other conditions, including interstitial pneumonia and advanced lung cancer. The use of HOT has expanded significantly since it was first approved for coverage under Japan’s national health insurance (NHI) program in 1985, with an estimated 160,000 patients currently receiving this therapy. In addition to enabling patients to better balance the demands of everyday life with treatment, there is also strong evidence of additional medical benefits, including prolonged survival, improved mobility, and a reduction in the frequency of hospitalization. In addition to systems for use when patients are at home or out, there is a need for systems that can be used in a variety of everyday situations, including at school and work, as well as when traveling. Moreover, because they are operated by patients or family members, HOT systems must be easy to use to ensure safety and peace of mind.

We promote product development with the aim of addressing diverse needs, with an emphasis on user-friendliness. For example, when HOT patients leave the house, they can transport oxygen cylinders easily using a dedicated cart, but this is shunned by more than a few

patients for a variety of reasons, including the weight of portable cylinders and the attention they attract. In response to concerns such as these, we upended conventional ideas of oxygen cylinders with an ultra-compact portable model that can be carried with only a shoulder strap, thus leaving both hands free in an entirely inconspicuous fashion. Other feedback included comments that the oxygen cylinders were complex and difficult to use, and that patients wanted them to last longer. In response, we integrated the cylinder valve with a built-in oxygen regulator that allows oxygen to be delivered efficiently when breathed in, thereby making cylinders last longer. In addition, we extended the continuous usage time and reduced the weight of the unit by combining it with a lightweight conserver. With an increasing number of patients now able to choose home healthcare, we will also continue to promote the development of easy-to-use devices that can be used free of worry and to enhance our supply configuration.

* As of summer 2021, oxygen concentrators are being used in the home and at oxygen stations by patients experiencing respiratory distress in regions where in-home treatment is rising due to the increase in COVID-19 infections.



Ultra-compact portable oxygen cylinder



Oxygen concentrator (Oxywell 5A)

TNSC OXYMED Medical Gas Supply System

Drawing on its many years of business experience in the medical gases field, we analyzed near-miss events* in hospitals to develop the OXYMED medical gas supply system, which has been pursued for safety and ease of use. Our wide-ranging product lineup and detailed service system enables us to provide a high-quality gas supply system.

* Incidents that may not lead to serious disasters or accidents but are one step short of becoming a direct cause of serious disasters or accidents



High-pressure gas manifold

TNSC Water-18O PET Diagnostic Reagent Material

The Company produces Water-18O, a raw material for positron emission tomography (PET) diagnostic reagents, based on the air separation technology we have cultivated to date. PET diagnosis is widely used as a method for the early detection and diagnosis of cancer. Water-18O, or water labeled with 18O, which is an oxygen isotope, is indispensable as a raw material for PET diagnosis. We manufacture Water-18O at three plants in Japan and boast the world’s largest production capacity of 600 kg per year. The SI Innovation Center manufactures the final product under a GMP-compliance quality control system, providing a stable supply of high-quality Water-18O to more than 40 countries. Incidentally, Water-17O, which we produce at the No. 3 plant in Shunan, Yamaguchi Prefecture, is expected to be used as a magnetic resonance imaging (MRI) contrast medium in the diagnosis of a variety of brain diseases.



Stable isotope Water-18O

TNSC Contribution to Bioresearch Development

Since induced pluripotent stem (iPS) cells were invented in 2008, we have seen a continued acceleration of R&D in the field of regenerative medicine using human cells. The practical implementation of regenerative medicine requires technology for the reliable management of high-quality cultured cells and the cryopreservation of large quantities of living cells, vaccines, and blood. Taiyo Nippon Sanso Corporation, Japan’s sole manufacturer of liquid nitrogen cryopreservation vessels, develops technologies in areas that include regenerative therapy and biomedicine, delivering a lineup of diverse products.

Taiyo Nippon Sanso Corporation has achieved a roughly 50% share of the market (cumulative sales basis) for cryopreservation vessels used in the cryopreservation of biological samples with liquid nitrogen. Leveraging its strengths as Japan’s sole manufacturer of this product, the company has developed a fully automatic cryopreservation system called CryoLibrary® ADVANCE, meeting a wide range of cryopreservation needs.



Liquid nitrogen cryopreservation system



CryoLibrary® ADVANCE

NGE Care Center in Spain for Patients Using Home Respiratory Equipment

Oximesa S.L.U. is a subsidiary of NGE that provides home healthcare and other medical services. The company operates two care centers for home healthcare patients in Spain. The care centers allow patients to register for home respiratory therapy services. Patients may request to have their medical equipment checked on a regular basis and receive technical support if any issues arise. Once the COVID-19 pandemic subsides, patients will be able to attend in-person trainings to help improve their quality of life. The program has received high praise from all users, who appreciate direct access to home respiratory therapy professionals.



Care center in Coruña

Sustainability Topics:
Society

Intellectual Property Activities and R&D

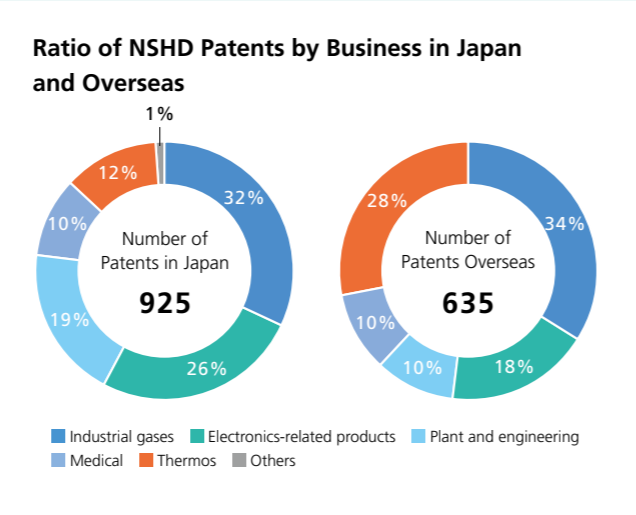
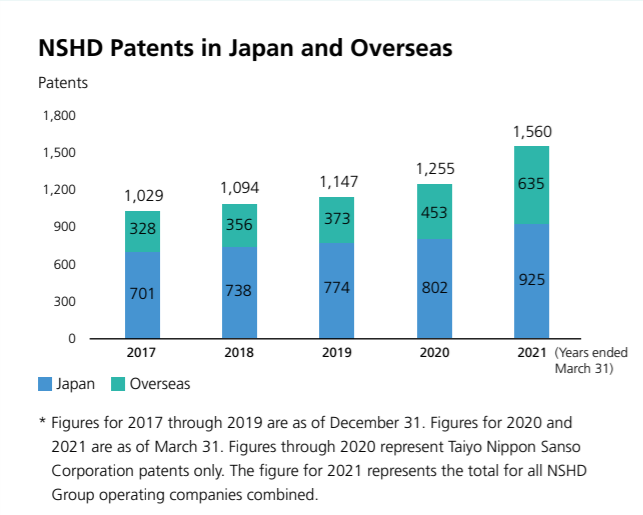
NSHD Strategic Acquisition and Retention of Intellectual Property

Nippon Sanso Holdings recognizes that intellectual property is an important corporate asset. We strive to acquire and retain intellectual property in a strategic manner, aiming to secure a competitive advantage in business that contributes to earnings and global growth. In accordance with the principles of legal compliance, we respect the valid intellectual property rights of third parties, exercising care to avoid infringement. We also take appropriate action against any infringement of our intellectual property rights by third parties.

We are engaged in applied research across a variety of fields, including research in advanced fields, building on the proprietary technologies we have developed over the more than 110 years since our founding. We will continue our efforts to strengthen intellectual property, supporting our growth as a global group.

NSHD Intellectual Property Management System

Nippon Sanso Holdings aims to strengthen the Group's comprehensive capabilities and achieve sustainable growth on a global scale. In this pursuit, we encourage collaboration among operating companies to ensure the appropriate acquisition, management, and utilization of intellectual property throughout the Group. The Global Strategy Review Committee, chaired by the President CEO, meets on an annual basis to determine important policies for managing technical risks, including risks related to security, product quality and safety, the environment, and intellectual property. Each operating company formulates and implements plans for the fiscal year based on these policies.



TNSC Overview of Research Labs and Research Topics

Taiyo Nippon Sanso Corporation pursues the potential of gases, conducting R&D to create new demand for gases. Each laboratory continues to take on new challenges in technology development, based on a wealth of expertise and experience, to offer new solutions that answer the needs of our customers. The Yamanashi Laboratory and Tsukuba Laboratory serve as global R&D hubs, engaging in new R&D related to our foundational industrial gases business, the Electronics Business, On-Site Plant Business, and Medical Business. Furthermore, these facilities are taking on the challenge to develop technologies for new materials, additive manufacturing, composite semiconductor manufacturing equipment, and other new businesses. The SI Innovation Center is a facility dedicated to the R&D of stable isotopes.



Yamanashi Laboratory



Tsukuba Laboratory



SI Innovation Center

TNSC AM Technology Research

AM is an additive manufacturing technology based on 3D printing, considered to be one of the core areas of the Fourth Industrial Revolution. This technology is attracting attention on a global scale, as it is expected to contribute to a sustainable society by bringing innovation to supply chains. Taiyo Nippon Sanso Corporation identified metal AM as a priority area, opening the AM Advanced Room within its Yamanashi Laboratory as a center for the development of AM-related technologies and businesses. The facility focuses on the development of AM molding technology in general, and is equipped with a wide range of the latest in 3D printer equipment, including the VELO3D Sapphire, as well as the company's own proprietary 3DPro® metal AM solution.



AM Advanced Room

MTG Advanced Technology Center R&D

MTG is expanding its footprint in the field of electronics, conducting R&D activities in its Advanced Technology Center located in Longmont, Colorado. In particular, the semiconductor market looks promising over the long term. In response, the company is developing semiconductor manufacturing tool supply equipment, as well as technologies for the manufacture, refinement, analysis, and equipment manufacturing technologies related to highly refined gases.

The results of these development activities have contributed to business through new products and by improving the quality of existing products at production plants in the United States and South Korea. Advanced Technology Center staff exchange ideas and build relationships with personnel from the Tsukuba Laboratory of Taiyo Nippon Sanso Corporation.



Advanced Technology Center

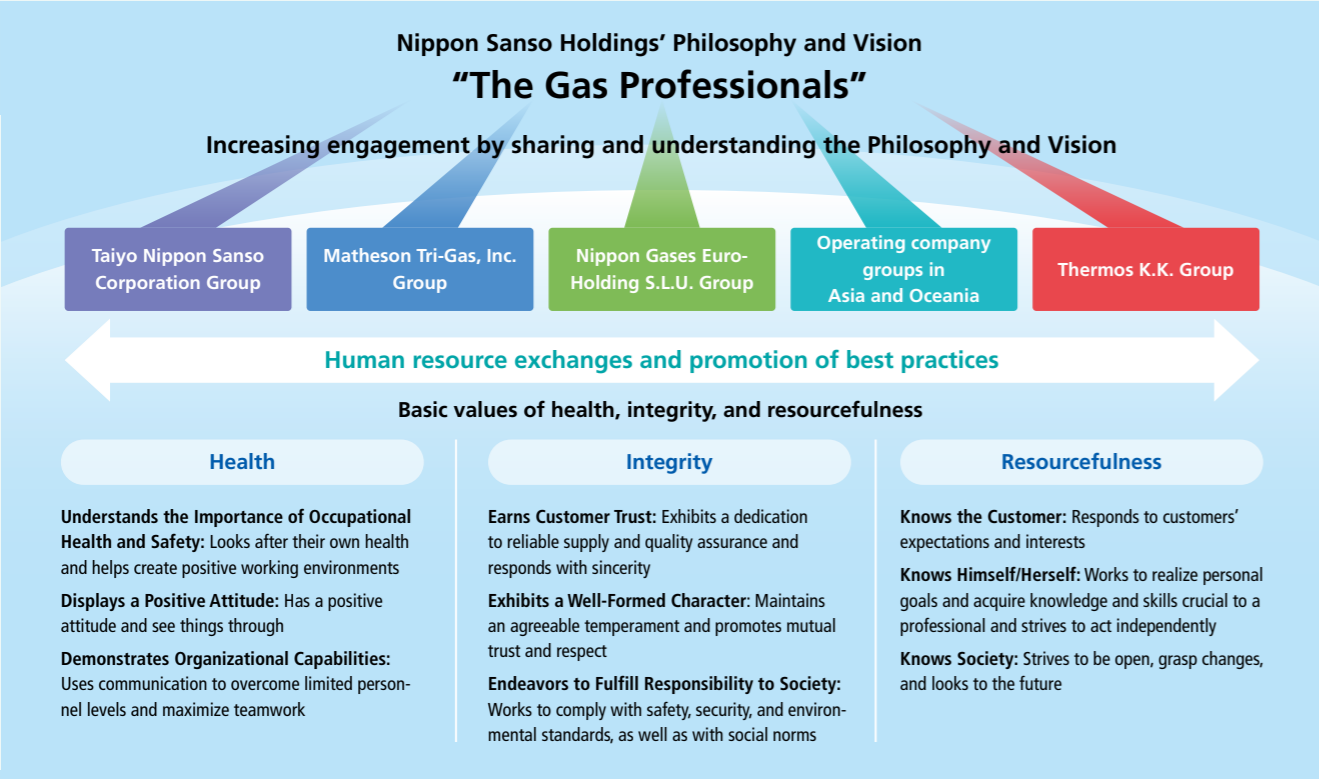
People (The Company and Its Organizational Structure)

Human resources are indispensable for the sustainable growth of a company. The Nippon Sanso Holdings Group operates the industrial gases business and the Thermos business, divided into four geographic hubs. Non-Japanese employees account for nearly 70% of our workforce on a consolidated basis, and the Group continues to become increasingly multinational. Remaining sensitive to the values and cultures of each region, we have established a system for fostering human resources to achieve our Group Vision as one. We intend to continue to interact closely with our employees and our stakeholders, including our supply chains, customers, shareholders, and investors, earning their trust and striving together for a better society.

NSHD Basic Concepts behind Human Resources Development

We selected “The Gas Professionals” as the tagline representing the philosophy of the Nippon Sanso Holdings Group. In developing “The Gas Professionals” who have a sense of mission to society and the earth, we emphasize the key personal qualities of health, integrity, and resourcefulness. These values have been handed down from generation to generation since the days of our predecessor, the former Taiyo Nippon Sanso Corporation. Health, integrity, and resourcefulness are qualities held in common among all Group companies, including the globally active Thermos. We will strive to communicate these concepts within each operating company based on the essence of health, integrity, and resourcefulness, tailored to reflect the unique values of each company.

In fulfilling our social responsibilities as a group, we believe that “sincerity” is a particularly important element of the concept of “integrity” included among these three qualities. We believe that securing, cultivating, and engaging with human resources in our Group who, based on a foundation of sincerity, are open to diversity and regional differences in values, customs, cultures, gender identity, races, and other qualities and perspectives, is vital toward creating a comfortable future for humankind, society, and the earth.

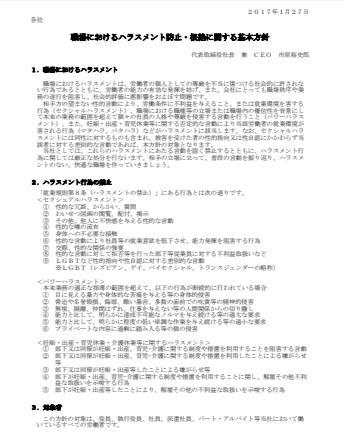


NSHD Respect for Human Rights

In conjunction with the adoption of a holding company structure in October 2020, Nippon Sanso Holdings reviewed existing policies and standards of conduct from a global perspective. As a result, we established several policies and standards in February 2021. Within these policies and standards, we reaffirmed the importance of human rights in conducting corporate activities and our support of the spirit behind internationally accepted norms, such as the Universal Declaration of Human Rights. We reconfirmed that we respect human rights and strive to create appropriate work environments. Through these affirmations and others, we will fulfill our social responsibilities as a corporate citizen (see page 176).

TNSC Stronger Anti-Harassment Measures

The Power Harassment Prevention Act (Revised Act on Comprehensive Promotion of Labor Policies) came into effect in June 2020. This revised act strengthened measures to prevent harassment in the workplace. In January 2017, Taiyo Nippon Sanso Corporation established the Policy on the Prevention and Eradication of Harassment in the Workplace to create healthy workplaces that encourage respect for personal character and individuality. Under this policy, we take strict disciplinary action against any acts of harassment, and we strive to create comfortable, harassment-free workplaces that foster mutual respect. Ongoing training is another important part of strengthening anti-harassment within the Group.



Dissemination Policy (Excerpt)

NSHD Safety Meetings

The Nippon Sanso Holdings Group holds regular safety meetings. The meetings are attended by safety and operations managers from each of the four global geographic hubs to provide information and exchange opinions on ways to improve the level of safety across the Group. The meeting includes hazard simulation training at the Technical Academy (see page 146), Job Safety Analysis (JSA) workshops, and case studies related to accidents and good practices from each company. We will continue to hold this meeting once a year, depending on the situation with COVID-19, to promote safety throughout the Group.



4th Annual Safety Meeting attended by safety and operations staff from around the world.

TNSC Training by Experience Level (First Year to Fifth) Basic Education

Taiyo Nippon Sanso Corporation provides a unique training system that covers basic training for employees throughout their first five years of employment. New employees begin with a three-month training program, and then experience annual training in each of their first five years in the company. The purpose of this training is to provide employees with a deep understanding of the characteristics of the industrial gases business as well as the awareness and sense of mission for maintaining gas supplies at all costs. Training includes the basics in non-technical aspects across the organization, regardless of whether the employee is assigned an administrative or technical position. Through five years of basic training, employees become aware of their role as “The Gas Professionals” and contribute actively to various fields.

- Training Overview**
- **First Year Training for new recruits:** In a three-month group training program, employees tour research laboratories and production facilities to learn about the front lines of our business.
 - **Second Year Followership training:** Employees learn the skill of expressing information clearly as a follower and develop communication skills.
 - **Third Year Training in logical thinking:** Employees acquire logical thinking and presentation skills.
 - **Fourth Year Finance training:** Employees learn how to read essential financial figures for business, acquire basic financial knowledge, and gain an understanding of the correlation between their work and figures.
 - **Fifth Year Strategy and marketing training:** At the culmination of five years, employees form teams to propose and present management strategies.

Sustainability Topics:
People (The Company and Its Organizational Structure)

TNSC Global Human Resources Selection and Development Training

We introduced this program in 2007 to enable employees who are capable of functioning in a global business environment to learn the necessary skills for playing an active role both in Japan and overseas. The training is conducted entirely in English by instructors who are foreign nationals and encompasses seven sessions, including final presentations, held over approximately six months. It covers such topics as mindset, logical presentation skills, business model generation, case studies, negotiating proficiency, and leadership skills. In addition to improving language capabilities, the training seeks to cultivate the confidence and presentation skills necessary to express one’s own opinions clearly and effectively whenever and wherever necessary.



Global employee selective training

TNSC Overseas Trainee Program

Launched in 2016, the overseas trainee education program aims to develop human resources who can contribute quickly after arriving at their assignments overseas. This program consists of a year of on-the-job training at an overseas Nippon Sanso Holdings Group company, offered mainly to employees between their fifth and tenth year of service. The program is voluntary, and any employee wishing to participate is provided a chance to work overseas. This environment of encouraging and supporting employees who seek new experiences is a unique feature of Taiyo Nippon Sanso Corporation.



Overseas Trainee Program

TNSC Establishment of a Helpline

Taiyo Nippon Sanso Corporation established a helpline for the early detection and correction of compliance violations. The company investigates each report, considerate of privacy protection issues. Corrective actions and recommendations are made, leading to improvements and measures to prevent recurrence of the issue in question. The specific operation of the helpline is provided in the helpline guidelines, and we ensure that whistleblowers are not subject to unfair treatment as a consequence of their report.

TNSC Employment of People with Disabilities

Taiyo Nippon Sanso Corporation strives to provide recruitment information to as many people with disabilities as possible. After joining the company, employees with disabilities make contributions across a wide range of positions, including general affairs, administration, accounting, sales, logistics, technical management, production management, R&D, and engineering. As of June 1, 2021, employees with disabilities accounted for 2.47% of all company employees, exceeding the legally mandated employment rate of 2.30%. We will continue to foster a corporate culture in which employees understand and respect each other, aiming to create workplaces in which every employee works with vitality and enthusiasm.

NGE Management Development Training

NGE completed its management development training program in June 2021, which was first launched in February 2020. Despite a temporary delay due to the spread of COVID-19, NGE completed the program by converting the course to online training. Participants worked on a variety of projects, and those deemed as having the most impact are scheduled to be presented to NGE management.

NGE One-Year Training Program for New Employees in Norway

In November 2020, Nippon Gases Norge AS (Norway) began the Young Professional online training program for employees aged 35 or younger (approximately 18% of the workforce). The purpose of the program is to share knowledge and information about the business as well as to create a forum for newer employees to interact with each other. The program will continue over the next few months, with four sessions scheduled per year. The sessions are structured based on employee input.

NGE Digital Skills Improvement Project

The IT and human resources departments in NGE came together to form the Collaborative Digital Champions (CDC) Team. This team serves as a location to teach how commonly used digital tools may be utilized more effectively. Participants come from all over Europe, returning home to their colleagues and sharing this new knowledge. Former participants have reported back that they are making the most of what they learned from the CDC Team.

NGE Events to Consider Employee Diversity

NGE held a special diversity week, conducting a number of events and meetings to consider employee diversity. The goal of this week was to raise awareness for a culture of diversity that appreciates the talents of employees regardless of sexual orientation, age, gender identity, or other attribute. Week events focused on LGBTI, generational, and gender diversity issues.



Diversity Week logo

NGE Employee Engagement Survey Reveals 86% “Highly Engaged”

NGE conducted an employee engagement survey in May 2020, which revealed that 86% of respondents (81% response rate) are “highly engaged” with their work. This result is higher than the average for the chemicals industry and qualifies NGE as a high-performance company. Comments from long-term employees indicate appreciation for support from colleagues and being treated as “a member of the family” since early in their careers. (Chairman and President Elejoste also mentions the survey. Please refer to page 101.)

Employee Engagement Survey

Category	Safety	Corporate Social Responsibility	Diversity	Sustainable Engagement	Empowerment	Global Satisfaction	Quality	Compliance
Score	95	88	88	86	85	82	82	81

* Score represents the percentage of employees who rated each category as “favorable” or “very favorable.”

Sustainability Topics:
People (The Company and Its Organizational Structure)

NSHS Leadership Development Program for the Next Generation of Leaders and Key Managers

Nippon Sanso Holdings Singapore Pte. Ltd. (NSHS) will roll out two leadership development programs beginning in FYE2022 to encourage the development of leadership among the next generation of leaders and key managers. The Nippon Sanso ASEAN+ Leaders Sandbox VR® is a two-year leadership development program that runs from April 2021 to December 2022. Under the catchphrase, *Manage Yourself, Lead Others*, the program covers global trends through content encompassing business strategy, engineering, safety, compliance, and human resources. Participants also have the opportunity to take part in a leadership development program known as the C-Suite-LED-Talk series. In this series, participants will learn about business strategy, business process strategy, and human resources strategy.



April 2021 webinar

NSHS Establishment of a Human Resources Platform in Asia

NSHS established the ASEAN+ HR* Community of Practice to share achievements and best practices from the past year to raise the skill level of the community of human resource professionals in the Asian region. NSHS designed and developed three competency models that will be used as a guide in building employee competencies. This unique platform allows community members to comment on and “like” posts from other members. In this way, NSHS encourages constructive feedback and suggestions related to human resources.

* Human resources training



Collage of participants in the ASEAN+ HR Network Meeting 2021

NSHS Annual ASEAN Learning Festival

NSHS sponsors the annual ASEAN Learning Festival to encourage employees to take part in lifelong learning. The company invites outside speakers to address participants visiting from across Asia. Throughout the festival, participants are encouraged to develop themselves to remain competitive and relevant.



Participants in the 2nd Annual Learning Festival 2020

NSHS KOPI Quarterly Webinars

NSHS began holding Keep Our People Interactive (KOPI) webinars in August 2018 as a means to update employees about human resources policy changes due to government labor laws and legislation. The KOPI webinar serves as a two-way communication channel for employees to provide feedback on human resources policies, human resources processes, and related matters.



KOPI webinar held in 2019

NSHS Annual Unity in Diversity Campaign

In August 2018, NSHS held its first Unity in Diversity campaign across the region. The campaign has become a foundation for employee engagement strategy in the region. In 2019, NSHS worked with its subsidiaries in Asia to produce a video under the concept, *Unity in Diversity Starts with Us*. To transition Unity in Diversity to a more collaborative activity, NSHS developed the Intercultural Awareness program series in 2020, releasing content via monthly webinars.



Monthly webinar

MTG 24/7 Telemedicine Services

MTG adopted Horizon CareOnline, a medical service accessible from the comfort of one's home to avoid the risk of COVID-19 infection arising from outside travel or crowded waiting rooms. Employees can consult doctors 24/7 regarding various ailments, including abdominal pain, fever, colds, and flu, as well as issues related to ear, nose, and throat conditions or dermatology. Registration is available through the app or website, and qualified doctors are on call via video, phone, or chat. Urgent care services are provided by U.S. board-certified and licensed physicians with an average of 15 years of experience in primary care or urgent care. Patients can read physician profiles and reviews before deciding on a healthcare provider.

Sustainability Topics:
People (The Company and Its Organizational Structure)

MTG Scholarship Program for Children of Employees

MTG has established a scholarship program to assist the children of employees who plan to attend a university or technical school. The company offers annual scholarships for students to study at their selected institute of higher learning. The scholarship program is administered by Scholarship America®, the largest presenter and administrator of scholarships in the United States, and supports tuition and other educational assistance through programs designed for corporations, foundations, associations, and individuals. Scholarships are awarded without regard to race, color, creed, religion, sexual orientation, age, gender identity, disability, or national origin.



Thermos Standardized Quality Inspection Training in Japan and Overseas

Thermos K.K. conducts rigorous quality inspections to ensure that customers use the company's products with confidence. One example is the 40-centimeter drop standard under Japanese Industrial Standards (JIS) for testing Thermos bottle durability. In contrast, Thermos conducts drop tests from a height of 70 centimeters, considering the height of tables and other objects in the home. Thermos provides training to quality inspectors based on internal standards. Training includes videos (available via PC and other means) of inspection procedures and methods to help inspectors improve their skills. By standardizing training in Japan and overseas, Thermos maintains its ability to deliver high-quality products consistently to the world.



Standardized quality inspection training in Japan and overseas

TNSC Pursuit of Health Management and Work-Style Reform

Taiyo Nippon Sanso Corporation believes that a focus on employee work styles and health is part of its management strategy for enhancing individual skills, improving productivity, and increasing corporate value. Therefore, we encourage health management for better mental and physical health, aiming to become a corporate group in which every employee works with vitality. We will continue to pursue health-related initiatives to maximize the contributions of our employees, whom we believe are one of the most important assets of a corporation. In conjunction with our efforts, we formulated the Health Management Declaration to serve as a health management code of conduct.

Health Management Declaration

Becoming a Company in which Employees Work with Vigor and Vitality

Health is one of the qualities and conduct under the key employee qualities and conduct of health, integrity, and resourcefulness. We have declared our commitment to foster a health-first culture in recognition that employee health is the driving force behind all we do, and through this culture, we encourage sound management and contribution to the creation of a prosperous society.

We also recognize that the mental and physical health of every employee is an asset to the company. Therefore, we strive to create safe and comfortable workplaces.

We want our employees to understand that their own health and the health of their families are the driving force behind their work and home life. Employees are asked to take responsibility for maintaining and improving their own health as well as to participate in fostering a health-first corporate culture.

TNSC Wearable Devices for Greater Health Visibility

In FYE2018, Taiyo Nippon Sanso Corporation began distributing wearable wristband devices to provide employees with greater visibility for individual health-related data. These devices provide information related to step count, heart rate, sleep time, calories burned, and more, motivating employees to become more health conscious through an understanding of their day-to-day health status. As of March 31, 2021, approximately 1,600 employees wear these devices on a regular basis. In July 2018, the company introduced a points system for walking, allowing users to convert their daily step count into points redeemable for various services, or to donate the points to the Japanese Red Cross Society or other charitable organization. In this way and others, we will continue to make health management more enjoyable for our employees.



Distributed wearable devices

TNSC Online Mental Healthcare Training

Taiyo Nippon Sanso Corporation has introduced an employee assistance program (EAP) conducted by external specialists who provide outside counseling. At the same time, the company endeavors to improve employee mental healthcare, offering internal programs to support employees returning to work.

Number of Employees Participating in Mental Healthcare Training

	Middle Managers	Senior Managers
FYE2015	25	38
FYE2016	37	38
FYE2017	32	24
FYE2018	32	28
FYE2019	35	29
FYE2020	37	32
FYE2021	32	31

TNSC Designated as a 2021 Health & Productivity Management Outstanding Organization (Large Enterprise Category) ("White 500")

Taiyo Nippon Sanso Corporation was certified as "White 500" (Large Enterprise Category) under the 2021 Certified Health & Productivity Management Outstanding Organizations Recognition Program administered by the Ministry of Economy, Trade and Industry (METI) and Nippon Kenko Kaigi. We were recognized for our initiatives based on three areas of health: Self, Workplace, and Family/Community. Specific reasons for our selection included our distribution of wearable devices for step counting and sleep monitoring, sessions for employees to measure their physical condition at work, and on-demand health seminars available to employees and their family members.



White 500 certificate

Sustainability Topics:
People (The Company and Its Organizational Structure)

TNSC Work-Style Reforms Designed to Create Positive Work Environments for All Employees

Taiyo Nippon Sanso Corporation strives to create a workplace comfortable for all employees. To this end, the company has established a variety of systems that allow employees to take advantage of work styles that best suit them.

Systems include shortened work hours after returning from childcare leave, as well as paid leave to care for sick children of elementary school age or younger, for childcare assistance, for participation in school events, and for home nursing care for relatives. The company also offers a program under which employees may take a total of up to 365 days of nursing care leave.

In FYE2018, Taiyo Nippon Sanso began offering a leave of absence program for employees returning to work after

coming back to Japan with a spouse who had been on an overseas assignment. Other programs include reemployment rules for employees who resigned due to pregnancy, child-care, or nursing care. In FYE2019, the company began recognizing annual paid leave in one-hour increments, and in October 2019, certain company locations adopted a flextime work system. In this way, Taiyo Nippon Sanso strives to achieve work-style reform through flexible work arrangements.

As of September 1, 2021, the company has recommended staggered hours using flextime to reduce the risk of COVID-19 infection during rush-hour commutes on public transportation.

Number of Employees Using Systems Designed for a More Comfortable Work Environment

	FYE2018	FYE2019	FYE2020	FYE2021
Special maternity leave before/after birth	2	4	4	9
Childcare leave	7 (Female employees: 7)	7 (Female employees: 5)	7 (Female employees: 7)	16 (Female employees: 10)
Reduced working hours	12 (Female employees: 12)	12 (Female employees: 12)	14 (Female employees: 14)	14 (Female employees: 14)
Flextime	0	1 (Female employees: 1)	2* (Female employees: 1)	—*
Special childcare leave	Cumulative number of individuals 39 (Female employees: 25; male employees: 14)	75 (Female employees: 46; male employees: 29)	119 (Female employees: 70; male employees: 49)	87 (Female employees: 28; male employees: 59)
	Cumulative number of days 52.0 (Female employees: 34.0; male employees: 18.0)	52.5 (Female employees: 33.0; male employees: 19.5)	100 (Female employees: 59.5; male employees: 40.5)	69.0 (Female employees: 23.0; male employees: 46.0)

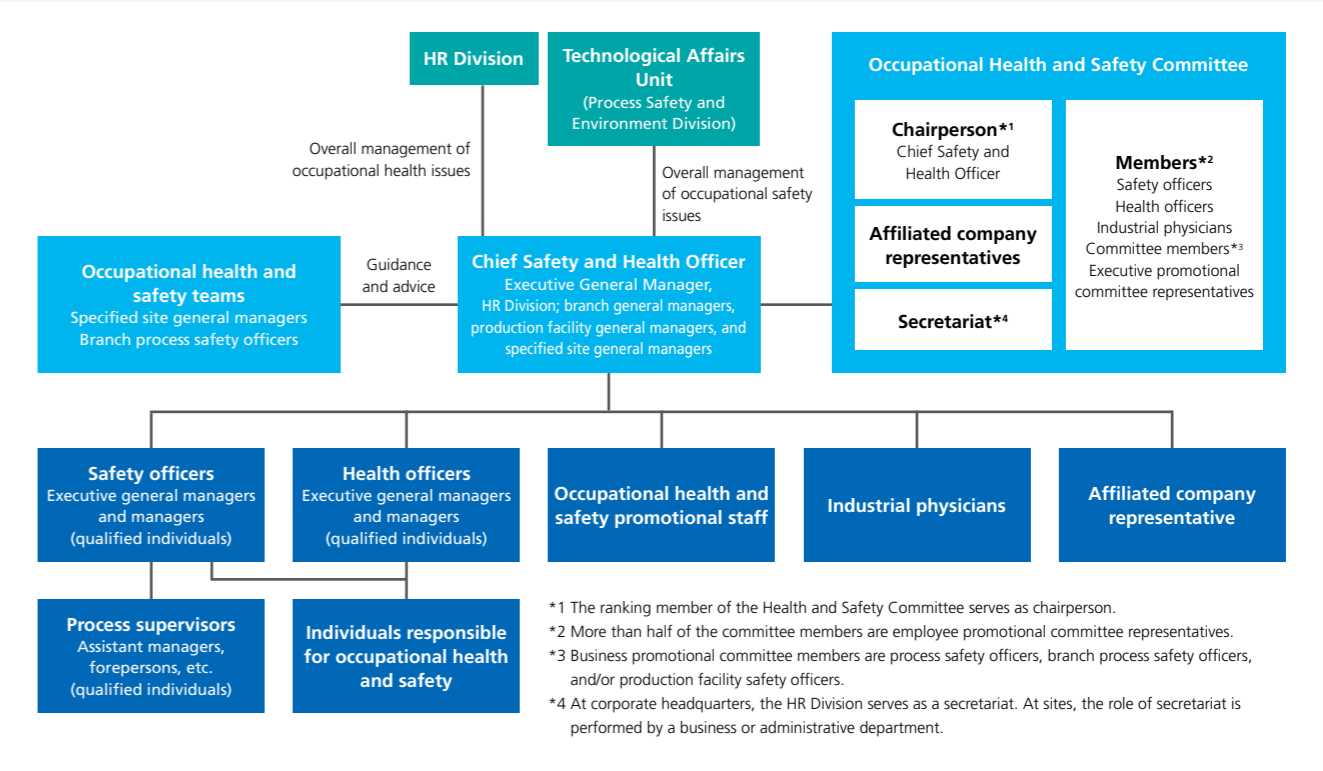
* The number of employees using flextime represents the number of employees using the childcare flextime system. Separately, one person (male) exercised nursing care flextime (not included in the count above). As of October 2019, flextime has been available at each office within the head office and other locations, so the numbers of employees using flextime at these offices is not included in the system.

In addition, in February 2020 we began encouraging employees to work on a staggered basis, using flextime as a response to COVID-19, and we have not tracked the number of employees using flextime since that time.

TNSC Occupational Health and Safety

Taiyo Nippon Sanso Corporation conducts health and safety activities based on Rules for Occupational Health and Safety. Each workplace establishes its own safety and health management organization based on these regulations, holding safety and health committee meetings. Each workplace also implements comprehensive and consistent safety education, morning meetings, hazard prediction activities, and “5S” (sort, set in order, shine, standardize, sustain) campaigns with the goal of zero lost time accidents. In addition, the company distributes materials from the Japan Industrial Safety and Health Association (JISHA) in the form of the Safety and Health News electronic newsletter to raise employee awareness of occupational safety.

Site Occupational Health and Safety Management Framework



TNSC Support for Labor Union Activities

The Taiyo Nippon Sanso Employees’ Labor Union, established in May 2005, concluded an agreement in October 2005 to make Taiyo Nippon Sanso a union shop. The policy of Nippon Taiyo Sanso Corporation on consultation and negotiation is to disclose as much information as possible to the Taiyo Nippon Sanso Employees’ Labor Union and to deal in good faith. Taiyo Nippon Sanso Corporation maintains sound labor–management relations, and the company hopes to continue working together diligently with the union for mutual development.

Sustainability Topics:
People (The Company and Its Organizational Structure)

NSHD Communication with Shareholders and Investors

Results of Main IR Activities

In addition to returning profits to shareholders, we aim to improve management transparency through dialogue with shareholders and investors. At the same time, we strive for the timely disclosure of corporate and financial information.

Total Number of Dialogues	FYE2020	FYE2021
For investors in Japan	159	156
For investors overseas	116	112
Total	275	268
Including ESG-related media coverage	12	17

First Quarter (Apr. to June 2020)
Full-year financial results presentation for FYE2020*
Second Quarter (July to Sep. 2020)
SMBC Nikko Securities Domestic Conference* (Japan)
Third Quarter (Oct. to Dec. 2020)
In conjunction with the launch of Nippon Sanso Holdings, we expanded the corporate website and IR page, held an online IR seminar for individual investors, published Integrated Report 2020 (Japanese/English), created new corporate and sustainability websites, and participated in the Nomura Securities Co., Ltd., Domestic Conference (Japan)*.
Fourth Quarter (Jan. to Mar. 2021)
Created and published IR policy, participated in the Daiwa Securities Co., Ltd. Domestic Conference (Japan)*, participated in Nomura Securities Co., Ltd., Domestic IR Conference (Japan)*, participated in the BofA Securities, Inc., U.S. Conference, and participated in the SMBC Nikko Securities Domestic IR Conference (Japan)*

* Held online

Financial Results Presentations

We use visuals in our financial results presentations to help deepen an understanding of our business, our performance, and our future prospects.



Financial results presentations for analysts and institutional investors
* Beginning in February 2020, we moved our financial results presentations online to prevent the spread of COVID-19.

Operating Site Visits

We conduct regular tours of our plants and laboratories to foster a deeper understanding of the Group's business.



Plant tour for analysts and institutional investors at an overseas operating site
* We have suspended tours since February 2020 to prevent the spread of COVID-19 infections.

Corporate IR Seminar for Individual Investors (Online)

After launching Nippon Sanso Holdings on October 1, 2020, we held a corporate seminar in November 2020 with au Kabucom Securities Co., Ltd., of the Mitsubishi UFJ Financial Group, Inc., as part of our IR activities for individual investors and to raise awareness of our new corporate name. In August 2021, we held a corporate seminar together with Nomura Investor Relations Co., Ltd., of Nomura Holdings, Inc., where we provided an overview of the Group's businesses, growth strategy, and recent earnings performance.



Takayoshi Umehara, general manager, Investor Relations, Group Finance and Accounting Office, giving a presentation

President CEO Hamada Appeared Live on the "Ask the Top" Segment of Nikkei CNBC Morning Express

In August 2021, Nippon Sanso Holdings Group President CEO Toshihiko Hamada appeared live on the "Ask the Top" segment of Nikkei CNBC Morning Express. During the segment, Mr. Hamada discussed our group strategy for supplying industrial gases and other products, as well as strategies focused on value-added services that answer customer needs such as reducing environmental impact.



Nippon Sanso Holdings Group President CEO Hamada during his live television appearance

Participation Nomura IR Fair 2021

In January 2021, we participated in the Nomura IR Asset Investment Fair 2021, which was held online. The fair is one of the largest IR events in Japan, and many publicly traded companies and investment trust management firms exhibit, conduct seminars, and sponsor lectures from prominent industry figures. The 2021 even was held online due to the spread of COVID-19.

IR Policy

In February 2021, we established an IR policy based on the concept of fair disclosure, expanding on the disclosure policies already in effect. Our intent with this policy is to achieve sustainable growth and enhance corporate value over the medium to long term. This IR policy communicates our basic stance on IR activities, IR information disclosure policy, initiatives related to IR activities, methods and procedures for timely disclosure, and quiet period for IR activities (see page 177 for details).



Professor
Hideaki Kobayashi,

Tohoku University

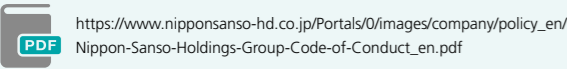
Message from a Stakeholder
Expected Performance as a Leader in the Drive for Carbon Neutrality

Taiyo Nippon Sanso Corporation provides supplies of industrial gases, but it is also expanding operations in a wide range of application fields. The company's technology development is extremely highly rated by the Combustion Society of Japan, which is my main academic society, and received the Society's technology award in fiscal 2015. My relationship to Taiyo Nippon Sanso came about through the activities of the Society, as it was the main participating institution from the start of the national Strategic Innovation Program (SIP)'s Energy Carrier Project, which was conducted over five years from 2014. In this project, I was leading the ammonia direct combustion team, which gave me an opportunity to become more familiar with Taiyo Nippon Sanso's new technologies. I was put in charge of developing basic technologies for using carbon-free ammonia as fuel for an industrial furnace, and we achieved the initial target at a high level. At the end of 2020, ammonia fuel was included explicitly in a statement on the green growth strategy associated with achieving carbon neutrality by 2050. Amid these developments, I would like to continue working with Taiyo Nippon Sanso on early social implementation of the results of our SIP project. Open innovation is much talked about these days. I hope that Taiyo Nippon Sanso will continue to develop and grow its technologies and its outstanding human resources, which are its strengths, and that the company will play a leading role in achieving carbon neutrality for the industrial sector.

Policies

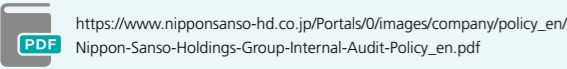
Code of Conduct

We contribute to the creation of value of our customers in all industries through innovative gas solutions and to the realization of an affluent and sustainable society through the creation of a harmonious relationship between people and the earth based on the Group Philosophy, “Proactive. Innovative. Collaborative. Making life better through gas technology.” We act honestly and fairly with high ethical values toward the goal that we can gain trust from society and make continuous progress.



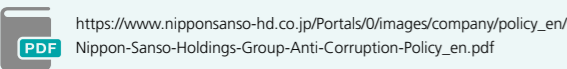
Internal Audit Policy

Our mission is to contribute to the realization of our group companies’ philosophy and vision and the achievement of business targets. Through internal audit activities, we endeavor to add value to our group companies’ operations or make improvement proposals, thereby contributing to securing sound and appropriate business operation and improving business efficiency.



Anti-Corruption Policy

We aim to prevent any form of corruption including bribery and anticompetitive acts and to establish and maintain fair trade practices in accordance with the Code of Conduct of the Nippon Sanso Holdings Group.

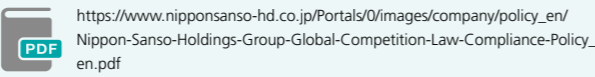


Global Competition Law Compliance Policy

In many countries and regions in which we conduct business activities, laws and rules that are generally called competition laws prohibit anticompetitive acts using a dominant position in the market, cartels, anticompetitive mergers and acquisitions, and other anticompetitive acts to ensure fair and free competition. In some countries and regions, laws of such countries and regions may be applied and enforced even on an act conducted outside the countries and regions if such act affects the market in the countries and regions.

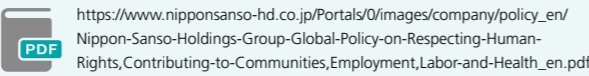
We understand that compliance with such competition laws contributes to the benefit not only of consumers but also of the entire society, will respect the competition laws,

and endeavor to ensure fair and free competition. We provide to our officers and employees necessary education on the importance of compliance with competition laws.



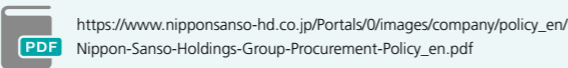
Global Policy on Respecting Human Rights, Contributing to Communities, Employment, Labor, and Health

We support the spirit and meaning of the Universal Declaration of Human Rights, the International Covenants on Human Rights, the Guiding Principles on Business and Human Rights, and the United Nations Global Compact, and we shall fulfill our social responsibilities as a business entity through the promotion of respect for human rights in the workplace and creation of adequate working environments.



Procurement Policy

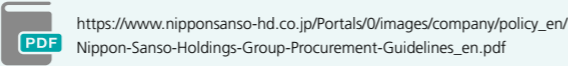
We are addressing the resolution of environmental and social issues based on the Group Philosophy, “Proactive. Innovative. Collaborative. Making life better through gas technology.” We believe resolving these problems and realizing a sustainable society requires joint efforts with wide range of suppliers, and established the below procurement policy. We will comply with this policy and contribute to realization of a sustainable society.



Procurement Guidelines

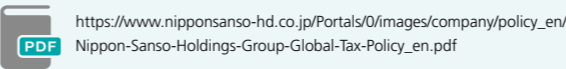
We are addressing the various issues we are facing, including of global warming, exhaustion of resources, energy, and human rights that threaten the continuance of sustainable natural and social environments based on the Group Philosophy, “Proactive. Innovative. Collaborative. Making life better through gas technology.” We believe this approach cannot be completed by a sole effort of our group; it can only be achieved by sharing perceptions and cooperating broadly with our suppliers.

Based on this standpoint, we have established the Nippon Sanso Holdings Group Procurement Policy to promote our suppliers’ understanding and cooperation and have created the Nippon Sanso Holdings Group Procurement Guidelines on matters that we would like our suppliers to address with us.



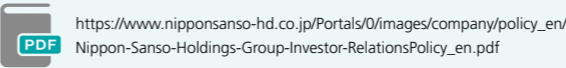
Global Tax Policy

We understand that it is our social responsibility to comply with the tax laws and regulations of, and contribute through tax payments to the development of, all the countries and regions we operate in. Therefore, we are committed to addressing the interests of various stakeholders through legal compliant, timely, and appropriate tax payments and proper and highly transparent tax management to ensure such compliance and tax payment.



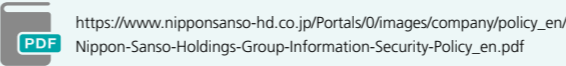
Investor Relations (IR) Policy

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



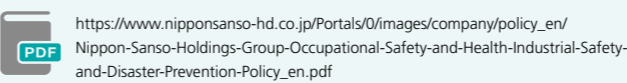
Information Security Policy

We recognize that information management is a material factor for internal control. This policy on information security is established to protect our group companies and our customers from loss of social credibility, business disruption, or the like, caused by information leakage or falsification, to be complied with by all employees.



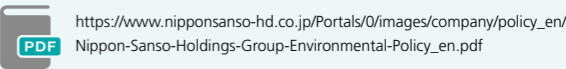
Occupational Safety and Health / Industrial Safety and Disaster Prevention Policy

We earnestly work on securing industrial safety for our business continuity, sound development, and corporate value enhancement based on the idea of putting the safety of our employees including contract employees, contractors, and external stakeholders first. We also ensure the safety and health of all individuals involving in our businesses by eliminating personal injuries, diseases, and accidents during business activities in our workplaces.



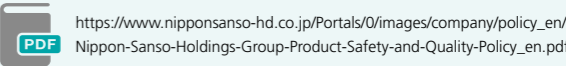
Environmental Policy

We address the reinforcement of sustainability management and contribute as “The Gas Professionals” to both the development of a globally sustainable society and the resolution of global challenges. We will technically contribute to the resource-recycling society and to the development of a sustainable society by harmonizing with the environment and endeavoring to reduce environmental impact in our business activities under the direction of top management.



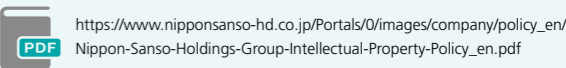
Product Safety and Quality Policy

We, “The Gas Professionals” at the Nippon Sanso Holdings Group, recognize that social responsibilities are not only to comply with the applicable laws and regulations of each country and region and respect international standards but also to provide a reliable supply of various kinds of products and services including industrial gases safely and securely. This reliable supply is the source of trust and we fulfill the mission to supply these products and services for the long term in accordance with the concept of product stewardship and by giving full attention to human and environmental aspects.






Intellectual Property Policy

Recognizing that intellectual properties are important corporate assets, we work on acquiring, protecting, and using intellectual properties in order to contribute to businesses and society through intellectual property-related activities and to realize our group companies’ global growth. Based on the philosophy of legal compliance, we also respect other companies’ intellectual property rights and pay attention not to infringe them.



Sustainability Data

Environment

	Unit	FYE2019	FYE2020	FYE2021
Greenhouse Gas (GHG) Emissions				
GHG Emissions Scope 1 	Thousands of tonnes CO ₂ e	14	1,061	987
GHG Emissions Scope 2 	Thousands of tonnes CO ₂ e	4,056	4,747	4,664
GHG Emissions Scope 3 –Total for the Following Categories 	Thousands of tonnes CO ₂ e	3,634	3,662	4,340
Category 1 Purchased goods and services	Thousands of tonnes CO ₂ e	—	883	883
Category 2 Capital goods	Thousands of tonnes CO ₂ e	—	60	43
Category 3 Fuel- and energy-related activities not included in Scope 1 and Scope 2	Thousands of tonnes CO ₂ e	—	276	248
Category 4 Upstream transportation and distribution (Including transportation services whose cost is borne by the Company)	Thousands of tonnes CO ₂ e	—	40	37
Category 5 Waste generated in operations	Thousands of tonnes CO ₂ e	—	N/A	2
Category 6 Business travel	Thousands of tonnes CO ₂ e	—	1	1
Category 7 Employee commuting	Thousands of tonnes CO ₂ e	—	3	3
Category 8 Upstream leased assets	Thousands of tonnes CO ₂ e	—	N/A	N/A
Category 9 Downstream transportation and distribution	Thousands of tonnes CO ₂ e	—	N/A	N/A
Category 10 Processing of sold products	Thousands of tonnes CO ₂ e	—	N/A	N/A
Category 11 Use of sold product	Thousands of tonnes CO ₂ e	—	1,583	2,436
Category 12 End-of-life treatment of sold products	Thousands of tonnes CO ₂ e	—	N/A	N/A
Category 13 Downstream leased assets	Thousands of tonnes CO ₂ e	—	N/A	N/A
Category 14 Franchises	Thousands of tonnes CO ₂ e	—	N/A	N/A
Category 15 Investments	Thousands of tonnes CO ₂ e		816	687


Reporting boundary: Scope 1 emissions and Scope 2 emissions represent main consolidated subsidiaries of Nippon Sanso Holdings. For information on Scope 3 emissions aggregation, please refer to pages 187-188.



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

GHG emissions in Japan are calculated using emission factors specified in Japan's Act on Promotion of Global Warming Countermeasures. For GHG emissions overseas, Scope 1 emissions are calculated using emission factors set forth in Japan's Act on Promotion of Global Warming Countermeasures, while Scope 2 emissions are calculated using country-specific emission factors published by the International Energy Agency (IEA). However, for electricity in Europe, beginning FYE2021 a separate emissions factor for each electricity provider is used, and emissions are calculated making reference to the Guarantee of Origin, resulting in an increase in Scope 2 emission of approximately 244 thousand tonnes CO₂e compared with using emission factors provided by the IEA. See pages 187-188 for details on the calculation method of Scope 3 emissions.

Indicators with  mark have been assured by KPMG AZSA Sustainability Co., Ltd. for FYE2021.

		Unit	FYE2019	FYE2020	FYE2021
Contributions to Environmental Protection through Products					
GHG Emission Reduction Contribution	Products and Services 	Thousands of tonnes CO ₂ e	1,779	2,373	2,892
	Industrial Gases 	Thousands of tonnes CO ₂ e	—	—	2,174

See pages 183 and 189 for details about reporting boundaries and the calculation methods.


Energy Usage					
Energy Consumption 		Terajoules	72,014	109,512	104,142
Electric power		Terajoules	70,890	97,483	93,400
Fuels		Terajoules	418	11,378	10,004
Heat		Terajoules	706	651	738

Reporting boundary: Main consolidated subsidiaries of Nippon Sanso Holdings

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. Purchased electricity and purchased steam are converted into primary energy amounts.




Environmental Impact					
Nitrogen oxide (NOx) emissions ☑		Tonnes	3.0	3.2	1.8
Sulfur oxide (SOx) emissions ☑		Tonnes	1.0	1.4	1.0
Particulate emissions ☑		Tonnes	1.0	0.1	0.1
Volatile organic compound (VOC) emissions ☑		Tonnes	10	10	5
Releases of substances designated under the Pollutant Release and Transfer Register (PRTR) ☑		Tonnes	29	19	7

Reporting boundary: Consolidated subsidiaries in Japan, including Taiyo Nippon Sanso Corporation

Water Usage					
Breakdown of sources of fresh water withdrawn	Fresh Water Withdrawn 	Ten thousand of m³	1,362	3,002	4,335
	Water supply from local government	Ten thousand of m³	—	1,496	1,472
	Municipal water	Ten thousand of m³	—	429	490
	Industrial water	Ten thousand of m³	—	1,067	982
	Groundwater	Ten thousand of m³	—	276	258
	Surface water	Ten thousand of m³	—	1,230	2,602
	Other	Ten thousand of m³	—	—	3

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

In FYE2020, we added business locations with facilities specified under the Water Pollution Prevention Act to the scope of aggregation.

Waste				
Waste generated* ¹ 	Tonnes	3,023	3,762	14,273
Waste disposed of as landfill* ² 	Tonnes	362	284	7,152
Hazardous waste generated* ³ 	Tonnes	156	197	1,325
Waste recycled* ⁴	Tonnes	1,695	2,381	4,890

Reporting boundary: Main consolidated subsidiaries of Nippon Sanso Holdings

Beginning FYE2021, main overseas consolidated subsidiaries are included in the reporting boundary. Waste generated by the Gas Business 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.

Environmental Accounting				
Environmental protection costs				
Investments	Millions of yen	9,655	1,351	7,559
Expenses	Millions of yen	844	1,033	1,089
Economic benefits associated with environmental conservation activities		Millions of yen	15	1,905
				8

Reporting boundary: Taiyo Nippon Sanso, Japan Fine Products Co., Ltd., Taiyo Nippon Sanso Engineering Corporation, Nissan Unyu K.K., and Thermos K.K.

From FYE2020, 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 domestic 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.

Sustainability Data

	Unit	FYE2019	FYE2020	FYE2021
GHG-Related				
GHG Scope 1 + Scope 2 ☑	Thousands of tonnes CO ₂ e	4,070	5,808	5,651
Gas Business in Japan	Thousands of tonnes CO ₂ e	2,494	2,273	2,014
Gas Business in the United States	Thousands of tonnes CO ₂ e	1,087	2,164	2,066
Gas Business in Europe	Thousands of tonnes CO ₂ e	—	871	1,049
Gas Business in Asia and Oceania	Thousands of tonnes CO ₂ e	488	499	511
Thermos Business	Thousands of tonnes CO ₂ e	1	1	11
Energy Consumption				
Total ☑	Thousands of gigajoules	72,014	109,512	104,142
Gas Business in Japan	Thousands of gigajoules	38,319	37,048	33,635
Gas Business in the United States	Thousands of gigajoules	24,507	37,946	36,172
Gas Business in Europe	Thousands of gigajoules	—	25,068	24,960
Gas Business in Asia and Oceania	Thousands of gigajoules	9,174	9,437	9,201
Thermos Business	Thousands of gigajoules	14	13	174
Electricity Consumption				
Total ☑	Millions of kWh	7,290	10,013	9,592
Gas Business in Japan	Millions of kWh	3,866	3,742	3,402
Gas Business in the United States	Millions of kWh	2,511	2,861	2,824
Gas Business in Europe	Millions of kWh	—	2,464	2,442
Gas Business in Asia and Oceania	Millions of kWh	912	945	908
Thermos Business	Millions of kWh	1	1	16
Water Withdrawal				
Total ☑	Ten thousands of m ³	1,362	3,002	4,335
Gas Business in Japan	Ten thousands of m ³	683	732	676
Gas Business in the United States	Ten thousands of m ³	457	724	707
Gas Business in Europe	Ten thousands of m ³	—	1,317	2,730
Gas Business in Asia and Oceania	Ten thousands of m ³	222	229	205
Thermos Business	Ten thousands of m ³	—	—	17
Waste Generated (Including Valuable Materials)*1				
Total ☑	Tonnes	3,023	3,762	14,273
Gas Business in Japan	Tonnes	2,943	3,675	5,505
Gas Business in the United States	Tonnes	—	—	5,691
Gas Business in Europe	Tonnes	—	—	758
Gas Business in Asia and Oceania	Tonnes	—	—	395
Thermos Business	Tonnes	80	87	1,924

*1 Beginning FYE2021, main overseas consolidated subsidiaries are included in the reporting boundary. Waste generated by the Gas Business in Japan is the volume for which the Company issued a manifest.

Society

	Unit	FYE2019	FYE2020	FYE2021
Employees and Diversity (Consolidated)				
Employees* ☑	Number of individuals	18,974	19,341	19,155
Gas Business in Japan	Number of individuals	6,171	6,292	6,295
Gas Business in the United States	Number of individuals	4,916	4,724	4,534
Gas Business in Europe	Number of individuals	2,589	2,794	2,884
Gas Business in Asia and Oceania	Number of individuals	4,026	4,195	4,114
Thermos Business	Number of individuals	1,272	1,336	1,328
Employees by gender				
Male ☑	Number of individuals	15,353	15,546	15,307
Female ☑	Number of individuals	3,621	3,795	3,848
Employees by age group (Composition ratio)				
20s and below	%	16.1	16.8	16.6
30s	%	24.7	24.8	24.6
40s	%	28.9	29.0	28.6
50s and above	%	30.2	29.4	30.2
Years of consecutive service				
Overall average	Years	12.4	12.4	11.3
Men	Years	12.5	12.7	11.7
Women	Years	11.6	11.5	9.5
Average age	Years	41.1	41.0	42.3
New hires	Number of individuals	2,548	2,095	1,893
Employee turnover rate	%	6.2	6.1	5.7
Female employees as a percentage of the total number of employees ☑	%	19.1	19.6	20.1
Female managers as a percentage of the total managerial positions ☑	%	13.7	13.7	14.6

* 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. Due to a revision of this aggregation method, figures presented in previous fiscal years have been retroactively revised.

Employees and Diversity (Non-Consolidated)				
Employees	Number of individuals	—	—	81*
Employees by gender				
Male	Number of individuals	—	—	66
Female	Number of individuals	—	—	15
Female employees as a percentage of the total number of employees	%	—	—	18.5
Female managers as a percentage of the total managerial positions	%	—	—	4.1

* Includes 47 employees working concurrently for Taiyo Nippon Sanso Corporation

Sustainability Data

	Unit	FYE2019	FYE2020	FYE2021
Employees, Diversity, and Work–Life Balance (Registered employees of Taiyo Nippon Sanso Corporation)				
Employees	Number of individuals	1,983	2,024	2,065
Employees by gender				
Male	Number of individuals	1,758	1,775	1,789
Female	Number of individuals	225	249	276
Employees by age group (Composition ratio)				
20s and below ㊦	%	17.9	18.9	19.5
30s ㊦	%	19.8	19.7	20.1
40s ㊦	%	31.8	29.6	27.6
50s and above ㊦	%	30.5	31.8	32.9
Years of consecutive service				
Overall average	Years	18.1	17.9	17.8
Men	Years	18.6	18.5	18.5
Women	Years	14.4	13.8	12.9
Average age ㊦	Years	42.6	41.9	42.3
New hires ㊦	Number of individuals	108	109	102
Employee turnover rate*1 ㊦	%	2.8	3.1	2.8
Employee training hours	Total hours per year	5,175	5,547	2,296
Unions members ㊦	Number of individuals	1,106	1,146	1,195
Union members as a percentage of the total number of employees ㊦	%	55.8	56.6	57.8
Layoffs*2 ㊦	Number of individuals	0	0	0
Female employees as a percentage of the total number of employees	%	11.3	12.3	13.4
Female managers as a percentage of the total managerial positions	%	1.4	1.5	1.5
Employment ratio of persons with disabilities (as of June 1 of each fiscal year) ㊦	%	2.2	2.3	2.3
Number of employees reemployed after retirement ㊦	Number of individuals	57	64	74
Employees using childcare leave systems ㊦	Number of individuals	7	7	16
Men ㊦	Number of individuals	2	0	6
Women ㊦	Number of individuals	5	7	10
Employees using nursing care leave or long-term nursing care leave ㊦	Number of individuals	0	0	0
Usage rate for annual paid leave*3 ㊦	%	61.3	62.5	60.2
Employees using volunteer leave system ㊦	Number of individuals	4	0	0

*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 Employees leaving the Company for reasons attributable to the Company (dismissals)

*3 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 year.

	Unit	FYE2019	FYE2020	FYE2021
Others (Consolidated)				
Expenditures on social contribution initiatives	Thousands of yen	40,396	49,472	109,706

* Data is calculated on a consolidated basis from FYE2021.

Occupational Health and Safety			
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) ㊦	—	2.32	1.99
Taiyo Nippon Sanso Group ㊦	—	0.73	0.73

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

Nippon Sanso Holdings include overseas subsidiaries of Thermos K.K. from January 2017 and Nippon Gases Euro-Holding from January 2019.

Reporting Boundary

Main consolidated subsidiaries

Consolidated subsidiaries in Japan including Taiyo Nippon Sanso Corporation; Matheson Tri-Gas, Inc.; Nippon Gases Euro-Holding S.L.U. and its consolidated subsidiaries; Leeden National Oxygen Ltd.; 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.; 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 Mfg. (Malaysia) Sdn. Bhd.; Vacuumtech Philippines Inc.

Beginning FYE2021, environmental data includes the HyCO plant and liquid carbon dioxide plant of Nippon Gases Euro-Holding S.L.U. and its consolidated subsidiaries, Top Thermo Mfg. (Malaysia) Sdn. Bhd and Vacuumtech Philippines Inc.

Sustainability Data

Governance

Unit		FYE2019	FYE2020	FYE2021
Activities of Committees				
Management Configuration	Number of individuals	6	9	9
Internal directors	Number of individuals	4	7	7
Independent outside directors	Number of individuals	2	2	2
Directors serving concurrently as executive officers	Number of individuals	3	4	3
Percentage of directors serving concurrently as executive officers	%	50.0	44.4	33.3
Independent outside directors as a percentage of total Board of Directors' members	%	33.3	22.2	22.2
Female directors as a percentage of total Board of Directors' members	%	0.0	0.0	0.0
Term of appointment	Years	1	1	1
Frequency of Board of Directors' meetings	Times	15	12	11
Attendance at Board of Directors' meetings	%	97.8	99.1	98.0
Attendance of independent outside directors at Board of Directors' meetings	%	96.7	100.0	100.0
Number of directors attending less than 75% of Board of Directors' meetings	Number of individuals	0	0	0
Audit & Supervisory Board members	Number of individuals	4	4	4
Internal Audit & Supervisory Board members	Number of individuals	1	1	1
Independent outside Audit & Supervisory Board members	Number of individuals	3	3	3
Independent outside Audit & Supervisory Board members as a percentage of total Audit & Supervisory Board members	%	75.0	75.0	75.0
Female Audit & Supervisory Board members as a percentage of total Audit & Supervisory Board members	%	0.0	0.0	0.0
Frequency of Audit & Supervisory Board meetings	Times	18	16	16
Attendance at Audit & Supervisory Board meetings	%	100.0	92.2	100.0
Attendance of independent outside Audit & Supervisory Board members at Audit & Supervisory Board meetings	%	100.0	89.6	100.0
Number of Audit & Supervisory Board members attending less than 75% of Audit & Supervisory Board meetings	Number of individuals	0	1	0
Average age of directors and Audit & Supervisory Board members	Years	65.5	64.3	64.8
Number of executive officers*	Number of individuals	23	22	7
Female executive officers as a percentage of total executive officers	%	0.0	0.0	0.0

* Figures for FYE2021 represent executive officers of Nippon Sanso Holdings (including the president). Figures for FYE2020 and earlier represent executive officers of Taiyo Nippon Sanso Corporation (including the president).

Unit		FYE2019	FYE2020	FYE2021
Activities of Committees				
Advisory Committee on Appointments and Remuneration				
Members	Number of individuals	3	3	3
Internal directors	Number of individuals	1	1	1
Independent outside directors	Number of individuals	2	2	2
Frequency of meetings	Times	8	11	6
Attendance	%	100.0	100.0	100.0
Management Committee				
Members	Number of individuals	17	17	13
Frequency of meetings	Times	21	16	6
Attendance*1	%	99.1	97.1	100.0
Investment Committee				
Members*2	Number of individuals	12	12	15
Frequency of meetings	Times	2	2	1
Attendance*1	%	95.5	100.0	93.3
Global Strategy Review Committee				
Members	Number of individuals	—	—	17
Frequency of meetings	Times	—	—	1
Attendance	%	—	—	100.0
Global Risk Management Committee				
Members	Number of individuals	—	—	17
Frequency of meetings	Times	—	—	1
Attendance	%	—	—	100.0
Global Compliance Committee				
Members	Number of individuals	20	20	20
Frequency of meetings*3	Times	1	0	0
Attendance	%	100.0	—	—

*1 Average attendance rate
*2 Excluding additional attendees and secretariat
*3 Not held during FYE2020 or FYE2021 due to COVID-19

Sustainability Data

Unit		FYE2019	FYE2020	FYE2021
Remuneration for Officers				
Remuneration for directors (excluding outside directors)				
Total	Millions of yen	249	255	263
Basic remuneration	Millions of yen	151	162	169
Corporate political contributions	Millions of yen	97	93	94
Remuneration for Audit & Supervisory Board members (excluding independent outside members)				
Total	Millions of yen	25	25	27
Basic remuneration	Millions of yen	25	25	27
Remuneration for independent outside directors				
Total	Millions of yen	102	102	100
Basic remuneration	Millions of yen	102	102	100
Remuneration for independent auditors				
Total	Millions of yen	212	198	210
Remuneration for audit services	Millions of yen	209	195	209
Other remuneration for independent auditors	Millions of yen	3	3	1
Others				
Anti-takeover measures	—	Not adopted	Not adopted	Not adopted
Code of ethics	—	Adopted	Adopted	Adopted
Policy on transparency of tax affairs	—	Adopted (Internal)	Adopted (Internal)	Adopted (Currently disclosed on the Company website)
Corporate political contributions	Yen	0	0	0

Intellectual Property and Research and Development

Unit		FYE2019	FYE2020	FYE2021
Intellectual Property				
Registered patents				
Total	Patents	1,147	1,255	1,560
Japan	Patents	774	802	925
Overseas	Patents	373	453	635

* Figures for FYE2019 and earlier are based on a December 31 fiscal year-end. Figures for FYE2020 and later are based on a March 31 fiscal year-end. Figures through 2020 represent Taiyo Nippon Sanso Corporation on a non-consolidated basis, while figures for 2021 represent the total for all operating companies.

Research and Development				
Research and Development				
Total	Millions of yen	3,494	3,389	3,315
Gas Business in Japan	Millions of yen	2,846	2,691	2,694
Gas Business in the United States	Millions of yen	614	658	589
Thermos Business	Millions of yen	34	39	32

Calculation Methods for Scope 3 GHG Emissions

Referenced Guidelines

Our Scope 3 GHG emissions are calculated based on the Corporate Value Chain (Scope 3) Accounting and Reporting Standard issued by the GHG Protocol. For emission factors, we used the emission factor database Ver. 3.1 provided in the Green Value Chain Platform, the Inventory Database for Environmental Analysis (IDEA v2) for supply-chain GHG emissions accounting, and information included in MilCA Ver. 2, a life-cycle assessment software developed by the Japan Environmental Management Association for Industry.

Reporting Boundary

Unless otherwise specified, the data covers consolidated subsidiaries in Japan, including Taiyo Nippon Sanso Corporation

Calculation Method by Category

Category 1 Purchased goods and services	Calculated by multiplying the amounts of products and services in physical or monetary units purchased by Taiyo Nippon Sanso Corporation by the respective emission factor for each type of product or service. However, emissions from transport and shipping services and from oxygen, nitrogen, and argon purchased from Taiyo Nippon Sanso's consolidated subsidiaries or affiliates are included in the reporting boundary of Scope 1 or 2, or categories 4 and 15 of Scope 3, and are therefore deducted from the procured amounts used for this calculation.
Category 2 Capital goods	Calculated by multiplying the amounts of capital investment during each reporting fiscal year by an emission factor per price of capital goods.
Category 3 Fuel- and energy-related activities not included in Scope 1 and 2	This category includes emissions associated with the extraction, production, and transportation of purchased fuels and those consumed in the production of electricity and steam that are purchased by the Group. Fuels: Calculated by multiplying the amount purchased during the fiscal year by an emission factor for each fuel type. Electricity and steam: Calculated by multiplying the amount purchased from outside the Group by the upstream emission factor for each purchased energy reflecting electricity transmission loss.
Category 4 Upstream transportation and distribution (Including distribution services whose cost is borne by the Group)	Calculated by subtracting the CO ₂ emissions from logistics subsidiaries, which are included in Scope 1 emissions, from the CO ₂ emissions reported for Taiyo Nippon Sanso Corporation and Nippon Ekitan Corporation as specified shippers in accordance with the Act on Promotion of Global Warming Countermeasures. CO ₂ emissions related to transportation and distribution of products for which Taiyo Nippon Sanso Corporation and Nippon Ekitan Corporation bear the transportation costs are included in this category.
Category 5 Waste generated in operations	Calculated by multiplying industrial waste output by the emission factors for each waste type (including transportation stages).
Category 6 Business travel	Calculated by multiplying the number of employees of consolidated subsidiaries in Japan, including Taiyo Nippon Sanso Corporation by the emission factor (0.13 tonnes of CO ₂ /person/year).
Category 7 Employee commuting	Taiyo Nippon Sanso Corporation employees: For train commuters, the annual payment for commuter passes is multiplied by an emission factor per transportation expense. For car commuters, the round-trip distance is multiplied by the annual number of commuting days and an emission factor per person-kilometer for passenger car. Employees of domestic consolidated subsidiaries: The number of employees is multiplied by the annual number of commuting days, and multiplied by the emission factor per commuting day.

Sustainability Data

Category 8 Upstream leased assets	Since the amount of applicable lease assets is negligible, emissions in this category are not calculated.
Category 9 Downstream transportation and distribution	The emissions associated with the transportation of sold products whose cost is borne by Taiyo Nippon Sanso Corporation and Nippon Ekitan Corporation fall within category 4 as the Group basically bears the cost of transporting products.
Category 10 Processing of sold products	The Taiyo Nippon Sanso Group's main product group is gas, and since it is difficult to rationally calculate the GHG emissions associated with the processing of these products, the emissions are not calculated.
Category 11 Use of sold products	The amount of CO ₂ emissions generated from the use of propane gas (LP gas), liquefied carbon dioxide gas, and dry ice, and from use of electricity for the operation of its ASUs during the service life, which were sold to customers outside of the Taiyo Nippon Sanso Group.
Category 12 End-of-life treatment of sold products	The Taiyo Nippon Sanso Group's primary products are gases (oxygen, nitrogen, and argon). After use, these gases return to the atmosphere and do not become waste. Furthermore, since the gas containers are loaned, and therefore the amount of waste from sold is negligible, emissions in this category are not calculated.
Category 13 Downstream leased assets	Since the amount of applicable lease assets is negligible, emissions in this category are not calculated.
Category 14 Franchises	As the Group does not have any businesses in this format, there are no emissions in this category.
Category 15 Investments	Calculated by multiplying the emissions of each of the seven main affiliates of Taiyo Nippon Sanso Corporation in Japan by the Company's shareholding ratio (as of the fiscal year-end). The seven companies' GHG emissions are based on their actual emissions in the reporting period.

Calculation Methods for GHG Emission Reduction Contribution

We include the following products and services sold by consolidated subsidiaries of Nippon Sanso Holdings and certain affiliated companies in the calculation of GHG emission reduction contribution. The calculation method per product or service is as follows. The CO₂ emission factor used for electricity is 0.470 t-CO₂/MWh.

Product or Service	Calculation Methods of GHG Emission Reduction Contribution
Combustion-type exhaust gas abatement system Reporting Boundary: Consolidated subsidiaries in Japan	An average processing capacity of 0.6 L/min for nitrogen trifluoride (NF ₃) gas per one combustion-type exhaust gas abatement system was assumed, and this value was multiplied by the number of such systems that were installed in FYE2019 and FYE2021, the number of operating hours per year, and the global warming potential (GWP) of NF ₃ to calculate the GHG emission reduction contribution. The amount of CO ₂ emissions from fuel used in combustion equipment was deducted.
SF ₆ recovery service Reporting Boundary: Consolidated subsidiaries in Japan	The volume of sulfur hexafluoride (SF ₆) gas recovered in FYE2021 was multiplied by its GWP to calculate GHG emission reduction contribution.
SCOPE-Jet® Reporting Boundary: Consolidated subsidiaries in Japan	Based on actual observed values at two electronic furnace manufacturers who had introduced SCOPE-JET®, the electricity-saving effect per volume of jet oxygen (kWh/Nm³) was calculated. The ratio of the number of plants that have introduced SCOPE-JET® to the total number of electric furnace manufacturing plants was multiplied by the volume of crude steel products by electric furnaces in Japan in FYE2021, and the resulting number was assumed to be the production volume of crude steel contributed by the electricity saving from SCOPE-JET®. The amount of oxygen consumed by SCOPE-JET® in the production of this crude steel, and the amount of electricity saved per volume of oxygen were multiplied by the CO ₂ emission factor for electricity to calculate the GHG emission reduction contribution. The amount of the CO ₂ emissions generated during the manufacture of the oxygen was deducted.
MG Shield® Reporting Boundary: Consolidated subsidiaries in Japan	The amount of SF ₆ gas whose use was avoided through use of MG Shield® sold in FYE2021 was multiplied by the gas' GWP to calculate the GHG emission reduction contribution.
New refrigerants Reporting Boundary: Consolidated subsidiaries in Europe	We calculated the amount of reduction contribution by assuming a 7% per year leakage rate of new refrigerants sold in FYE2021, and multiplying leakage amount by the difference between the GWP of alternative refrigerants and the GWP of new refrigerants.
Nitrogen gas supply system for laser processing (PSA) Reporting Boundary: Consolidated subsidiaries in Japan	The annual power consumption of Taiyo Nippon Sanso Corporation's conventional air compressor was compared with that of the energy-saving type nitrogen gas supply system to calculate the annual electricity saving from using the energy-saving type system. The annual electricity saved was multiplied by the CO ₂ emission factor for electricity and the cumulative number of units sold from FYE2012 to FYE2021 to calculate the GHG emission reduction contribution.
Shuttle Chef® Reporting Boundary: Consolidated subsidiaries in Japan	The amount of electric power usage saved per year from using Shuttle Chef® when cooking was multiplied by the CO ₂ emission factor for electricity and the total number of units sold over the three years from FYE2019 to FYE2021 to calculate the GHG emission reduction contribution.
Hydrogen station Reporting Boundary: Consolidated subsidiaries in Japan	The annual CO ₂ emissions, which include emissions during the manufacture of the hydrogen, emitted by fuel cell vehicles (FCVs) filled with hydrogen at hydrogen stations sold or operated by Taiyo Nippon Sanso Corporation and operated during FYE2021 was compared with the annual CO ₂ emissions of gasoline cars to calculate the GHG emission reduction contribution.
Oxygen-enriched combustion in blast furnaces Reporting Boundary: Consolidated subsidiaries in Japan and affiliated companies in Japan	We calculated the GHG emission reduction contribution as the difference between the amount CO ₂ emissions in the production of crude steel using 100% coke and the production of crude steel via pulverized coal combustion based on crude steel production by the six steel companies to whom Taiyo Nippon Sanso Group supplied oxygen in FYE2021. This calculation method is described in "The Impact of Oxygen on Reducing CO ₂ Emissions in Blast Furnace Ironmaking" (July 2011) by Dr. Michael F. Riley. We deducted the amount of CO ₂ emitted during the production of oxygen and the pumping of gas into the blast furnace.

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, 2020 to March 31, 2021 included in its Integrated Report 2021 (the “Report”) for the fiscal year ended March 31, 2021.

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 Kashima Plant of TM-Air Co., Ltd. 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 Control

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 Control 1, we maintain a comprehensive system of quality control including documented policies and procedures regarding compliance with ethical requirements, professional standards and applicable legal and regulatory requirements.

KPMG AZSA Sustainability Co., Ltd.

KPMG AZSA Sustainability Co., Ltd.
Tokyo, Japan
September 29, 2021