TAIYO NIPPON SANSO

Focused on Growth. Driven by People.

2019 Integrated Report

Year Ended March 31, 2019

Philosophy

“Market-driven collaborative innovation: Improving the future through gases”

Guiding Principles

Progressive, united in creativity, forward-looking

We pledge to listen to the views of stakeholders and to contribute—through both our gas technologies and collaboration with partners in other industries—to the creation of a spiritually and materially wealthy society.

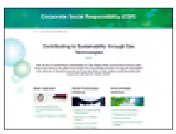
The Gas Professionals

We pride ourselves on our ability to act on customer feedback and to partner with a wide range of industries to help improve the quality of life. Market responsiveness and collaborative innovation are our two core values. These values are at the heart of everything we do as we shape the future through gas technologies, crafting a harmonious relationship between people, society and the planet.
We are the Taiyo Nippon Sanso Group, where professionals come together.

Disclosure System

This report contains important basic information that Taiyo Nippon Sanso particularly wishes to communicate to stakeholders. For more detailed non-financial information, please visit the CSR section of the Company’s corporate website.

Important ↕ Detailed

	Financial information	Non-financial information
Printed report	Integrated Report 2019 Basic information on the Company’s overall operating activities	
Website (Updated)	 **IR information** Detailed financial and share/shareholder information for investors https://www.tn-sanso.co.jp/en/ir/	 **CSR information** Detailed information on the Company’s CSR initiatives for all stakeholders https://www.tn-sanso.co.jp/en/csr/

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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 fiscal year 2017, 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 picture of the Taiyo Nippon Sanso Group, its operating activities and its approach to value creation.

In response to feedback from stakeholders, we enhanced the content of our integrated report 2019 as outlined below.

Section	Principal content	Pages
A Message to Stakeholders	Progress in the first year of the Ortus Stage 2 medium-term management plan and outlook for the remaining years	8–13
The Taiyo Nippon Sanso Group's Financial Strategies	Medium- to long-term financial strategies, including financing strategies related to major acquisitions in fiscal year 2019	14–15
Strategic Perspectives	Segment reports (performance, strategies and key initiatives) from the executives in charge	20–29
Corporate Governance	Management structure and information on the Company's governance system	32–35
Non-Financial Highlights	Key ESG-related data	48–49

Scope of Reporting

This report covers the activities of Taiyo Nippon Sanso and the companies of the Taiyo Nippon Sanso Group. In principle, non-financial information is for Taiyo Nippon Sanso and its Group companies in Japan and overseas, although in some cases the scope varies.

Period Covered

Data in this report is for fiscal year 2019, ended March 31, 2019, although some fiscal year 2020 activities are also featured.

Guidelines Used

This report was prepared in accordance with *Guidance for Integrated Corporate Disclosure and Company–Investor Dialogue for Collaborative Value Creation*, published by the Ministry of Economy, Trade and Industry; *Environmental Reporting Guidelines (2018 Edition)*, published by Japan's Ministry of the Environment; and the *GRI Sustainability Reporting Guidelines (2013)*, published by the Global Reporting Initiative (GRI).

The Taiyo Nippon Sanso Group's Value Creation Process

We continue working to address key social imperatives, thereby helping to create social value and increase economic value and at the same time achieving continued growth. Industrial gases, the raw material for which is air, an infinite resource, play a key role in modern life, supporting everything from basic industries such as steel and chemicals to cutting-edge fields such as electronics and medicine. Going forward, we will endeavor to increase the application of our state-of-the-art gas technologies with the aim of responding to issues that affect society and the environment, contributing to sustainability and enhancing our corporate value.

Management foundation

Corporate philosophy

"Market-driven collaborative innovation: Improving the future through gases"

- Ortus Stage 2 (medium-term management plan) Page 9
- Compliance
- Risk management
- Corporate governance

Management resources

Technological prowess Page 16

- Stable production of high-grade products
- Production of air separation units
- Product development capabilities derived from gas control technologies

Supply base Page 16

- Safe and stable supply capabilities
- Multiple supply modes
- Four-hub global supply network

Sales channels

- Extensive sales and service network
- Robust supply chain centered on official dealers
- Supply network

Human resources Page 18

- Diverse global labor force of approximately 20,000 individuals
- Ability to foster human resources with the ability to drive sustainable growth

Financial foundation

- Ability to generate stable cash flows
- Fund-raising capabilities

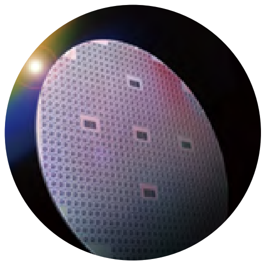
Group capabilities

- Extensive product and service portfolios
- Broad network of business bases

Business domains

Industrial gases

Stable supplies that support diverse industries



Electronics-related products

Provision of state-of-the-art solutions

Reportable segments

- Gas Business in Japan
- Gas Business in the United States
- Gas Business in Europe
- Gas Business in Asia and Oceania
- Thermos

Medical

Supply of medical gases and stable isotopes

Energy

Environment-friendly LPG that supports modern lifestyles

Plant and engineering

Production of top-class air separation units

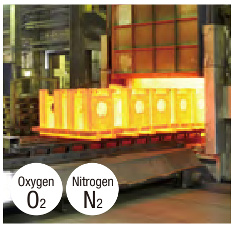
Value chain

- Development and production
- Supply
- Sale
- Use by various industries

Thermos

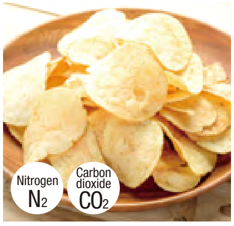
A pioneer in vacuum-insulated bottles with a diverse product range

Outputs



Steel

Installs on-site plants at steel production facilities that ensure stable supplies of industrial gases, thereby supporting increased production efficiency



Food

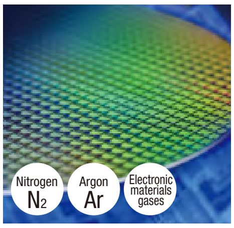
Provides Bistranza-brand products, which represent applications of nitrogen-filled packaging, freezing and other food-related gas technologies

Chemicals

Provides stable supplies of nitrogen, essential to the safety of many production facilities, via pipeline networks extending across large-scale industrial complexes

Life sciences/medical

Produces Water-^{18}O stable isotope, used in reagents for positron emission tomography (PET) diagnostics through the application of air separation technologies, and has established the world's most extensive supply framework

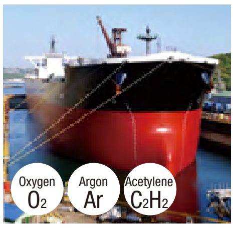


Electronics

Supplies nitrogen and electronics materials gases from total gas centers (TGCs) built on sites adjacent to large-scale semiconductor fabs

Energy

Supplies environment-friendly, safe LPG for use in homes, as well as in commercial and other premises



Transportation equipment and machinery

Supplies gases for cutting and welding, as well as of related equipment and materials, to automobile manufacturing facilities, shipyards and construction sites

Outcomes

Earth

- Efficient use of resources and energy
- Response to climate change

Society

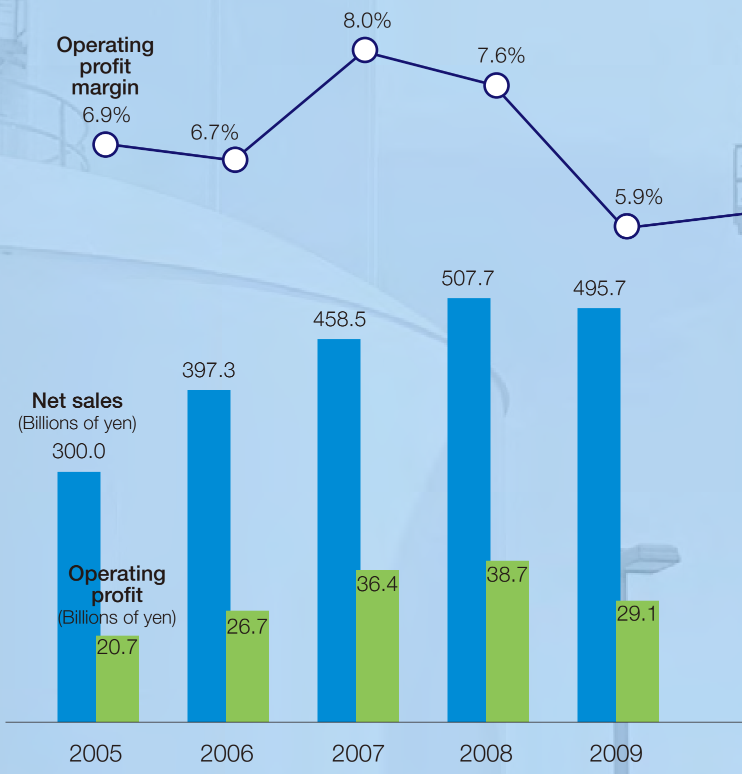
- Contribution to maintenance of physical health
- Contribution to medical care
- Response to food and agriculture-related issues
- Increase in consumer satisfaction

People (Companies and organizations)

- Product and service reliability
- Respect for human rights
- Contribution to communities
- Human development and training
- Promotion of measures to improve information security and privacy
- Stakeholder engagement
- Occupational health and safety
- Diversity and inclusion

Milestones in Value Creation

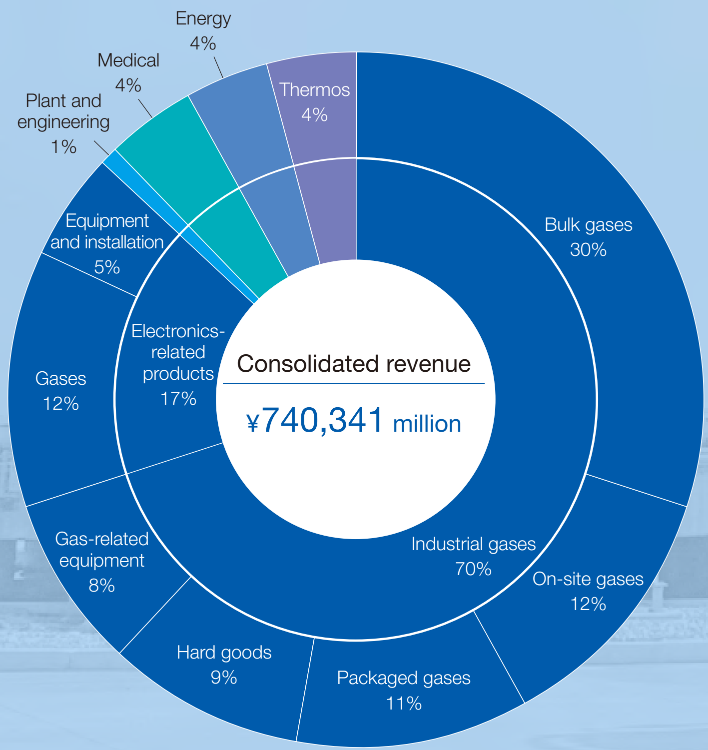
Since our creation, we have pursued swift global expansion through a forward-looking program of mergers and acquisitions (M&As) and capital investments. Today, our global network currently spans four key geographic hubs: Japan, the United States, Europe, and Asia and Oceania. Having set targets of consolidated revenue of ¥910.0 billion, core operating profit of ¥100.0 billion, a core operating profit margin of 11.0%, an ROCE of 7.1% and an overseas revenue ratio of 55.0% for fiscal year 2021, the final year of our current medium-term management plan, Ortus Stage 2, we are pressing ahead with active efforts to ensure these targets are achieved.



Business Scale

(As of March 31, 2019)

Global industrial gases market	Global presence
Number 4	29 countries and territories
Production facilities	**Core operating profit**
130-plus	¥65,819 million
Overseas revenue ratio	**Labor force**
47.9%	19,229



1910
Nippon Sanso is established under the name Nippon Sanso Ltd.

1918
Toyo Sanso K.K. is established

1946
Taiyo Sanso Co., Ltd. is established

1995
Taiyo Toyo Sanso Co., Ltd. commences operations

2004
Created as Taiyo Nippon Sanso Corporation

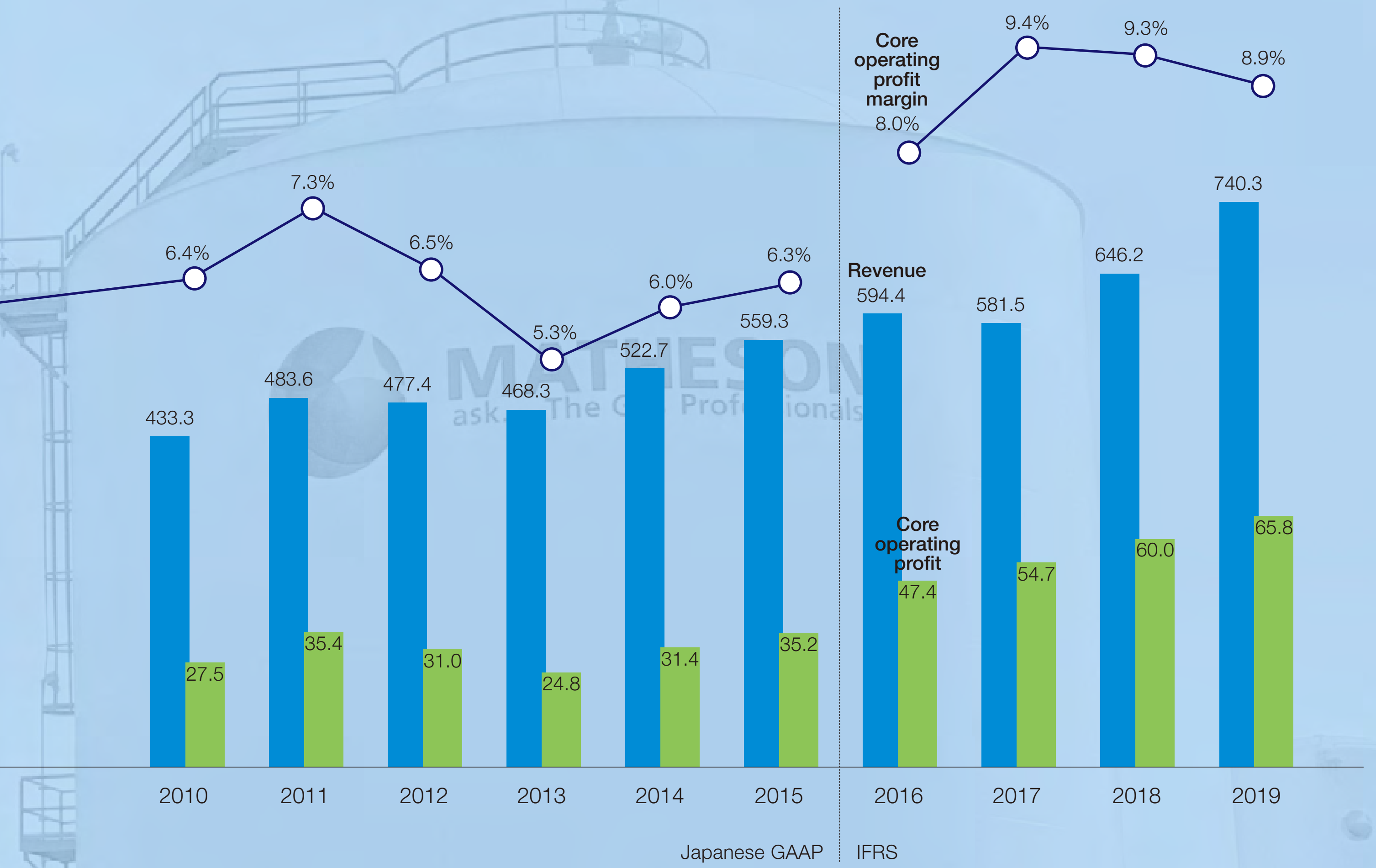
October 2004
Taiyo Nippon Sanso is created through the merger of Nippon Sanso and Taiyo Toyo Sanso

2004
Develops Water-^{18}O, a pharmaceutical ingredient for reagents used in PET diagnostics

2006
Acquires Linweld Inc., an industrial gases production and marketing company in the western and central United States

Purchases helium source contracts and other related assets of the former BOC Group plc (currently Linde plc) in the United States and Europe

Acquires all shares in Hitachi Sanso K.K. and changes the company's name to Taiyo Nippon Sanso Higashikanto Corporation



2014
Start of Ortus Stage 1 medium-term management plan

2017
Start of Ortus Stage 2 medium-term management plan

2008
Establishes Dalian Changxing Island Taiyo Nippon Sanso Gas Co., Ltd., in China and installs air separation unit

2009
Acquires Valley National Gases LLC, the largest independent industrial gases distributor in the United States

2010
Acquires Western International Gas and Cylinders, Inc., a leading U.S. wholesale supplier of acetylene

2012
Acquires Singapore-based industrial gases and welding equipment manufacturer Leeden Limited

2013
Launches Hydro Shuttle package-type hydrogen refueling station

2014
Acquires U.S. carbon dioxide gas manufacturer Continental Carbonic Products, Inc.

Becomes a wholly owned subsidiary of Mitsubishi Chemical Holdings Corporation

2015
Acquires Australian liquefied petroleum gas (LPG) and industrial gases distributor Renegade Gas Pty Ltd

2016
Acquires a portion of the U.S. gas business of France's Air Liquide S.A., together with related assets

2017
Establishes JFE Sanso Center Co., Ltd.'s Kurashiki Plant

2018
Establishes TNSC Technical Academy

Acquires a portion of the European gases business of U.S. firm Praxair, Inc.

2019
Commences production and sales of Water-^{17}O, a pharmaceutical ingredient for reagents used in magnetic resonance imaging (MRI)

Acquires a portion of Linde Gas North America LLC's HyCO business

The Taiyo Nippon Sanso Group's Business Model

Technological development, production, supply and sales in our mainstay industrial gases business

Our core competency—our ability to provide safe and stable supplies of industrial gases—reflects technological development, production, supply and sales capabilities accumulated over the years since our creation. These capabilities are important assets that will continue to underpin sustainable growth in the years ahead.

Technological development

Technological development capabilities that create value

We work to grasp the needs of customers and, by leveraging our gas technologies, to help them address key challenges.

- Product development that leverages core technologies
- Open innovation

Efforts to enhance product development, supply and facility-related technologies and feedback received

Feedback from customers

Production

Production capabilities: Ability to produce stable supplies of high-purity industrial gases

We provide safe and stable supplies of a diverse range of industrial gases required by customers using highly energy-efficient production equipment.

- Production and supply technologies built up over nearly a century
- Rigorous safety, quality and technological management

Air separated gases (Typical industrial gases) **Production process**

Raw materials	Separation/rectification	Products
Air	Air separation unit	Oxygen O_2, Nitrogen N_2, Argon Ar

Other industrial gases

Carbon dioxide CO_2, Hydrogen H_2, Helium He, LPG, ESG[*1], Acetylene C_2H_2

Principal supply modes	O_2	N_2	Ar	CO_2	H_2	He	LPG	ESG	C_2H_2
On-site gases	●	●	●		●[*2]				
Bulk gases	●	●	●	●	●	●	●		
Packaged gases	●	●	●	●	●	●	●	●	●

[*1] Electronics specialty gas

[*2] Thanks to the acquisition of a HyCO business, we are now able to supply hydrogen via pipeline.

Investments in growth

- Capital investments
- Business investments (including M&As)
- Investments in R&D

Value of business activities (Cash)

Returns to shareholders

Financial soundness

Customers

Proposals that yield new value and products/efforts to maintain or add depth to relationships with customers

Creation of new value and efforts to further enhance product development and quality

Sale

Responsiveness and ability to address issues that enhance relationships of trust with customers

We help customers address issues and to create new value by extending proposals for gas types, flow rates, pressures, supply formats and backup systems that respond to their unique needs.

Sales activities	Quality assurance	Gas engineering	Safety training
Introduction of products and services, development of proposals, acceptance of orders	Various initiatives that ensure worry-free products	Joint development with customers (applications for gas technologies)	Protecting customers and customers' gas facilities

Supply

Ability to supply gases in the manner that best suits customer needs

We provide safe and stable supplies of a diverse range of industrial gases required by customers using the optimal supply mode.

On-site gases

We install on-site plants on sites adjacent to the customer's site and supply gases through pipelines on a continuous basis.

Bulk gases

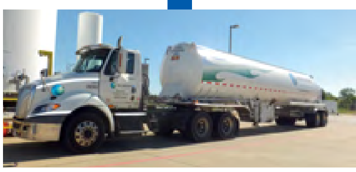
We install liquefied gas tanks and other facilities on the customer's site and supply gases in a manner appropriate to the method of use.

Packaged gases

We deliver gases to customers in cylinders for supply in a manner appropriate to the method of use.

Gases are liquefied at our production facility and transported to customers by tanker truck.

Tanker truck



Filling station

A Message to Stakeholders

Contributing to a society that enjoys both spiritual and material wealth by pursuing the development of innovative gas technologies

In line with our philosophy, “Market-driven collaborative innovation: Improving the future through gases,” we have worked consistently to contribute to the realization of a spiritually and materially wealthy society by capitalizing on our gas technologies to work in collaboration as a vital partner to companies in a host of industries, including steel, chemicals, electronics, automobiles, construction, shipbuilding, food and healthcare.

Since our founding in 1910, we have grown in tandem with Japan’s industrial sector. We subsequently expanded into overseas markets, beginning with the creation of a representative office in Singapore and a local subsidiary in the United States in 1980. Subsequent efforts focused on broadening our operations in the United States, as well as on establishing a presence in China, Southeast Asia, India and other Asian markets. In 2015, we entered the Australian market. In December 2018, we acquired a portion of the European business of U.S. company Praxair, Inc. As a consequence, our global network currently spans four key geographic hubs: Japan, the United States, Europe, and Asia and Oceania.

We are grateful for the ongoing support of our stakeholders, without whom the sustained growth we have enjoyed to date would not have been possible. To fulfill the responsibilities implied in our corporate slogan, “The Gas Professionals,” we remain committed to fulfilling our responsibility to maintain safe and secure supplies of gases for our customers around the world, as well as contributing to a society that enjoys both spiritual and material wealth by pursuing the development of innovative technologies. To this end, we will remain attentive to the views of customers and continue to advance the development of new gas technologies.

It is my hope that readers find this year’s integrated report both informative and interesting and that it contributes to a better understanding of the Taiyo Nippon Sanso Group today and its goals for the future.

September 2019

Yujiro Ichihara
Representative Director, President CEO

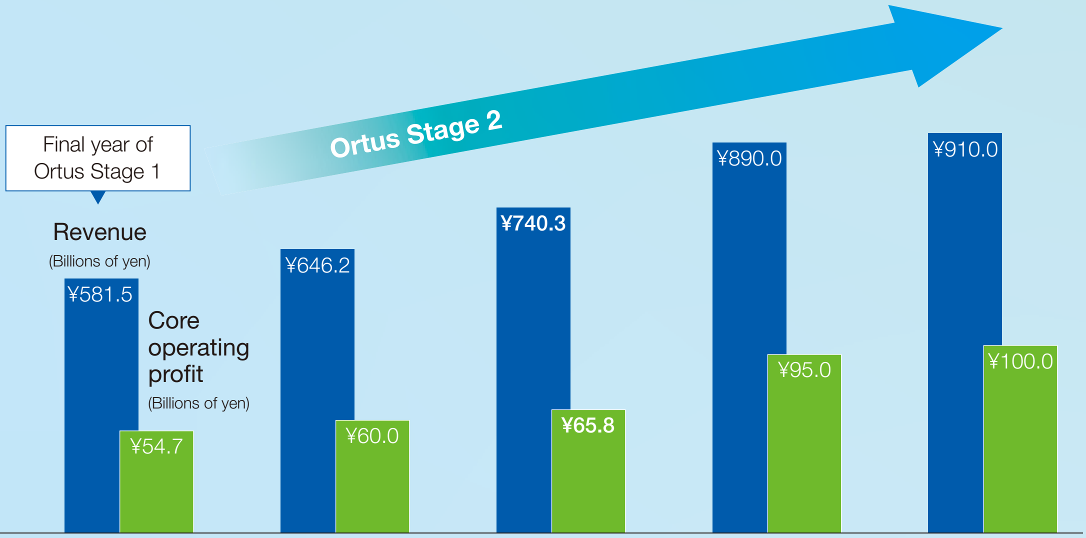
Ortus Stage 2: Progress to Date

In fiscal year 2018, ended March 31, 2018, we embarked on our current medium-term management plan, Ortus Stage 2, which will guide our efforts through fiscal year 2021. Taking into account the impact of two large-scale acquisitions in fiscal year 2019, that is, a portion of Praxair's European business and a portion of Linde Gas North America LLC's HyCO business, we have revised our targets for the final year of the plan.

Note: "Ortus" is a Latin word meaning "beginning" or "birth."

	Initial targets for the final year of Ortus Stage 2 (Fiscal year 2021)	Revised targets for the final year of Ortus Stage 2 (Fiscal year 2021)
Revenue	¥800.0 billion	¥910.0 billion
Core operating profit	76.0 billion	100.0 billion
Core operating profit margin	9.5%	11.0%
Overseas revenue ratio	45.0%	55.0%
ROCE	9.0%	7.1%
Adjusted net D/E ratio	—	1.27 times

Note: Exchange rates used: ¥110.00/U.S.$1.00, ¥125.00/€1.00



Years ended/ending March 31	2017 Actual (IFRS)	2018 Actual (IFRS)	2019 Actual (IFRS)	2020 Forecast (IFRS)	2021 Target (IFRS)
Revenue	¥581.5	¥646.2	**¥740.3**	¥890.0	¥910.0
Core operating profit*1	54.7	60.0	**65.8**	95.0	100.0
Core operating profit margin	9.4%	9.3%	**8.9%**	10.7%	11.0%
Overseas revenue ratio	40.8%	43.3%	**47.9%**	55.0%	55.0%
ROCE*2	8.4%	8.4%	**6.2%**	6.6%	7.1%
Adjusted net D/E ratio*3	—	—	**1.54 times**	1.38 times	1.27 times

*1. Core operating profit is calculated by subtracting losses (nonoperating items) produced by nonrecurring factors from operating profit. Nonrecurring 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 debt-to-equity (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.

Acquisition of Praxair's European Business and Linde's U.S. HyCO Business

Resources Accumulated to Date Contribute Substantially to the Conclusion of Important Large-Scale Acquisitions

Recent years have seen a steady realignment of the global industrial gases market. In 2016, France's Air Liquide S.A., at the time the global leader in the industrial gases market, acquired U.S. firm Airgas, Inc., while in 2017, then-number two Linde AG of Germany and then-number three Praxair reached an agreement to merge. Against this backdrop, since fiscal year 2018 we have promoted a variety of decisive measures in line with our Ortus Stage 2 medium-term management plan with the aim of swiftly establishing a position that ensures competitiveness with major global players. Since the Linde–Praxair agreement, antitrust authorities reviewed the merger, as a result of which it was ruled that approval of the transaction was conditional on both companies divesting a portion of their existing businesses.

Recognizing this as a tremendous opportunity to dramatically bolster our presence in the global industrial gases market, we moved to acquire the portion of Praxair's European businesses being sold off.* To execute the acquisition, we organized a team comprising a select few in-house human resources and external experts who reported directly to the president. In-house team members also included executives from U.S. subsidiary Matheson Tri-Gas, Inc., with extensive experience making acquisitions in the United States, who played a key role in negotiations with Praxair and with pertinent authorities. High marks given our track record and technological capabilities in the manufacture and supply of industrial gases by the European Commission also had a positive impact. Moreover, thanks to the positive evaluation of our stable earnings performance by financial institutions and ratings agencies we were able to borrow the entire amount required for the acquisition. Valuable resources accumulated over our years in business thus contributed substantially to the successful conclusion of this important large-scale acquisition.

*Following Praxair's sale of a portion of its European businesses, a review of the merger by the U.S. Federal Trade Commission determined that Linde would sell its HyCO business in the United States. Through Matheson Tri-Gas, we concluded an agreement with Linde Gas North America to acquire this business.

Acquired European Businesses Enjoy Outstanding Profitability

The European businesses acquired from Praxair include industrial gas businesses in Germany, Spain, Portugal, Italy, Norway, Denmark, Sweden, the Netherlands and Belgium, carbon dioxide gas businesses in the United Kingdom, Ireland, the Netherlands and France, and helium-related businesses.

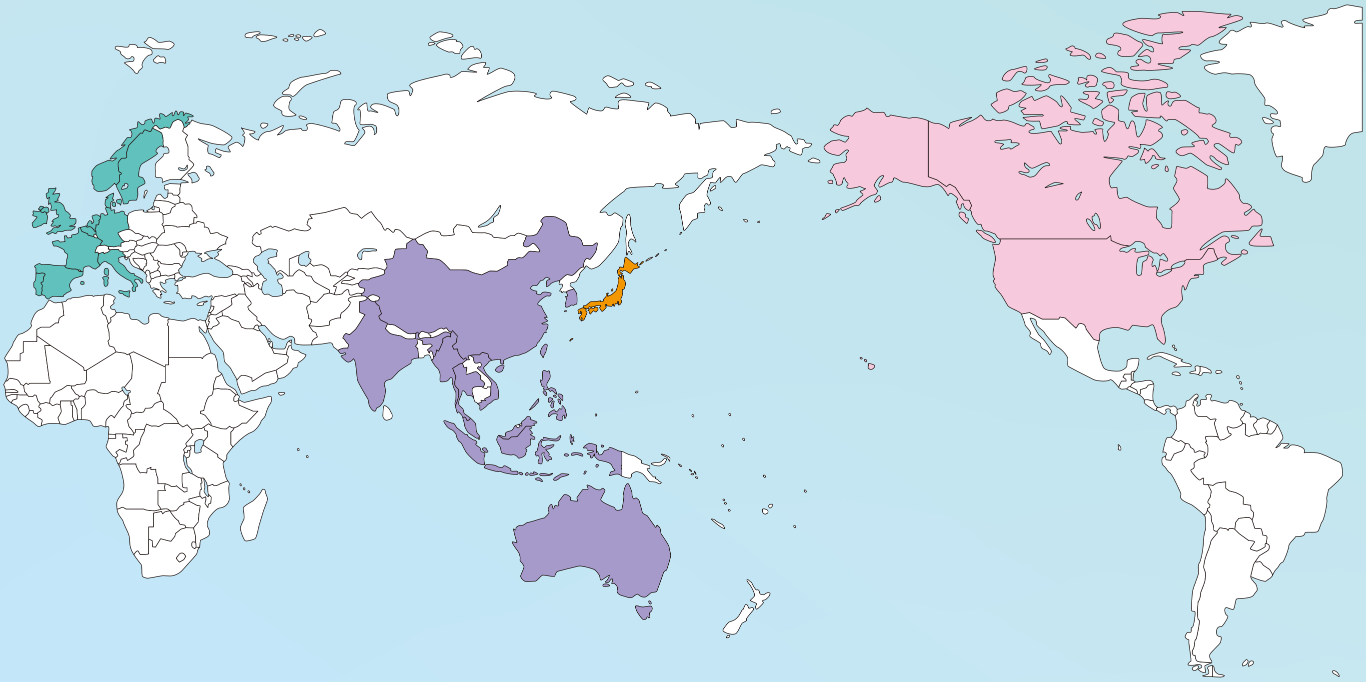
We subsequently created the brand "Nippon Gases" to be used by the European operating companies in these businesses and established a holding company in Madrid, Nippon Gases Euro-Holding S.L.U., to serve as our regional headquarters for Europe. Our gas business in Europe now generates annual revenue of approximately ¥170 billion, ranking it second behind our gas business in the United States, but its stable profit base means that it is top in terms of profit margin.

Through this transaction, we also gained intact the acquired businesses' talented personnel, including its top management team, and its business platforms. Efforts to integrate these businesses with our existing European businesses are proceeding at a favorable pace. The business is also moving ahead with a number of major investment projects that it had put on hold prior to being acquired. These include projects in promising areas new to the Taiyo Nippon Sanso Group, including the installation of an air separation unit for the salmon farming industry in Northern Europe and efforts to reinforce a refrigerant gas business in Italy. Going forward, we will also take steps to realize synergies by collaborating to develop and deploy strategic products, notably electronics materials gases and helium, and optimizing supply chains.

HyCO: An Example of Open Innovation

The HyCO business separates hydrogen (H_2) and carbon monoxide (CO) from feedstock such as natural gas and supplies it to the petroleum refining and petrochemical industries on a large scale through pipelines. The HyCO business that we acquired from Linde Gas North America encompasses all related assets, including five U.S. HyCO plants employing a technology called steam methane reforming (SMR), pipelines, remote monitoring centers, human resources, supply technologies and existing supply contracts. We have more than half a century of experience in the supply of air separated gases from large-scale on-site plants. This acquisition has enabled us to expand the scope of our operations by adding new products to our lineup, underscoring its importance as an example of open innovation. Looking ahead, we will work to strengthen our ability to offer proposals for new on-site projects in the United States as well as to deploy newly gained capabilities in other regions where we have operations.

Global Network Spanning Four Key Geographic Hubs



Emerging onto a Still Wider Stage

Charting Steady Growth and Striving to Become a Stronger, Better Company

Our Ortus Stage 2 medium-term management plan outlines five basic strategic policies and carries over four key strategies of its predecessor, Ortus Stage 1, which are summarized as “structural reform,” “innovation,” “globalization” and “M&A.” Through the steady execution of these strategies, we will aim to become a stronger, better company by further expanding our global industrial gases businesses and our Thermos business, which encompasses a variety of housewares, and further enhancing our profitability.

Challenges Ahead

Ortus Stage 2 identifies four key challenges.

• Expand domestic gas business

Chart sustainable growth by maximizing synergies between our gas business and our gas-related businesses, including equipment and services, in Japan, and strengthen profitability by restructuring production and logistics.

• Promote globalization

Capitalize on regional networks and competitive strengths to enhance comprehensive Group capabilities, facilitating the further expansion of the scale of our operations.

• Improve financial health

Work to create a stable flow of cash provided by operating activities, facilitating the systematic reduction of interest-bearing debt and an improved net debt-to-equity ratio.

• Step up safety, quality and compliance initiatives

Step up efforts to ensure safety, quality and compliance in Japan and overseas with the aim of establishing a stronger business foundation that will underpin sustainable growth.

Five Basic Policies

Expanding domestic gas business	Safety, quality and compliance	Accelerating R&D strategy	Globalization	Strengthening corporate functions
• Expand gas-related businesses such as equipment, in addition to the gas business • Sustain growth of businesses in Japan (M&As inside Japan and changes to sales channels)	• Strengthen safety, quality and compliance efforts • Strengthen collaboration with regional holding companies in overseas markets where businesses are expanding	• Accelerate R&D with open innovation • Concentrate on prioritized development fields based on portfolio strategies • Make a larger contribution to profitability	• Increase overseas M&As and capital investments • Establish new businesses	• Implement human resource, information and finance strategies • Strengthen corporate functions to provide stronger support to TNSC and Group companies

Four Key Strategies

1. Structural reform

Maximize Group power by augmenting collaboration

- Strengthen collaboration in sales and marketing functions
- Integrate engineering functions
- Consolidate production and logistics
- Promote shared services

Total TNSC

2. Innovation

Promote innovation by capitalizing on external resources and IoT

- Innovation in R&D
- Innovation in engineering
- Innovation in sales approaches
- Innovation in production and logistics

3. Globalization

Enhance governance

- Strengthen the functions of global operations
- Strengthen the functions of regional holding companies

Growth strategies

- Expand business areas
- “Total Electronics”

Total Electronics

4. M&A

Seek promising M&A opportunities to ensure sustainability and accelerate growth

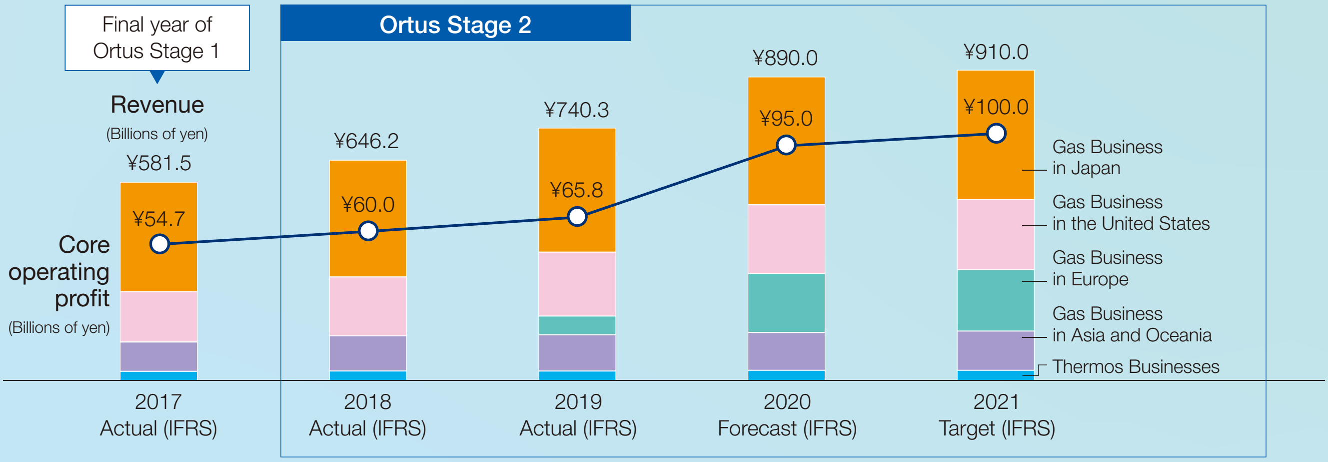
- Expand business territory and reinforce operational density
- Acquire new products, technologies and supply chains
- Expand medical business

Strengthening Global Management

With the realization of a global network spanning four geographic hubs, revenue in overseas markets is expected to account for more than 50% of our consolidated revenue in fiscal year 2020. To reinforce our global management framework and ensure it better reflects our operations, in June 2019 Matheson Tri-Gas Chairman and CEO Thomas Scott Kallman and Nippon Gases Euro-Holding Chairman and President Eduardo Gil Elejoste, who oversees our gas businesses in the United States and Europe, respectively, joined our Board of Directors. Looking ahead, we will continue working to promote the optimal allocation of management resources and fortify corporate governance from a global perspective.

Segment Consolidated Revenue and Core Operating Profit

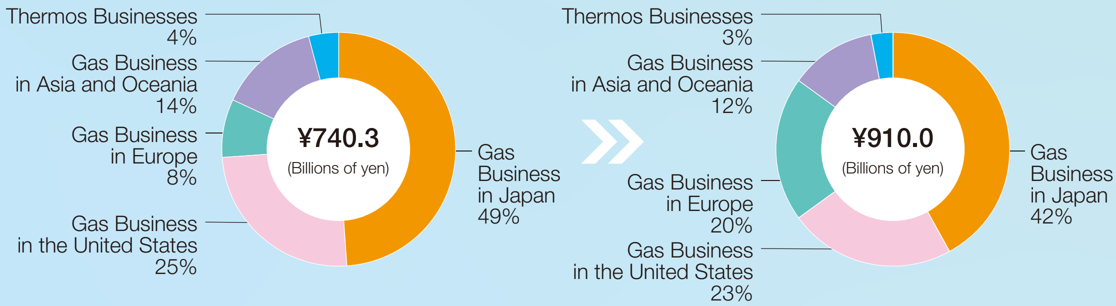
Years ended/ending March 31



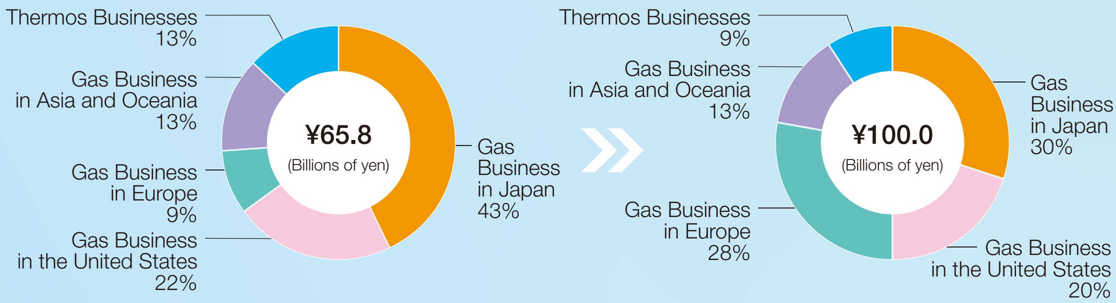
Breakdown of Targets for the Final Year of Ortus Stage 2 (Fiscal Year 2021)

	Second year of Ortus Stage 2 (Fiscal Year 2019)	Final year of Ortus Stage 2 (Fiscal Year 2021)

Revenue



Core operating profit



Core operating profit margin	8.9%	11.0%

Overseas revenue ratio

Note: Fiscal year 2019 figures for the Gas Business in Europe segment are for the four months ended March 31, 2019.

The Taiyo Nippon Sanso Group's Financial Strategies

We are executing decisive investments designed to ensure the swift restoration of a sound financial structure and support future growth.

Yoshifumi Koide
Executive Officer
Executive General Manager,
Corporate Administration Division

Progress Under Ortus Stage 2

Fiscal Year 2019 in Review

Our operating environment in fiscal year 2019 benefited from firm production levels in both domestic and overseas manufacturing industries, as a consequence of which shipments of air separated gases (oxygen, nitrogen and argon) were favorable. In contrast, in electronics-related products, shipments of electronics materials gases for use in certain product areas declined in Japan. Against this backdrop, we reported consolidated revenue of ¥740.3 billion, an increase of 14.6%, or ¥94.1 billion, and core operating profit of ¥65.8 billion, up 9.6%, or ¥5.8 billion. Nonetheless, profit attributable to owners of parent declined ¥7.7 billion, to ¥41.2 billion, owing primarily to the absence of a ¥12.2 billion taxes decrease in income taxes recorded in fiscal year 2018 as a result of a reduction of the federal corporate income tax rate in the United States. Discounting this factor, profit attributable to owners of parent would have risen ¥4.5 billion.

Outlook for Fiscal Year 2020

Our initial consolidated results forecasts for fiscal year 2020, announced on May 13, 2019, call for revenue of ¥890.0 billion in fiscal year 2020, up 20.2%, or ¥149.7 billion. We also forecast core operating profit of ¥95.0 billion, an increase of 44.3%, or ¥29.2 billion, and profit attributable to owners of parent of ¥57.0 billion, up 38.0%, or ¥15.8 billion. The principal factor behind these sizeable improvements is the inclusion of a full year of results for our recently acquired industrial gases business in Europe and HyCO business in the United States and medical equipment sales company IMI Co., Ltd., in Japan. We also expect net cash provided by operating activities to rise ¥31.9 billion, to ¥130.5 billion, and free cash flow to reach ¥35.1 billion.

Swiftly Restoring a Sound Financial Structure

Using Adjusted Net Debt-to-Equity Ratio as an Indicator of Financial Soundness

In making plans for raising funds for major acquisitions in fiscal year 2019, we took into account the outstanding profitability of the acquired businesses, as well as the need to avoid a decline in capital efficiency due to stock dilution, as well as to maintain financial soundness. Accordingly, we procured ¥250.0 billion, approximately 40% of the necessary funds using hybrid financing*1, thereby maintaining an "A" credit rating. Going forward, we will work to reduce interest-bearing debt, as planned, primarily by using cash flows generated by the acquired businesses, to restore a sound financial position. We have added an adjusted net D/E ratio*2—a key management indicator—of 1.27 times to our Ortus Stage 2 targets for fiscal year 2021, an improvement from 1.54 times in fiscal year 2019. Beyond fiscal year 2021, we will take steps to bring this down to below 1.0 times as swiftly as possible.

*1 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.

*2 The adjusted net D/E ratio is calculated taking into account the amount of debt procured using hybrid financing that has been recognized as equity credit by ratings agencies (50% of the procured amount).

Promoting Capital Efficiency

To date, we have sought to ensure capital efficiency in Japan and the United States by using a cash management system. In Europe, we have established a financial subsidiary to centralize the management of settlements among Group companies in the region and of exchange rate risk, and are in the process of building a system that facilitates more efficient capital management. We will also seek to ensure the effective use of assets, promoting the creation of capital through ongoing efforts to reduce cross-shareholdings, as well as through the sale of idle assets.

Financial Soundness and Investments in Growth

In fiscal year 2019, the second year of Ortus Stage 2, we invested a total of ¥765.2 billion, including in the acquisition of a business in Europe. As a consequence, we will significantly exceed the ¥340.0 billion estimated for investments over the four years of the plan. Although some investment plans have been reassessed, in light of the increase in net cash from operating activities resulting from these acquisitions we currently plan to invest approximately ¥200.0 billion over the remaining two years. This will include capital investment in the acquired business in Europe that will be larger than usual because certain projects were put on hold prior to the acquisition. With due consideration given to our financial position, we will also promote investments designed to drive business expansion in Japan and overseas.

As indicated above, we currently forecast net cash from operating activities in fiscal year 2020 of ¥130.5 billion. In the near future, we anticipate that this will rise to around ¥140.0 billion. Once investments in Europe have stabilized, in approximately two years later, we also expect free cash flow to exceed ¥60.0 billion. Accordingly, we are confident in our ability to steadily reduce interest-bearing debt. Assuming this proceeds as planned, we expect our adjusted net D/E ratio to fall below 1.0 times in fiscal year 2023.

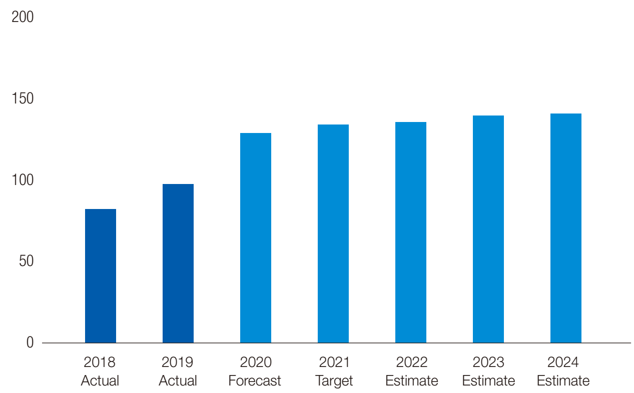
Outlook for the Restoration of Financial Soundness and Net Cash Provided by Operating Activities

Thanks to sustainable growth in existing businesses and the outstanding profitability and stable results of newly acquired businesses, we expect net cash provided by operating activities to increase steadily.

Net Cash Provided by Operating Activities

Years ended/ending March 31

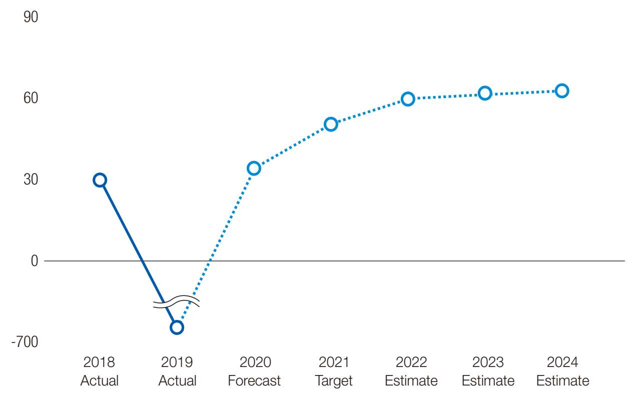
(Billions of yen)



Free Cash Flow

Years ended/ending March 31

(Billions of yen)



SPECIAL FEATURE 1

Technologies That Support Efforts to Ensure Safe, Secure and Stable Supplies of Industrial Gases

The mission of the industrial gas business is to ensure safe, secure and stable supplies of high-purity industrial gases. Advanced technologies and know-how for the safe production, supply and transport of industrial gases are essential to the continuity of this business. In this special feature, we highlight our extensive technologies and know-how, focusing on our core air separated gases business.

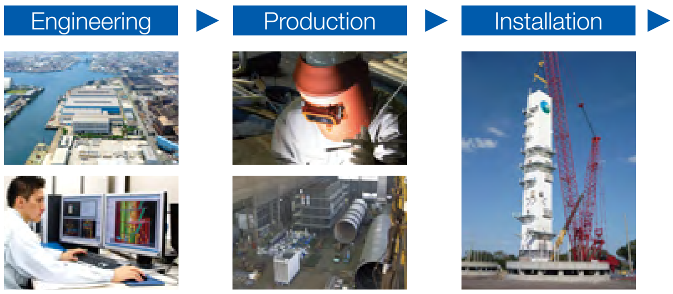
Capitalizing on Technologies, Know-How and Experience in the Industrial Gases Business Accumulated over More than 100 Years

Taiyo Nippon Sanso predecessor Nippon Sanso, a plant manufacturer, realized Japan's first air separation unit in 1935. We still design and produce air separation units today at our Keihin Factory in Kawasaki, Kanagawa Prefecture. Founded in 1910, we have more than a century of experience in the production and supply of industrial gases. Our technologies, expertise and experience in the supply of gases via pipeline from large-scale on-site plants, which date back to the 1960s, are equal to those of any of our competitors around the world.

The technologies and know-how underpinning our industrial gases business are diverse, but the most critical are those used in the area of plant and engineering, that is, in everything from the design through to the maintenance of air separation units, which produce air separated gases; in plant operations, which facilitate the stable and efficient production of industrial gases at gas production facilities; and in supply operations, which enable safe and stable supplies of gases to customers. Equally crucial are various initiatives that support safety and security and which are thus crucial to building relationships of trust with customers. 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.

We will continue to build on our technologies and know-how in the years ahead to create systems that ensure safe and stable supplies in locations around the world. We will also continue working to further enhance our technological capabilities with the aim of continuing to earn the trust of society.

Production and Supply of Industrial Gases and Related Technologies



Plant and Engineering

Ability to provide services encompassing everything from design to maintenance

Air separated gases (oxygen, nitrogen and argon) are produced simultaneously by separating atmospheric air into its constituent gases. The production equipment used varies substantially depending on the separation technology employed. We use state-of-the-art cryogenic air separation units, which boast a high capacity and yield ultrahigh-purity air separated gases, that are built at the Keihin Factory. At this facility, we leverage our plant construction technologies, which are among the world's most advanced, to provide comprehensive services encompassing everything from design and production through installation, trial operation and post-start-up maintenance, as a team of professionals in the area of air separation units.

The Presidential Policy Directive on Technology Risk Management

The President of TNSC requests all the Group members to comply thoroughly with the applicable laws, regulations and rules as “the Gas Professionals,” and herewith has established the following policy on the risk management of public safety/security, quality, products safety, environmental sustainability and strategy of intellectual properties, that are essential to running our business.

All the Group members are expected to:

- thoroughly comprehend this policy and put it into practice,
- minimize the risk of loss by planning, doing and continuously improving the corporate risk management system and business continuity plan to cope with disasters, e.g., large-scale earthquakes,
- make sincere efforts to raise customers’ satisfaction over our business activities,
- obtain and maintain social credibility by achieving public safety and security, and contribution to environmental sustainability of the planet Earth,
- pursue a sound prosperity of our business and an enhancement of our corporate value.

Public safety and security:
We TNSC implement voluntary activities for safety assurance based on our motto of “Selling gas is selling safety.”

Quality:
We TNSC accurately identify the sophisticated and diversifying needs of customers and society, and offer the services and products of the best suited quality in response.

Products safety:
We TNSC offer safer and more reliable products by minimizing dangers inherent over the life of the products.

Environmental sustainability:
We TNSC drive action to reduce the impact on the global environment and prevent pollution.

Intellectual properties:
We TNSC, by obtaining the exclusive right of intellectual properties and exploiting them, protect our business from patent litigation that might be imposed by other parties.

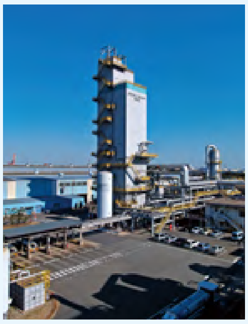
Initiatives to Support Technologies

TNSC Technical Academy: Improving Group Technological and Safety Capabilities

As a company that handles compressed gases, we recognize that fostering our employees’ ability to sense danger and hazard awareness is critical. In June 2018, we established the TNSC Technical Academy, a training facility designed to further bolster techniques for preventing industrial gas-related accidents and ensuring technical skills are passed on to subsequent generations. The laboratory is set up to anticipate all types of accidents and problems that employees on the front lines might face, creating a framework that makes it possible for Group employees from around the world to participate in training. The academy also provides TNSC Technical Seminars, which focus on instilling understanding of basic technologies.

Technologies for Optimizing Factories

The production of our core gases and liquid products uses a considerable amount of electric power and thus accounts for a significant portion of the Taiyo Nippon Sanso Group’s overall impact on the environment. We thus recognize the reduction of electric power consumption at our factories as a priority for us and are taking steps to update facilities by replacing existing equipment with new high-efficiency alternatives and improving equipment operating methods, as well as by promoting improvements that leverage cutting-edge IT, including those used in AI and IoT. Notable examples include technologies for optimizing combinations of gases generated by multiple air separation units by analyzing operational data and for optimizing turbines for gas liquefaction equipment, both of which have earned high marks for helping reduce electric power consumption without the need for capital investment. Looking ahead, we will deploy these technologies across the Group with the goal of further reducing our environmental impact.



Gas production ▶ Gas supplies ▶ Gas consumption

Plant Operations

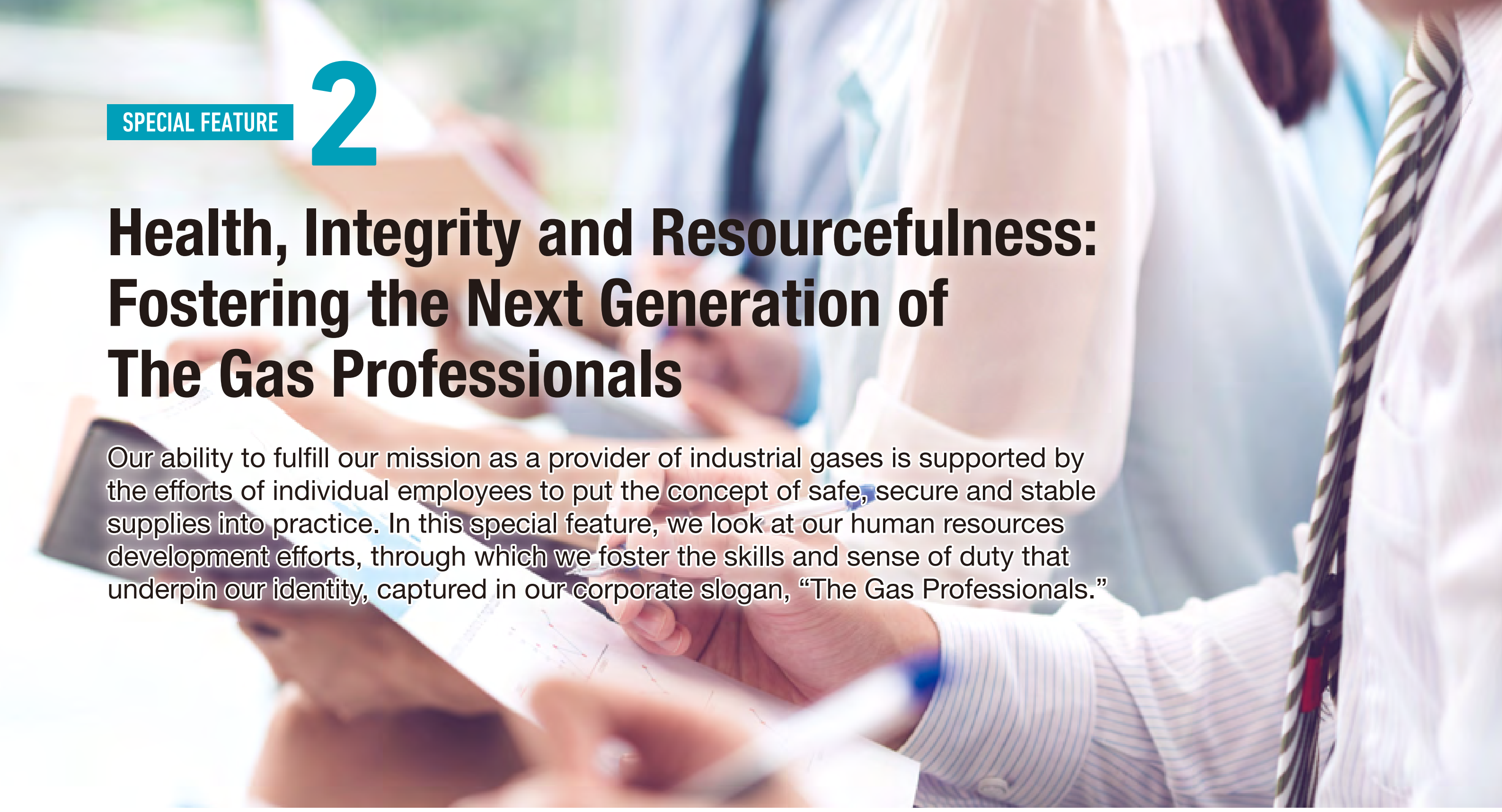
Ability to ensure stable, efficient production of gases

The stable, efficient production of air separated gases depends on improving the skill levels of plant operators, as well as on ensuring careful everyday operational and equipment management at our factories. At steelworks (blast furnaces and converters) and chemical production facilities, among others, the disruption of industrial gas supplies, that is, the stoppage of equipment, leads to breakdowns and accidents. For this reason, advanced plant operations and maintenance technologies are crucial to maintaining required gas flow rates, pressure and quality, thereby facilitating uninterrupted around-the-clock production 365 days a year. We provide practical education, including training for emergency situations, using a proprietary air separation unit simulator developed for this purpose. We also provide diverse training aimed at improving technical and security capabilities.

Supply Operations

Ability to ensure safe and stable supplies of gases

Conditions of use for air separated gases, including the amount and pressure thereof, vary depending on the nature of the customer’s site. Accordingly, we provide gases in the most appropriate supply mode, including through pipelines from on-site plants or by tanker truck for storage in tanks located at the customer’s site. In addition to ensuring strict adherence to safe driving rules by companies responsible for conveying and supplying gases by tanker truck, we work as one to improve the awareness and technologies of employees involved in supply operations who handle pressurized gases. We also ensure that customers correctly understand the nature and dangers of the gases they use, i.e., of suffocation due to the lack of oxygen, frostbite caused by low-temperature liquefied gas, fires and explosions resulting from oxygen enrichment by promoting self-protection initiatives and holding regular safety workshops.



SPECIAL FEATURE 2

Health, Integrity and Resourcefulness: Fostering the Next Generation of The Gas Professionals

Our ability to fulfill our mission as a provider of industrial gases is supported by the efforts of individual employees to put the concept of safe, secure and stable supplies into practice. In this special feature, we look at our human resources development efforts, through which we foster the skills and sense of duty that underpin our identity, captured in our corporate slogan, “The Gas Professionals.”

Balancing Basic Training and Training Tailored to Historical Context and Position

Our human resources development efforts center on four key themes, summarized as “Globalization,” “The Gas Professionals,” “Customer Needs” and “Integrity.” These themes are rooted in the ideas of health, integrity and resourcefulness. “Health, integrity and resourcefulness are the three key qualities we look for in employees,” says Executive Officer Satoshi Wataru, Executive General Manager of Human Resources and Chief Health Officer (CHO). “In addition to fostering the basic skills necessary for a businessperson, the Human Resources Division emphasizes educating employees on the importance of these qualities, which are essential to their growth as people.”

Our training framework consists of hierarchical, selective, optional and theme-specific training, which are provided by the Human Resources Division and division-specific training designed to cultivate specialized skills. (For more details, see Social Initiatives—Relations with Employees in the CSR section of our corporate website.) Training for new employees is particularly distinctive, with every employee required to participate annually for his or her first five years in the Company.

Another part of basic employee training that has a focus of attention in recent years is line manager training. The issue of communication gaps between supervisors and employees resulting from differences in education from one generation to another and the increasing diversification of values continue to draw attention in everyday society. In response, in fiscal year 2018 we began offering training for line managers.

Satoshi Wataru
Executive Officer
Executive General Manager,
HR Division and Corporate Planning Office;
Chief Health Officer

Basic Themes of Human Resources Development

Human resources development that accommodates further globalization	Human resources development that trains “The Gas Professionals”
Human resources training that addresses customer needs	Human resources training that emphasizes strengthening integrity

Key Employee Qualities and Conduct

Health

1. Understands the importance of occupational health and safety (looks after his or her own health and helps create positive working environments)
2. Displays a positive attitude (has a positive attitude and see things through)
3. Demonstrates organizational capabilities (uses communication to overcome limited personnel levels and maximize teamwork)

Integrity

1. Earns customer trust (exhibits a dedication to stable supplies and quality assurance and responds with sincerity)
2. Exhibits a well-formed character (maintains an agreeable temperament and promotes mutual trust and respect)
3. Endeavors to fulfill responsibility to society (works to comply with safety, security and environmental standards, as well as with and social norms)

Resourcefulness

1. Knows the customer (responds to customers’ expectations and interests)
2. Knows himself/herself (works to realize personal goals and acquire knowledge and skills crucial to a professional and strives to act independently)
3. Knows society (strives to be open, grasp changes and looks to the future)

“Prior to this, there was no training for managers beyond that provided to individuals newly promoted to management positions,” explains Tomoyasu Azuma, manager of the Human Resources Division’s Human Resources Development Team. “This, plus the fact that as a company we place an emphasis on the role of line managers, encouraged us to focus on this. Line manager training has proved effective in enhancing awareness and has led to changes in how participants’ perception perceive their subordinates.”

Another important focus is on responding to globalization. Approximately half of the participants in our global training program in Japan, which was launched in 2007, have subsequently been assigned to positions overseas or to positions that involve working closely with our overseas bases. In 2016, we launched the Overseas Trainee Program, whereby employees are dispatched to overseas Group companies for approximately nine months of on-the-job training. To date, a total of 11 individuals have taken part in this program, enabling them to gain valuable experience.

“The global training program, which aims to improve the basic ability of employees to function in a global business environment, has been in existence for more than a decade,” says Mr. Wataru. “However, given recent qualitative changes, namely an increase in the number of new hires who already have overseas experience gained through, for example, studying abroad, I think that a review of this program is in order. We are also considering the introduction of global leadership training.”

Creating a Framework for Fostering Human Resources, Including through the Creation of Positive Working Environments

The other principal focus of our efforts besides employee training is the creation of positive working environments. As indicated by Taiyo Nippon Sanso’s Health Management Declaration, announced in 2017, we are actively promoting initiatives to support employee health and reform work styles, as well as advancing in-house globalization and diversity. “In recent years, we have expanded hiring of female graduates and individuals who have studied overseas,” Mr. Azuma elaborates. “We also actively seek to hire mid-career candidates and foreign nationals, both largely new for us. While we have always had quite an open atmosphere, we continue striving to create positive working environments that are conducive to job satisfaction, enabling us to maintain a comparatively low voluntary separation rate.”

Tomoyasu Azuma
Manager
HR Development Team
HR Division

“Personally, I think that what is really required to work for Taiyo Nippon Sanso is a sense of responsibility,” says Mr. Wataru. “A resolute determination to ensure that gas supplies are never interrupted, even in the event of a major disaster, is in our DNA. This is something that is passed down more through experience than through training. However, with the progress of globalization and an increasing number of mid-career hires, it can be difficult to ensure that all employees share the same awareness. At the same time, the presence of such individuals brings in new ideas and stimuli to which we would otherwise not have access. Accordingly, training and mechanisms that bring together diverse values will be important going forward.”

By providing training tailored to the changing times and evolving requirements, we will continue working to enhance the skills of each and every employee, as well as to pass down the essence of our identity as The Gas Professionals to subsequent generations. Through such efforts, we will continue working to ensure safe, secure and stable supplies of industrial gases.

Training Programs

Training for Line Managers

Developed with the aim of improving the skills of managers and line managers, this program focuses particularly on responding to changing views and the increasing diversification of work styles. In addition to management lectures given by external speakers on such topics as the achievement of goals and fostering subordinates, this program includes training in performance evaluation, i.e., how to evaluate employees, provide feedback and conduct performance reviews; labor management; and compliance training, among others. By enhancing managers’ ability to communicate logically with their subordinates, we aim to nurture managers who can assign targets to their subordinates and effectively leverage their capabilities. Training for line managers is currently offered twice annually with the aim of reaching all lines within three years.

Training made use of workshops to further encourage awareness.

Global Training (Selective)

Against the backdrop of a rapidly globalizing industrial gases industry, we provide training with the aim of fostering employees who are capable of functioning in a global business environment and can thus play an active role both in Japan and overseas and enhancing their basic capabilities. In fiscal year 2019, a total of 16 employees participated in the global training program. In principle, training is conducted entirely in English by instructors who are foreign nationals. Training encompasses seven sessions, including final presentations, held over approximately six months and covers such topics as mind-set, logical presentation skills, business model generation, case studies, negotiating proficiency and leadership skills. In addition to improving language capabilities, training seeks to cultivate the confidence and presentation skills necessary to express one’s own opinions clearly and effectively whenever and wherever necessary.

Approximately 180 employees have participated in the global training program to date and are leveraging their experiences overseas in their current positions.

Gas Business in Japan

Outline of Business
Market Presence and Competitive Advantages

Taiyo Nippon Sanso is Japan's leading manufacturer of industrial gases, with a domestic market share of approximately 40%. Taiyo Nippon Sanso Group companies in this business include Nippon Ekitan Corporation, Japan's top supplier of carbon dioxide gas and dry ice; Nissan Tanaka Corporation, a manufacturer of cutting and other equipment; and Taiyo Nippon Sanso Gas and Welding Corporation, which provides welding materials. As a comprehensive supplier of industrial gases and peripheral products, with a product range encompassing diverse industrial gases, as well as plants and equipment, we offer a full selection of products and services to customers in diverse industries, including steel, chemicals, electronics, automobiles, shipbuilding, food and healthcare.

Fiscal Year 2019 in Brief

Revenue: +5.5% from fiscal year 2018	
Industrial gases	Revenue increased, underpinned by revenue from JFE Sanso Center's Kurashiki Plant.
Electronics-related products	Falling shipments of electronics materials gases pushed revenue down.
Medical-related products	Revenue was bolstered by the acquisition of medical equipment sales company IMI Co., Ltd.

Segment Profit: –5.0% from fiscal year 2018	
Industrial gases	Profit decreased, as rising fuel prices pushed up costs.
Electronics-related products	Declining sales of electronics materials gases led to a decline in profit.
Medical-related products	Profit was bolstered by the acquisition of IMI Co., Ltd.

The key concept underlying the action plan developed for our "structural reform" strategy, one of four strategies of our Ortus Stage 2 medium-term management plan is "Total TNSC," by which we mean maximizing the power of the Taiyo Nippon Sanso Group by strengthening collaboration among Group companies. Guided by this concept, Group companies work together closely, rallying strengths to enhance customer service and reinforce market influence and competitiveness, as well as to bolster sales by extending comprehensive gas solutions that encompasss both gases and related equipment.

Interview: Growth Strategies for the Domestic Gas

Kenji Nagata
Member of the Board,
Senior Managing Executive Officer
Executive General Manager,
Gases Business Division

Q1 What is your perception of the current operating environment in Japan?

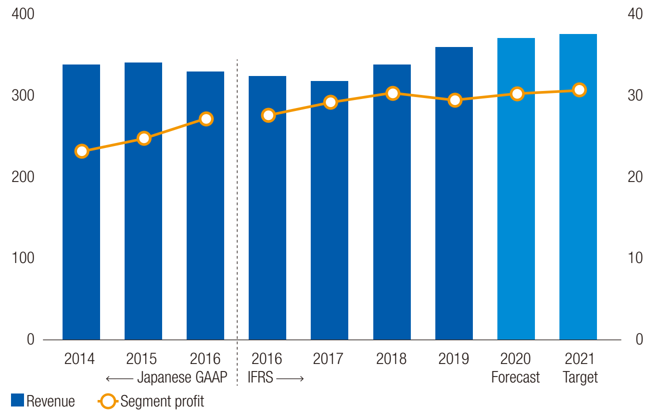
In addition to Japan being a mature economy, work style reforms and a decline in the labor force have spurred labor shortages. In this environment, we are seeing increasingly active investments across all industries to improve efficiency and reduce labor requirements, as well as to enhance product quality and differentiate offerings. This, together with changes brought about by innovation, as well as by autonomous driving, AI, IT and digital technologies, is sparking a fundamental transformation of companies.

In the area of industrial gases, innovation is driving advances in burner technologies, which enhance energy efficiency, and in gas technologies used in, for example, additive manufacturing (3D printers); modified atmosphere packaging (MAP), a food packaging process; agriculture; and aquaculture.

We transport bulk gases to customers' sites using approximately 800 tanker trucks and other large vehicles and are currently promoting decisive efforts to streamline and optimize our logistics. To address the critical challenge of improving working conditions for drivers, it is also necessary for consignors to promote measures aimed at improving the efficiency and effectiveness of supply chains. However, this is not something that we can resolve on our own, so in fiscal year 2020 we will ask customers to bear a portion of related costs.

Revenue and Segment Profit

Years ended/ending March 31
(Billions of yen)



Note: Effective from fiscal year 2019, other businesses currently accounted for in the Thermos and Other Business segment were shifted to the Gas Business in Japan and the segment was renamed the Thermos Business. Accordingly, the basis for calculating the revenue and segment profit forecast for fiscal year 2019 differs from that used for calculating segment revenue and income reported for the years up to and including fiscal year 2018. Calculated on the same basis as the fiscal year 2019 forecast, segment revenue and core operating income in fiscal year 2018 would have been ¥2.5 billion and ¥0.6 billion lower, respectively, than reported results.

Q2 Can you tell us about the principal measures you plan to pursue in fiscal year 2020?

In industrial gases, we will step up innovation and advancing the Total TNSC concept. To promote innovation, we will reinforce efforts to develop applications for gas technologies in such fields as combustion, heat treatment, processing and food packaging, as well as to fortify our soft capabilities, including our ability to provide safety services and assist customers in modifying processes. In the area of air separated gases (oxygen, nitrogen and argon), we will seek to differentiate our offerings by enhancing both hard and soft deliverables. On the soft side, in addition to leveraging our diverse customer base, a key competitive advantage, we will work with other companies that have extensive expertise in soft services, positioning us to provide solutions that we would not be able to extend independently.

The response to our efforts to advance the Total TNSC concept has been tremendous. We will reinforce our ability to offer comprehensive solutions in collaboration with Group companies, including Nippon Ekitan, Nissan Tanaka and Taiyo Nippon Sanso Gas and Welding, which have already yielded multiple successes. We will also work with Group service companies such as Japan Fine Products, Taiyo Nippon Sanso Engineering Corporation and Cryo One Inc., in line with our goal of advancing cross-Group efforts to differentiate our products and service. Our focus in the domestic industrial gases business will thus be on value creation and differentiation.

In fiscal year 2018, we augmented our medical business portfolio, which currently centers on the supply of medical gases and the provision of products for home medical care, respiratory therapy and biotechnology, and of stable isotopes, by acquiring medical equipment sales company IMI. We are confident that the ability to offer our medical products and services through IMI's robust sales channels will further enhance the sustainability of this business.

In the area of energy-related products, we aim to capitalize on the nationwide consumer LPG network of Group LPG manufacturer Taiyo Nippon Sanso Energy Corporation to broaden synergies in the LPG business of Japan's leading industrial gases manufacturer. We will continue working to grow this business by proposing conversion from heavy crude to LPG as an attractive solution.

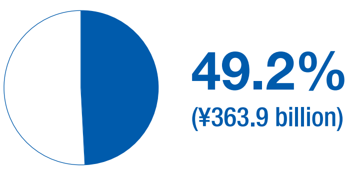
Q3 What are the principal growth strategies for the gas business in Japan?

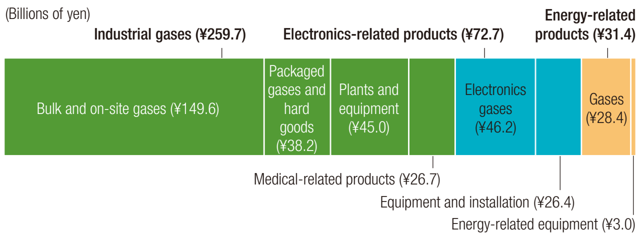
One of the basic policies of Ortus Stage 2 is to expand our domestic gas business. Against a backdrop of active innovation in many industries, demand for industrial gases is expected to continue to increase steadily. To ensure sustainable growth, the provision of solutions that integrate hard and soft deliverables will continue to be a core strategy. To date, we have grown our electronics-related products business by expanding our lineup beyond the supply of gases to include the provision of electronics-related materials and the installation of equipment such as cylinder cabinets, purifiers, abatement systems and bulk specialty gas supply systems (BSGSs), thereby responding to the needs of customers. We see such an approach, which emphasizes incorporating technologies, know-how and other soft capabilities accumulated over many years to expand business scope as also being ideal for the industrial gases business.

Taiyo Nippon Sanso possesses a wealth of important basic technologies. These include gas control, high-pressure, high- and low-temperature control and processing (welding and cutting) technologies. It is important that we look beyond simply supplying gases by leveraging these basic technologies to offer tailored solutions. One of the distinguishing features of the industrial gases businesses is that it involves local production for local consumption. That said, we have introduced applications developed by Group companies in Europe and the United States into Japan and vice versa. Maximizing the resulting benefits will continue to be essential to the growth of our domestic gases business. We will also continue to implement the Total Electronics, Total Welding, Total On-Site and Total Gas-Applications strategies to drive growth in the domestic gas business.

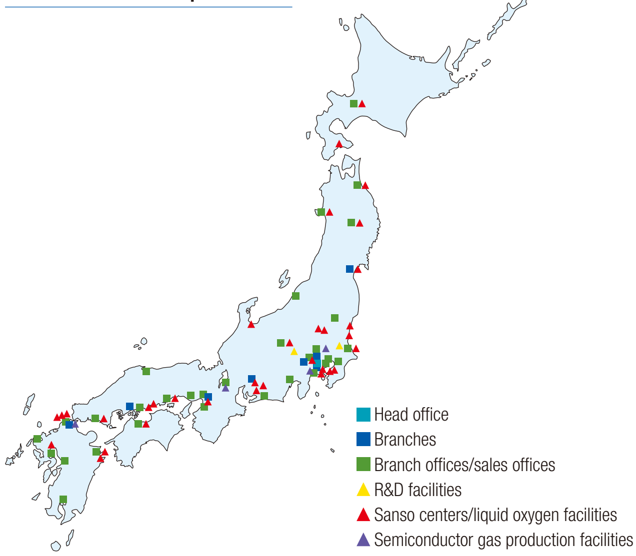
Percentage of Revenue

(Fiscal Year 2019)





Business Sites in Japan



Gas Business in the United States

Outline of Business
Market Presence and Competitive Advantages

We first established operations in the United States in the 1980s. Initial efforts to broaden our presence, which began in 2004, focused on the southern states and emphasized reinforcing our operations through an ambitious M&A program that included multiple major and other deals and capital investments. These and later efforts facilitated the establishment of a robust operating foundation that includes California, which boasts the largest state economy, as well as Texas and Louisiana, leaders in the development and production of petroleum. In 2016, we acquired a portion of Air Liquide's U.S. operations, a move that enabled us to build an industrial gas supply network that stretches from the southern to the eastern and Midwestern states and establishing us as a major national player. In fiscal year 2019, we acquired a HyCO business from Linde Gas North America, including all related assets, securing a stable highly profitable source of income.

While our U.S. operations center on supplying packaged and bulk gases, in fiscal year 2019 we commenced operation of major-site plants for customers in the steel and petrochemicals industries. In addition, we offer an extensive supply of original hard goods, including welding equipment, which we sell along with packaged gases, for which we are number three in terms of market share. We have also diversified our product lineup by acquiring manufacturers of acetylene and carbon dioxide gas, becoming the largest wholesale producer of acetylene and merchant dry ice in the United States.

*The HyCO business separates H_2 and CO from feedstock such as natural gas and supplies it to the petroleum refining and petrochemical industries on a large scale through pipelines.

Fiscal Year 2019 in Brief

Revenue: +8.5% from fiscal year 2018	
Industrial gases	Revenue increased, underpinned by robust orders from U.S. manufacturers (principally in the steel, construction and energy sectors). New on-site plants began operating.
Impact of acquisition	Revenue was bolstered by the acquisition of a HyCO business from Linde.

Segment Profit: +15.3% from fiscal year 2018	
Industrial gases	Profit was bolstered by robust results in all businesses.
Impact of acquisition	Profit was bolstered by the acquisition of a HyCO business from Linde.

Interview: Growth Strategies for the Gas Business

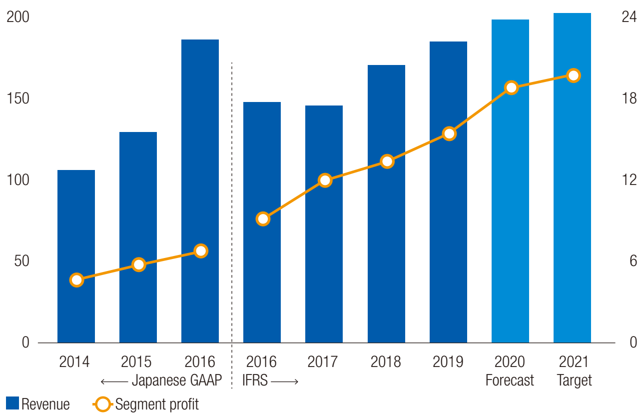
Thomas Scott Kallman
Member of the Board, Chairman and CEO, Matheson Tri-Gas, Inc.

Q1 What is your perception of the current operating environment in the United States?

General economic growth is expected to be mixed, with GDP forecasted to potentially slow to below 2% by Q1 of 2020 and inflation at 2% levels. Historically low unemployment rates are projected to continue to be under 4% increasing wage cost pressure. International trade conflicts are unfavorably impacting agriculture equipment fabrication sales volumes. However, steel tariffs have bolstered domestic steel production, resulting in sales volume increases including the startup of two new merchant liquid and pipeline air separation units in support of two major steel companies this year. Oil prices are expected to support ongoing activity in west Texas and North Dakota and are being supplied by our merchant liquid air separation units in each market. Gas and equipment sales related to equipment repair and fabrication of oil field equipment provide additional growth opportunities. Gulf Coast ethane cracking operations supplied by MATHESON's tonnage pipeline network in Louisiana are ramping up demand and generating significant sales volume growth. Lastly, our medical oxygen and food industry nitrogen along with dry ice will continue to be a stable source of sales. MATHESON believes our diversified customer portfolio will help smooth any potential volatility in the economy over the next year, allowing the business to continue to grow at a steady rate.

Revenue and Segment Profit

Years ended/ending March 31
(Billions of yen)



Note: In fiscal year 2016, a change in accounting period by Matheson Tri-Gas, Inc., resulted in the inclusion of 15 months of results for the company.

Q2 Can you tell us about the principal measures you plan to pursue in fiscal year 2020?

With the support of TNSC, MATHESON has established a vertically integrated business with a national footprint. There has been a significant build-out of our U.S. infrastructure through acquisition and capital projects, resulting in a national network of air separation units and package gas distribution accompanied by the largest U.S. wholesale acetylene and merchant dry ice production capacities along with new liquid carbon dioxide production. Our Specialty Gas network production facilities have been upgraded to complement the world class electronic gas production capabilities at New Johnsonville, Tennessee. Our emphasis in fiscal year 2020 will be on loading these plants to optimize profitability and cash generation. We are focused on expanding the "Total TNSC" initiative into the U.S. market, leveraging our vertically integrated gases and equipment portfolio to aggressively implement cross-selling to win customers' entire industrial gas and equipment requirements. All this is in concert with rigorous control of operating expenses and capital expenditures to realize our profit and cash targets.

Q3 What are the principal growth strategies for the gas business in the United States?

MATHESON's primary focus is supporting the successful implementation of TNSC's medium-term plan and the four key strategies of ORTUS Stage 2.

1. Structural reform

Key managers in our helium and the newly acquired HyCO businesses are actively supporting sales and business development across the TNSC Group to include coordinated global strategies in support of structural reform.

2. Innovation

MATHESON is pursuing innovation in our operations by upgrading our U.S. plants remote operations center and our data acquisition capabilities related to IoT to refine and speed up daily tactical decisions and support better longer term strategic decisions such as capital investments.

3. Globalization

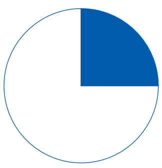
To further globalization, we are enhancing governance through our Internal Audit function, performing more aggressive and frequent auditing of field locations. Additionally, we are increasing coordination with TNSC Group companies in the electronics segment with focus on the major international semiconductor manufacturers in support of the Total Electronics initiative and the Group's drive to grow sales with these major customers. Further development of the scale of our dry ice production capacity to continue to reliably serve customers and take new market share and the extension of our coverage of acetylene production into geographical markets we do not currently serve will be a priority.

4. M&A

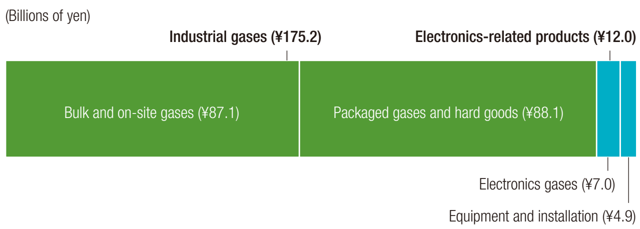
Lastly, MATHESON's M&A efforts will continue to be focused on identifying acquisition opportunities for high-quality distribution businesses in key U.S. markets to achieve vertical integration or gain significant synergies if we already have vertically integrated infrastructure in that market.

Percentage of Revenue

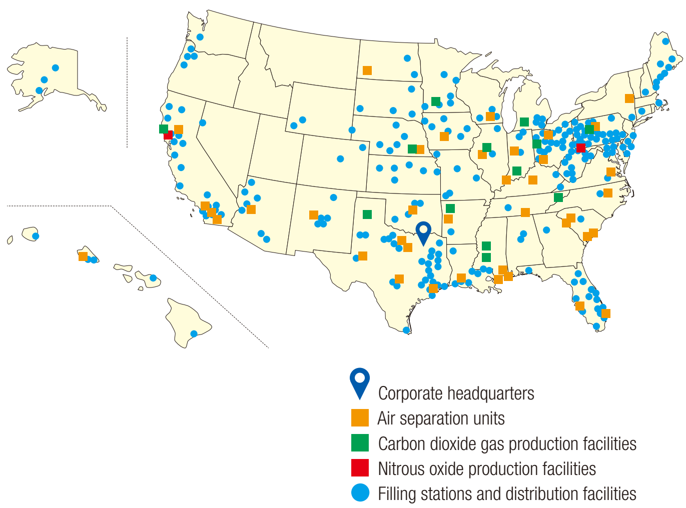
(Fiscal Year 2019)



25.3%
(¥187.3 billion)



Business Sites in the United States



Gas Business in Europe

Outline of Business

Significance of Acquisition and Market Presence

In December 2018, Taiyo Nippon Sanso acquired a portion of the European businesses of Praxair, facilitating its expansion into the European market, where it previously did not have a presence. Through this acquisition, the Company gained industrial gases (including carbon dioxide gas) businesses in 12 countries (Germany, Spain, Portugal, Italy, Norway, Denmark, Sweden, the Netherlands, Belgium, the United Kingdom, Ireland and France) and a helium-related business.

The European industrial gases market is second only to that of the United States in terms of size. The regional market share of the acquired businesses is at approximately 16% (internal estimate). The scale of these businesses—now operating under the name Nippon Gases—is comparable to Taiyo Nippon Sanso's U.S. business, which has taken three decades to develop. Like its U.S. counterparts, these businesses are highly profitable. With a robust operating foundation, Nippon Gases is the second-largest industrial gases manufacturer in Spain and Portugal and the third-largest in Italy and Germany in terms of market share. Revenue is well balanced among supply modes, namely bulk, packaged gases and on-site gases (including supplied by pipeline), with on-site gases accounting for around 17% of the total. The Nippon Gases pipeline network encompasses such key European industrial zones as the Rhineland and Saar areas of Germany and the Antwerp area in Belgium, enabling it to guarantee stable supplies of high volumes of gases to Europe's major steel and petrochemicals manufacturers.

Principal assets acquired

- **Approximately 2,800 employees**
- **More than 100,000 customers**
- **Six pipelines**
- **Four specialty gas filling stations**
- **27 air separation units**
- **Six hydrogen plants**
- **52 compact on-site plants**
- **12 carbon dioxide gas plants**
- **600-plus transport vehicles**
- **2.6 million-plus cylinders**
- **34 filling stations**
- **13 dry ice manufacturing facilities**
- **Seven carbon dioxide gas terminals**
- **Three ships for transporting carbon dioxide gas**

Interview: Growth Strategies for the Gas Business

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

Q1 What is your perception of the current operating environment in Europe?

We have been enjoying favorable economic conditions, with good GDP and IP growth in most countries in recent years. Today, while our company continues to perform strongly, we are hearing more concerning news about the current slowdown in the European economy and the probability that the slowdown may accelerate. This information comes from both official and private relevant sources. Also, some of our most relevant customers are signaling challenging times ahead. Our company, which is positioned in very diverse and resilient markets (40% of sales), is a lean and efficient organization and our cost controls and financial discipline will enable us to react quickly to changing economic conditions.

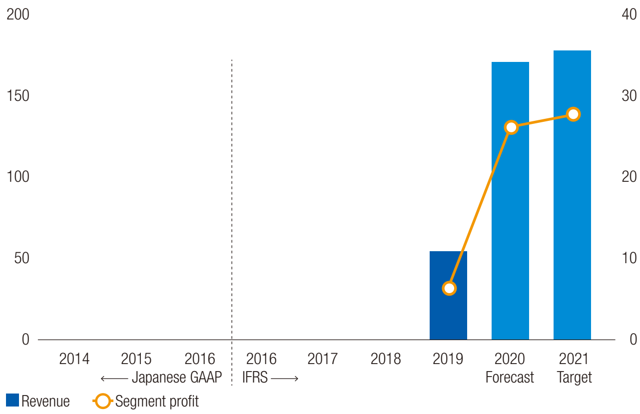
Q2 Can you tell us about the principal measures you plan to pursue in fiscal year 2020?

The current year is the first year for the European business in the TNSC Group. Other than delivering excellent safety, compliance and financial results, most important is that

Revenue and Segment Profit

Years ended/ending March 31

(Billions of yen)



Note: Results for fiscal year 2019 are for the four months ended March 31, 2019. These results include the following amounts based on the use of a purchase price allocation (PPA), an application of goodwill accounting whereby the purchase price is allocated to various assets and liabilities acquired: a one-time increase in cost of sales of ¥700 million due to the market price valuation of inventory assets and expenses of ¥3.2 billion due to an increase in depreciation and amortization expenses related to property, plant and equipment and amortization expenses related to intangible assets.

becoming part of the TNSC Group occurs in a fast, smooth and "no surprises" process. To accomplish this, we are working on a three-pronged approach: (a) separation from our prior company (completed), (b) integration into TNSC (completed) and (c) extracting synergy benefits (recently started). In regard to the last item, we are working on the following items to extract these synergies: (a) electronic gases (increased cooperation with global customers and optimization of our electronic gases plant in Belgium), (b) engineering (work has started with TNSC engineering and a number of opportunities are being analyzed), (c) applications technology (work is underway in food and beverage, combustion, additive manufacturing, water and wastewater) and (d) productivity (lean practices and cost reduction opportunities are being shared across the different TNSC businesses).

Q3 What are the principal growth strategies for the gas business in Europe?

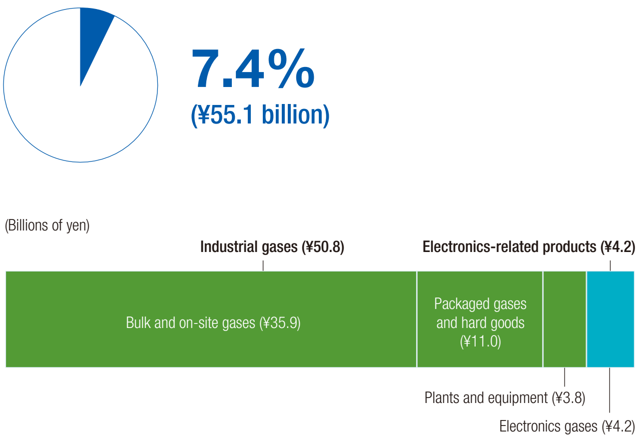
Our company is a well-balanced industrial gases company: 37% of sales in merchant liquid, 33% in merchant packaged, 17% in pipeline and onsite and 13% in other. At the same time, we are well positioned in 12 strategic European countries. In the mid-term, we will maintain the efficient balance of our supply portfolio, we will continue to build density in areas where we are strong, while, at the same time, we will be looking for growth opportunities in new areas. Our growth will be balanced between investment projects, applications technology opportunities and new opportunities in doing things that we are not doing today. For example, investing in new technologies that improve our customer integration and optimize our operational processes.

We are a strong organization of 2,800 employees that, along with its entire management team, has moved to the TNSC Group. The successes we had in the past will continue in the future.

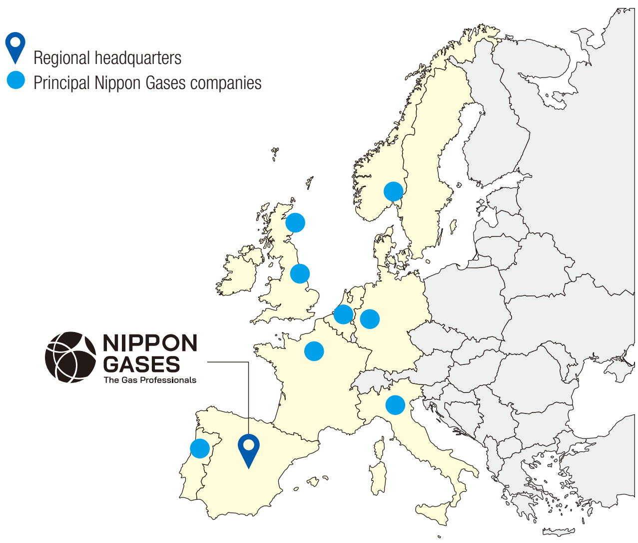
Nippon Gases' tanker truck and storage tank area

Percentage of Revenue

(Fiscal Year 2019) (Four months)



Business Sites in Europe



Gas Business in Asia and Oceania

Outline of Business
Market Presence and Competitive Advantages

Our operations in Asia and Oceania center on the supply of industrial gases to customers in Southeast Asia, China, India and Australia, and of electronics-related products to customers in China, Taiwan and South Korea. We entered the Singaporean market in the early 1980s by establishing National Oxygen Pte. Ltd. and have expanded our operations there in the years since. In 2012, we acquired Leeden Limited, a leading supplier of packaged gases that also provides welding equipment and other products with an extensive network across Southeast Asia. In 2014, we merged Leeden with National Oxygen, thereby strengthening our operations in Singapore and Malaysia. We have also established a presence in the Philippines and Vietnam, where we are currently the top manufacturer of liquefied gases in terms of production capacity, and continue to seek promising investment opportunities in both countries that will position us to capitalize effectively on economic growth. Further expanding our geographic reach, we established bases in Indonesia—Southeast Asia's largest industrial gases market—in 2014, acquired a local distributor in Australia in 2015 and established an operating company in Myanmar in 2016. In the area of electronics-related products, we will capitalize on rising medium- to long-term demand from the semiconductor industry in China, Taiwan and South Korea. Guided by our Total Electronics strategy, we are taking steps to reinforce the relationships we have built with customers in these markets and to expand sales of electronics-materials gases, of which we are a leading supplier, as well as to offer equipment and installation services.

Fiscal Year 2019 in Brief

Revenue: +2.9% from fiscal year 2018	
Industrial gases	Revenue increased, underpinned by robust sales of bulk gases in China, Vietnam and the Philippines.
Electronics-related products	Despite the negative impact of a change in accounting treatment in Taiwan, revenue rose, reflecting firm shipments of electronics materials gases.

Segment Profit: –0.9% from fiscal year 2018	
Industrial gases	Profit increased, underpinned by higher sales of bulk gases.
Electronics-related products	Profit was bolstered by an increase in sales of electronics materials gases.
Impairment loss	Profit declined, owing to impairment losses on assets related to Leeden National Oxygen's natural gas liquefaction business.

Interview: Growth Strategies for the Gas Business

Tsutomu Moroishi
Executive Officer,
Executive General Manager,
Global Operations Division

Q1 What is your perception of the current operating environment in Asia and Oceania?

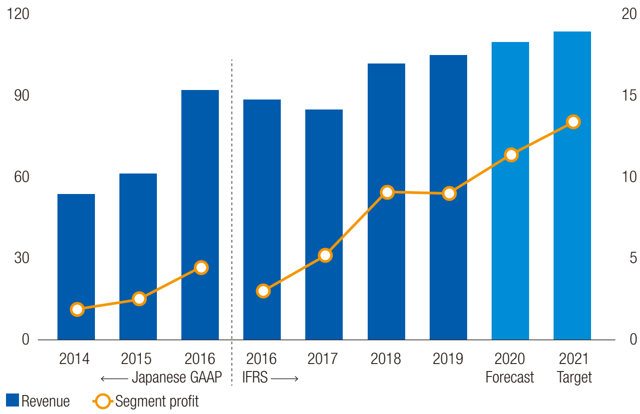
Exports remain soft across Asia, including in China, the region's largest economy. Nonetheless, regional economic growth continues to outpace that of Japan, the United States and Europe, driven by solid domestic demand underpinned by personal consumption. In Australia, moderate economic growth persists, despite slowing growth in personal consumption. Demand in both Asia and Australia remains steady. In Asia, in particular, the bulk gases business continues to see steady growth, particularly for the machinery and materials industries.

Q2 Can you tell us about the principal measures you plan to pursue in fiscal year 2020?

In Asia, with the aim of ensuring long-term sustainable growth, we continue to promote investments to expand bulk gas production capacity and to capitalize on increased production capacity and cost competitiveness to expand sales efforts. In China, we are pressing ahead with the construction of a semiconductor materials gases plant in Yangzhou that is scheduled to commence operations in fiscal year 2020. We will continue to capitalize on our specialty gases technologies to promote the development of products not only in China but also in other regional markets. In India, we are working to bolster profits by capitalizing on our robust helium sales network, while in Australia we began operating an air separation unit in the north of the country and a liquefied carbon dioxide gas production facility in the east, positioning us to expand our business and ensure stable supplies.

Revenue and Segment Profit

Years ended/ending March 31
(Billions of yen)



Note: In fiscal year 2016, a change in accounting period by certain subsidiaries resulted in the inclusion of 15 months of results for these companies.

Q3 What are the principal growth strategies for the gas business in Asia and Oceania?

In Asia, we will actively promote capital investment to prepare for future gas demand, as well as to create a foundation for medium- to long-term growth in our core bulk gases. With stable supply and backup capabilities for bulk gases, we will reinforce our efforts to supply large quantities through on-site projects and broad pipeline networks. In addition, we will expand core business such as carbon dioxide, helium, standard gas and gas-related equipment, and the maintenance of the production system with support within the Group.

In the electronics-related products business, which is expected to continue seeing brisk growth in the years ahead, we plan to expand production facilities in promising Asian markets such as Singapore and China. Such efforts to establish an effective supply system that extends across the entire region will enable us to provide competitive products. Guided by the Total Electronics strategy, we will take steps to reinforce our marketing capabilities, build a reliable supply chain and enhance our responsiveness to the needs of strategically important customers in this key region.

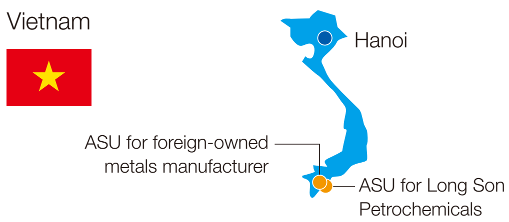
In Australia, in addition to capturing demand for packaged gases from competitive small and medium-sized customers, we will take advantage of our position as a national supplier with a network extending over the entire country and actively market our services to major users. We will also promote capital investment aimed at further growing both our LP gas and industrial gases businesses.

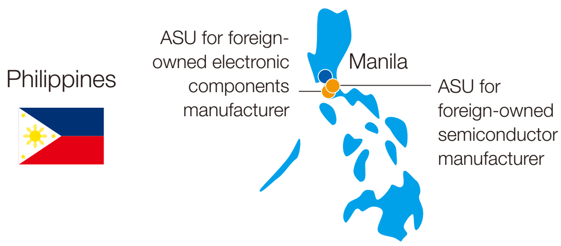
In anticipation of future population growth and the aging of Australian society, we will capitalize on our accumulated experience, including in the area of home oxygen therapy, to reinforce our service structure and expand our services in the medical business.

TOPIC

Expanding Our On-Site Business in Southeast Asia

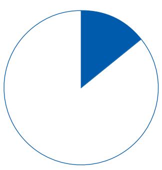
In Vietnam and the Philippines, both of which continue to see extraordinary economic growth, we are working to capture orders for new on-site projects and create solid supply chains with the aim of reinforcing our supply capabilities for air separated gases. In Vietnam, we secured two orders for air separation units from foreign-owned companies, one from a metals manufacturer and the other from Long Son Petrochemicals of Thailand. In the Philippines, we also secured two orders from foreign-owned companies for air separation units from, respectively, an electronic components manufacturer and a semiconductor manufacturer.



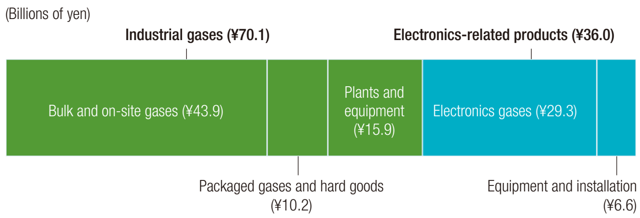


Percentage of Revenue

(Fiscal Year 2019)



14.3%
(¥106.1 billion)



Business Sites in Asia and Oceania

Thermos Business

Outline of Business

Market Presence and Competitive Advantages

The Thermos business dates back to 1978, when Taiyo Nippon Sanso predecessor Nippon Sanso, seeking new applications for its existing vacuum insulation technologies, developed the world's first vacuum-insulated stainless steel bottle. In 1989, Nippon Sanso acquired the Thermos Group from U.S firm Household International Inc. and commenced sales of Thermos-brand stainless steel vacuum-insulated bottles. In 2001, the business was spun off as Thermos K.K. Since then, the company has continued to launch a steady stream of attractive new products. From a production configuration comprising facilities in Malaysia, China and the Philippines, the company currently sells top-quality Thermos-brand products in more than 120 countries. The Thermos Group is particularly noted for its excellent development capabilities, with approximately 30% of its annual production accounted for by newly released products, enabling it to build an extensive portfolio of products across multiple categories. Backed by rigorous quality control, the Thermos brand continues to gain acceptance in markets worldwide.

THERMOS®
QUALITY SINCE 1904

Fiscal Year 2019 in Brief

Revenue: +9.6% from fiscal year 2018	
Japan	Revenue increased, bolstered by healthy sales, particularly of sports-use vacuum-insulated beverage bottles. The launch of new frying pans in the company's lineup of cookware also contributed.
Overseas	Factors behind the increase in revenue included brisk sales in South Korea.

Segment Profit: +18.6% from fiscal year 2018	
Japan	Higher sales led to an increase in profit.
Overseas	Profit was up, as brisk sales led to higher profit in South Korea and equity-method affiliates reported increases.

Interview: Growth Strategies for the Thermos Business

Keiichiro Chujo
President
Thermos K.K.

Q1 What is your perception of the current operating environment?

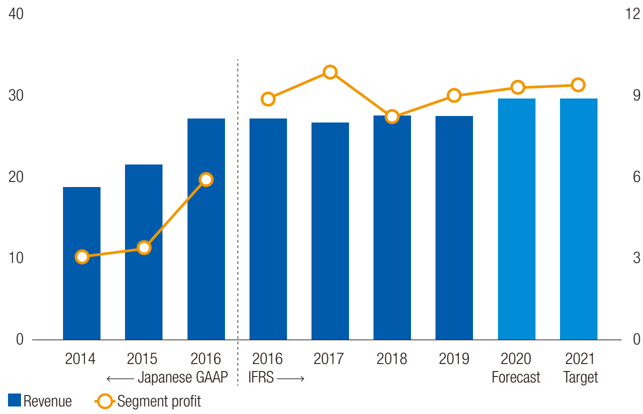
In Japan, the idea of carrying around one's own beverage bottle being ecologically sound and cool began to take hold around 2006. With the economic downturn precipitated by the collapse of Lehman Brothers Holdings Inc. in 2008, the trend was further fueled by increased frugality, which drove up the popularity of vacuum-insulated mugs. In 2012, we released the ultralight JNL series of beverage bottles, which rapidly swept the domestic market thanks to their light weight—approximately 30% lower than conventional products—and slim profile, a cumulative total of approximately 20 million of which have sold to date. With competition for demand associated with rising inbound tourism in Japan intensifying, we anticipate a slowing of growth in the domestic market. Overseas, we expect demand to continue rising in South Korea, China and Southeast Asia. We will continue working to stimulate demand by further bolstering awareness of the Thermos brand.

Q2 Can you tell us about the principal measures you plan to pursue in fiscal year 2020?

We will continue to promote area marketing, tailoring efforts to cultural and dietary customs in different parts of the world. In Japan, we are expanding our selection of products in new categories such as frying pans and tumblers to encourage new demand from households. We will also endeavor to deploy well-defined product categories with clear concepts based on use—for example, a series designed for outdoor

Revenue and Segment Profit

Years ended/ending March 31
(Billions of yen)



Note: Effective from fiscal year 2019, other businesses currently accounted for in the Thermos and Other Business segment were shifted to the Gas Business in Japan and the segment was renamed the Thermos Business. Accordingly, the basis for calculating revenue and segment profit forecast for fiscal year 2019 differs from that used for the years up to and including fiscal year 2018. Calculated on the same basis as in previous years, segment revenue and core operating income in fiscal year 2018 would have been ¥2.5 billion and ¥0.6 billion lower, respectively, than reported results.

use, bottles for mountain climbing and bottles for cycling—and to cultivate new sales channels. We will promote active publicity and advertising for categories that are expected to see increased demand with the aim of bolstering the value of the Thermos brand.

We have also recently established directly operated brick-and-mortar Thermos Styling stores, organized around the theme of “lifestyles with Thermos.” In March 2019, we opened a Thermos Styling store in Nishinomiya Kitaguchi, our first in the Kansai area, which joins previously opened stores in Tokyo’s Futako-Tamagawa district and the Minato Mirai area of Yokohama. In addition to Thermos Styling stores, we are stepping up efforts to establish permanent and pop-up Thermos shops in outlet malls and other locations.

Strategies overseas center on expanding our sales channels and further reinforcing the Thermos brand, as well as on expanding operations in areas other than stainless steel vacuum-insulated bottles. Thermos-brand products are currently manufactured at three facilities worldwide. Going forward, we will expand our production capacity at all three locations to facilitate swift, effective responses to rising demand in global markets.

Q3 What are the principal growth strategies for the Thermos Business?

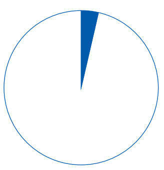
As a global manufacturer of vacuum-insulated bottles, we seek to provide products that enhance lifestyles and are environment-friendly, in line with the concept “Thermos: Maintaining a tasty temperature.” Looking ahead, we intend to expand our product portfolio beyond vacuum-insulated bottles, leveraging the insulating technologies we have fostered as pioneer in this field, as well as our ability to envision unique lifestyles, to develop offerings such as high-performance speakers with dual-structure vacuum-insulated bodies and insulated drinking containers for babies, to realize products that help shape bold new lifestyles.

TOPIC

The Taiyo Nippon Sanso Group boasts outstanding core low-temperature, high-pressure, separation, vacuum and gas control technologies. The superior heat and cold retention of Thermos’ portable vacuum-insulated mugs and tumblers is thanks to low-temperature and vacuum technologies cultivated in the industrial gases business. Industrial gases are liquefied at cryogenic temperatures below their respective boiling points (–183°C for oxygen, –196°C for nitrogen and –186°C for argon) and stored in dedicated tanks. These tanks are vacuum-insulated to keep heat away from the liquid contained, thereby preventing evaporation. Thermos’ vacuum-insulated bottles were developed using the same vacuum brazing technologies used in the construction of industrial gas storage tanks.

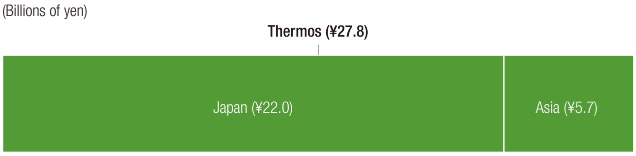
Percentage of Revenue

(Fiscal Year 2019)

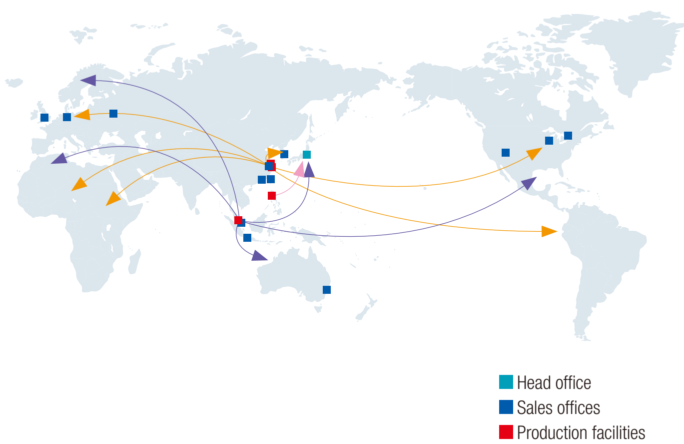


3.8%
(¥27.8 billion)

(Billions of yen)



The Thermos Group’s Global Network



The Taiyo Nippon Sanso Group's ESG Initiatives

Contributing to the achievement of the SDGs and earning the continued trust of society

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 (Taiyo Nippon Sanso and its organizational structure) through all of our business processes, that is, across our 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.

Theme	Material issues	Role of the Taiyo Nippon Sanso Group
Management issues	• Compliance • Corporate governance • Process safety	• 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 stable supplies of industrial gases, thereby ensuring our ability to provide the gases our customers need when they are needed.

Theme	Material issues	Role of the Taiyo Nippon Sanso Group
Global environment	• Efficient use of resources and energy • Climate change	• Introduce effective air separation units that help reduce electric power consumption and CO_2 emissions. • Lower fuel consumption by tanker trucks to reduce related CO_2 emissions. • Fortify framework for mitigating climate change through the reduction of greenhouse gas emissions and other efforts. • Promote the reduction of greenhouse gas emissions and the creation and expansion of opportunities to mitigate/adapt to climate change through the sale of vacuum-insulated bottles and cookware.
Society	• Contribution to maintenance of physical health • Contribution to medical care • Response to food and agriculture-related issues • Increase in consumer satisfaction	• 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 LPG, including its low carbon footprint and the 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 with peace of mind by strengthening systems to ensure quality and safety across the entire product life cycle.
People (Taiyo Nippon Sanso and its organizational structure)	• Respect for human rights • Occupational health and safety • Human development and training • Diversity and inclusion • Product and service reliability • Promotion of measures to improve information security and privacy • Stakeholder engagement • Contribution to communities	• 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 creed and promote diversity and inclusion in corporate activities. • 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, Taiyo Nippon Sanso 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.

SUSTAINABLE DEVELOPMENT GOALS

We are promoting a variety of initiatives with the aim of contributing to the achievement of the Sustainable Development Goals (SDGs) for 2030, which were adopted at the UN Sustainable Development Summit in September 2015.

Principal initiatives in fiscal year 2019	Relevant pages
• Corporate governance • Initiatives to ensure safe and stable supplies (→ See corporate website)	P32–35 **Website:** https://www.tn-sanso.co.jp/en/csr/

Principal initiatives in fiscal year 2019	Relevant pages	Relevant SDGs
• Environmental management • Initiatives to protect the global environment	P46–47 **Website:** https://www.tn-sanso.co.jp/en/csr/	Ensure access to affordable, reliable, sustainable and modern energy for all Ensure sustainable consumption and production patterns Take urgent action to combat climate change and its impacts
• Developing environment-friendly products (→ See corporate website)	**Website:** https://www.tn-sanso.co.jp/en/csr/	Ensure healthy lives and promote well-being for all at all ages Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation
• Initiatives to ensure safe and stable supplies • Relations with employees • Relations with customers • Relations with local communities • Relations with suppliers • Relations with shareholders	P44–45 **Website:** https://www.tn-sanso.co.jp/en/csr/	Ensure healthy lives and promote well-being for all at all ages Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation Ensure sustainable consumption and production patterns

Corporate Governance

Management Organization

Basic Approach and Management Policy

Our corporate philosophy is "Market-driven collaborative innovation: Improving the future through gases." In line with this philosophy, we have outlined the following management policy, which guides our corporate activities and our efforts to ensure sustainable growth and increase corporate value: "We pride ourselves on our ability to act on customer feedback and to partner with a wide range of industries to help improve the quality of life. Market responsiveness and collaborative innovation are our two core values. These values are at the heart of everything we do as we shape the future through gas technologies, crafting a harmonious relationship between people, society and the planet." From the perspective of fulfilling our responsibility as a corporate citizen, we have also formulated the Taiyo Nippon Sanso Group Code of Conduct to guide the conduct of all Group officers and employees in terms of compliance with laws and regulations and corporate ethics, in line with which we continue to promote conscious actions designed to respond to the expectations of customers and society at large.

Relationship with Parent Company

On May 13, 2014, Taiyo Nippon Sanso and parent company Mitsubishi Chemical Holdings Corporation established a capital alliance. Under the terms of the alliance, Mitsubishi Chemical Holdings agreed to respect our independence and fully support and cooperate with us in accordance with its Group Management Regulations. We maintain our status as an independent company with autonomous management, financial, sales, R&D and other corporate functions. In addition, two independent outside directors have been appointed to the Board of Directors to ensure management supervision is effective, thereby ensuring we fulfill our responsibilities to all shareholders.

Background to Adoption of the Current Structure for Management Execution and Supervision

We provide air separated gases (oxygen, nitrogen and argon) and other industrial gases to customers in diverse industries around the world and carry out a wide range of activities in diverse business areas. For this reason, business judgments, decision making and oversight must be based on expert knowledge derived from experience in or close to the industry to facilitate the effective assessment of a wide range of risks from multiple perspectives. Our current management structure centers on the Board of Directors, which is responsible for making decisions related to business execution above a certain scale, including those regarding M&As and investments. We have also adopted the Company with an Audit & Supervisory Board corporate governance model, whereby Audit & Supervisory Board members themselves audit business activities.

The Board of Directors is organized such that directors familiar with the business of the Group supervise operations and conduct decision making from various perspectives. To reinforce our global management framework, in June 2019, Matheson Tri-Gas Chairman and CEO Thomas Scott Kallman and Nippon Gases Euro-Holding Chairman and President Eduardo Gil Elejoste were newly appointed to the position of director. In addition, two outside directors have also been appointed to facilitate supervision from a broader perspective—thereby further enhancing management transparency and fairness, as well as reinforcing compliance, which is particularly crucial to business continuity—and advise management from a medium- to long-term perspective. Both individuals satisfy the criteria for the independence of directors set by the Tokyo Stock Exchange (TSE).

We have also established the Advisory Committee on Appointments and Remuneration, a voluntary advisory body, as an internal committee of the Board of Directors. The Board of Directors consults this committee regarding the selection of candidates for the position of director and Audit & Supervisory Board member, the appointment and dismissal of the president (CEO) and executive officers, and revisions to the rules governing compensation for directors, and seeks advice from the independent outside directors to ensure the transparency and objectivity of decision making. The Advisory Committee on Appointments and Remuneration consists of the president (CEO) and the outside directors and is headed by an independent outside director.

In addition, to ensure the objectivity, transparency and fairness of the management monitoring function, as well as to strengthen the supervisory function, the Audit & Supervisory Board is fully independent of the Board of Directors. In addition to an understanding of the business, the Audit & Supervisory Board boasts specialized expertise in such areas as law, finance and accounting, enabling it to effectively monitor the execution of duties by directors. The Audit & Supervisory Board comprises four full-time members, who conduct audits by leveraging their extensive experience, knowledge and ability to exercise authority. Three of the four are outside, with two satisfying the TSE's criteria for the independence of Audit & Supervisory Board members. To ensure the effectiveness of audits conducted by the Audit & Supervisory Board, we have also established the Office of Corporate Auditors, which comprises dedicated staff who are charged with supporting Board members' efforts.

As this shows, our corporate governance system is actually a hybrid, combining the Company with an Audit & Supervisory Board model with an outstanding feature of the Company with Three Designated Committees (Nomination, Audit and Remuneration) model in the form of the Advisory Committee on Appointments and Remuneration.

Boards and Committees

Board of Directors

The Board of Directors is responsible for making decisions regarding basic management policies and key matters related to business execution, which includes formulating key management indicators and medium- to long-term strategies, as well as for supervising the execution of business activities.

Advisory Committee on Appointments and Remuneration

The Advisory Committee on Appointments and Remuneration advises the Board of Directors on the selection of candidates for the position of director and Audit & Supervisory Board member, the appointment and dismissal of the president (CEO) and executive officers, and revisions to the rules governing compensation for directors.

Audit & Supervisory Board

The Audit & Supervisory Board is tasked with monitoring the framework and status of internal control and auditing the daily execution of management duties, including by directors, by conducting business and accounting audits.

Management Committee

In accordance with the basic management policy of Taiyo Nippon Sanso and the Taiyo Nippon Sanso Group established by the Board of Directors, the Management Committee deliberates and approves important management matters pertaining to the execution of duties by the president (CEO). The KAITEKI Promotion Committee, the Technological Development Strategy Committee and the Investment Committee have been created as ancillary bodies of the Management Committee.

KAITEKI Promotion Committee

An ancillary body of the Management Committee, the KAITEKI Promotion Committee identifies key issues, establishes sustainability indicators and monitors related achievements with the aim of contributing to the realization of Mitsubishi Chemical Holdings' achievement of its KAITEKI vision.

Technological Development Strategy Committee

An ancillary body of the Management Committee, the Technological Development Strategy Committee is charged with formulating technological development strategies, including for themes being pursued in collaboration with Mitsubishi Chemical Holdings (joint development projects), as well as with managing related development projects and budgets.

Investment Committee

An ancillary body of the Management Committee, the Investment Committee deliberates capital investment and other investment plans, looking at relevance to future business development plans, investment efficiency, funding plans and profit forecasts, prior to submission to the Management Committee. The committee also assesses and verifies the results of capital investments and other investments after execution.

Compliance Committee

The Compliance Committee is responsible for updating the Taiyo Nippon Sanso Group's Code of Conduct and determining/amending key policies related to the Code, as well as with deliberating planned initiatives for promoting compliance, reporting on the status of compliance at Group companies and confirming the progress of remedial measures and of related legal actions.

Global Compliance Committee

The Global Compliance Committee is chaired by the Taiyo Nippon Sanso Group's Chief Compliance Officer (CCO) and comprises regional CCOs representing North America, Europe, East Asia, Taiwan, Southeast Asia, India and Australia. The committee is tasked with reporting on the status of compliance at regional Group companies and related legal actions, the provision of training tailored to regional risks and the operational status of whistleblowing systems.

Risk Assessment Committee

The Risk Assessment Committee identifies and assesses risks unique to the Taiyo Nippon Sanso Group, verifies measures aimed at reducing these risks and reports on risks that have manifested as issues. The committee also periodically verifies the appropriateness of risk management systems through risk reduction activities.

Technological Risk Management Committee

In accordance with technology-related Group standards of conduct and the President's Basic Policy on Technological Risk Management, the Technological Risk Management Committee responds appropriately to technological risks faced by the Taiyo Nippon Sanso Group with the aim of reducing these risks and preventing them from manifesting as actual issues.

Information Management Committee

The Information Management Committee is responsible for creating and operating systems to ensure the appropriate management of technological, business, management and other key information, as well as with promoting information management that complies with pertinent laws, regulations and guidelines.

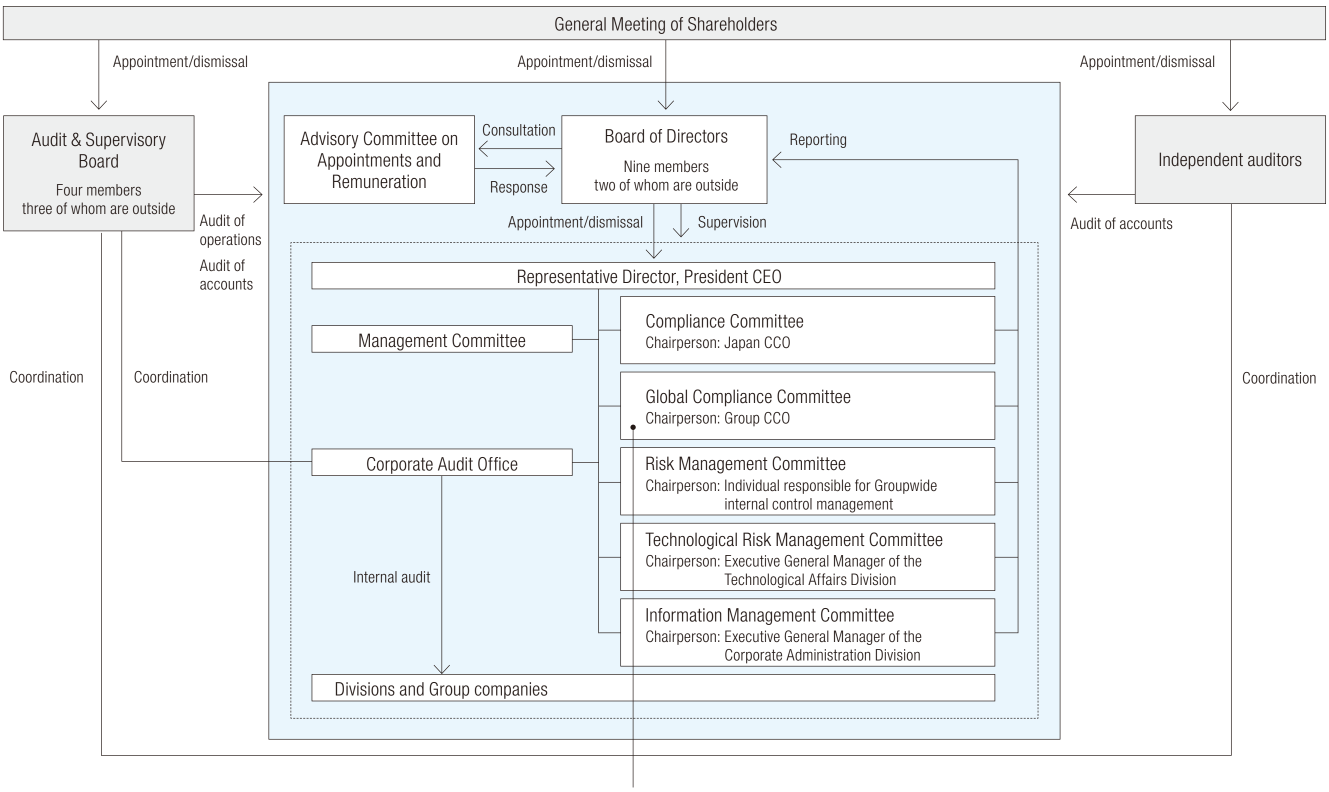
Corporate Governance Framework

We have established corporate governance principles to serve as guidelines for corporate governance across the Taiyo Nippon Sanso Group. With the aim of ensuring sustainable growth and increasing corporate value over the long term, and taking into account the positions of stakeholders, we strive to guarantee the transparency and fairness of decision making. This reflects our belief that the key to effective corporate governance is to bolster the strength of management by ensuring the effective use of available management resources and making swift, resolute decisions.

Initiatives to Improve Corporate Governance

Date	Area	Initiative
June 2015	Composition of the Board of Directors	Revised Articles of Incorporation to reduce the maximum number of directors on the Board of Directors from 20 to 15, reduced the actual number of directors on the Board of Directors from 16 to 11 and appointed two independent outside directors
June 2015 July 2015	Compliance	Established the position of Chief Compliance Officer (CCO) with the aim of ensuring the effectiveness of compliance Established the Internal Control Office to assist the efforts of the CCO
October 2015	Other	Formulated principles of corporate governance Formulated disclosure policy
June 2016	Committees	Established the Advisory Committee on Appointments and Remuneration, consisting of the chairperson of the Board of Directors, the president (CEO) and independent outside directors, to improve the transparency and objectivity of procedures for appointing and determining remuneration for directors
June 2016	Remuneration for directors	Introduced performance-linked bonuses tied to degree of achievement of medium-term business plan targets as an incentive with the goal of driving medium-term growth
July 2017	Committees	Established the Information Management Committee to create an appropriate framework for the joint management of information among pertinent departments
February 2018	Compliance	Appointed a Group CCO and six regional CCOs (North America, East Asia, Taiwan, Southeast Asia, India and Australia) to create an effective Groupwide compliance framework and formulated global compliance management regulations Established the Global Compliance Committee, which comprises the regional CCOs and is chaired by the Group COO, to facilitate the sharing of information on the status of compliance within the Group, the progress of legal proceedings and various related issues
June 2018	Risk management	Established the TNSC Technical Academy with the purpose of providing safety training and ensuring technical skills are passed on, crucial considerations from the perspective of technological risk management
March 2019	Compliance	Appointed a regional CCO for Europe

Auditing and Risk Management Structure



Chaired by the Group CCO and comprises regional CCOs representing North America, Europe, East Asia, Taiwan, Southeast Asia, India and Australia; tasked with reporting on the status of compliance at regional Group companies and related legal actions, the provision of training tailored to regional risks and the operational status of whistleblowing systems

Policies for Determining Remuneration for Directors and Audit & Supervisory Board Members
Remuneration for directors and Audit & Supervisory Board members is determined by resolution at the annual General Meeting of Shareholders in line with the total compensation limits for directors and Audit & Supervisory Board members. We have established the Advisory Committee on Appointments and Remuneration, which comprises multiple independent outside directors and the president (CEO). The Advisory Committee on Appointments and Remuneration deliberates the appropriateness of remuneration proposed after being consulted by the Board of Directors and Audit & Supervisory Board and reports the results of its deliberations to the Board of Directors and Audit & Supervisory Board.

Directors	Remuneration for directors consists of basic monthly remuneration (base salary) + bonuses (performance linked) (generally at a ratio of 6:4). Outside directors receive basic monthly remuneration only.	
	Basic monthly remuneration	Ranks-specific base salary
	Performance-linked bonuses (short-term)	Rank-specific, tied to year-on-year improvements in consolidated operating results (revenue, core operating profit and profit attributable to owners of parent)
	Performance-linked bonuses (medium and long-term)	Rank-specific, tied to degree of achievement of medium-term management plan targets (revenue and core operating profit margin)
Audit & Supervisory Board members	Remuneration for Audit & Supervisory Board members, including outside members, consists of base salary.	
	Basic monthly remuneration	Rank-specific base salary

Evaluation of the Board of Directors' Effectiveness

Our Principles of Corporate Governance stipulate that the Board of Directors carry out an annual analysis and evaluation of its overall effectiveness and make a summary of the results public in a timely and appropriate manner. The following is an outline of this process and the results thereof in fiscal year 2019.

Process for Analysis and Evaluation
The process for analyzing and evaluating the effectiveness of the Board of Directors centers on questionnaires distributed to individual directors, completed and submitted to the chairperson. The questionnaire distributed at the Board of Directors' meeting held in January 2019 contained questions regarding, among others, the Board of Directors' role and functions, composition and scale, operation, collaboration with the Audit & Supervisory Board, communication with management and relationship with shareholders. In the past, questionnaires were prepared by the Board of Directors' secretariat, but in fiscal year 2019 the Board outsourced preparation to a third-party consulting firm.

Outline of Results
(1) Overall summary
At the Board of Directors' meeting held in May 2019, directors evaluated the current level of effectiveness of the Board based on opinions expressed in the questionnaire and discussed issues and remedial measures. As a result, it was determined that the Board of Directors is effectively discharging its assigned duties. Based on a proposal from the chairperson, it was resolved that directors will implement initiatives to further improve the Board's performance.

(2) Initiatives to further improve the Board's performance
- Upgrade reports regarding operations overseas, particularly in the United States and Europe, at Board of Directors' meetings.
- Give periodic reports at Board of Directors' meetings on dialogue with shareholders.

(3) Initiatives based on the results of previous evaluations
- Goodwill impairment risk was monitored periodically by the Board of Directors.

Risk Management

In accordance with the provisions of Japan's Companies Act, we have established a system for ensuring appropriate business practices and are reinforcing internal control by clarifying decision-making authority and business processes, among others. We have also established Compliance, Risk Assessment, Technological Risk Management and Information Management committees with the aim of reinforcing compliance and ensuring the effectiveness of our internal control system.

A Dialogue Between the Outside Directors

With the aim of realizing the creation of uniquely Taiyo Nippon Sanso Group value, we are working to optimize corporate governance by actively debating issues and strategies from a medium- to long-term perspective.

Mitsuhiro Katsumaru
Outside Director

Akio Yamada
Outside Director

Realizing a Board of Directors Capable of the Free Exchange of Views

Katsumaru

Japan's Corporate Governance Code took effect on June 1, 2015. The two of us were appointed to the position of outside directors at about the same time. Outside directors have a variety of responsibilities, but at the time I saw two aspects of this role as particularly important. One is the fact in some companies the Board of Directors is less than proactive. The Board of Directors should play a bigger role in management than simply rubber stamping proposals that have already been made. Outside directors need to speak freely, not only expressing their own views, but also drawing out the regular directors, and in so doing to galvanize the Board. The other—and this is particularly important—is independence. Circumstances may make it difficult for regular directors to speak up. In such a situation, the ability of outside directors to express opinions from an independent perspective is particularly meaningful.

Yamada

The Code was challenging for Japanese companies at the time and for many responding to the new requirements was an overwhelming task. When I was appointed, my view was that the most important role of the outside director was to observe economic and social trends and respond appropriately, ensuring stakeholders' perspectives were reflected. Accordingly, when I attended Board of Directors' meetings I asked questions and expressed my views without restraint, drawing on my experience at other companies and focusing on issues that affect society at large. The atmosphere at meetings of Taiyo Nippon Sanso's Board of Directors makes it easy to speak up, which I saw as very positive.

Katsumaru

I don't know how it was before I was appointed, but I did hear from a long-serving director that it had become much easier to express one's opinion. For me, being in the midst of a group of industrial gases professionals, I have always tried to ask questions from the perspective of an amateur, maintaining a fairly casual tone. I think my somewhat naïve questions made the other directors feel like they should also speak out. Another important aspect is fairness. I know that your background is with the Japan Fair Trade Commission. I am a lawyer, so this is something we both see as important. This is not something that can be assessed easily based on one experience or from a single perspective. Outside directors are expected to assess fairness from multiple perspectives, including legality, common sense and experience.

Four Years Dedicated to Evaluating and Improving the Board of Directors

Yamada

Over the past four years, Taiyo Nippon Sanso has worked hard to establish a solid system of corporate governance. I have been very impressed by this process. Of all the requirements of the Corporate Governance Code, evaluating the Board of Directors is said to have been the most challenging. Most companies have addressed this requirement by distributing questionnaires or outsourcing the evaluation process. In Taiyo Nippon Sanso's case, this is handled by the head of the committee, that is, the Chairman of the Board of Directors, who has enthusiastically distributed repeated questionnaires, discussing views revealed, formulating individual countermeasures, setting goals and implementing improvements. This has produced substantial positive results, dramatically transforming the Board of Directors.

Katsumaru

I agree 100%. I was basically in favor of the Code, but at the time everyone wondered if Japanese companies could really deal with it. Taiyo Nippon Sanso was also somewhat bewildered at first, but took steady, resolute steps to achieve compliance. Even we found the evolution astonishing. As you mentioned, efforts to address the requirement for evaluating the Board of Directors were particularly indicative of our success. Four years ago, I don't think either of us imagined the degree of progress we would achieve.

Guaranteeing the Independence of Management and Personnel Matters

Yamada

One of the principal objectives behind the revision of the Corporate Governance Code in June 2018 was to ensure the objectivity and transparency of the processes for nominating and determining compensation for directors. Taiyo Nippon Sanso established the Advisory Committee on Appointments and Remuneration in June 2016 to deliberate on the appointment of and compensation for the Company's officers and key officers of subsidiaries based on consultations with the Board of Directors. The new succession plan for the CEO is divided into two parts: the dismissal of the current CEO/selection of a successor and the provision of training to cultivate necessary skills. The Advisory Committee on Appointments and Remuneration deliberates on standards for dismissal and selection, as well as on the selection process. The latter is a somewhat lengthy process and steps are being taken to create a system for cultivating the skills of candidates for management positions, as well as for potential successors to the CEO, recognizing that this is far from easy.

Katsumaru

I think that what you have just said is the most important point. If I was to add anything, it would be that from the perspective of minority shareholders, among others, there is an increasing emphasis on the independence of our personnel system. This course reflects our status as a listed company and a subsidiary of Mitsubishi Chemical Holdings.

Yamada
Absolutely. Most important is the fact that the outside directors of listed subsidiaries are independent of the parent company. We are fully independent, having no employment history with the parent company and no relations with its business partners. In addition, three of the four members of our Audit & Supervisory Board are independent. Our parent company, Mitsubishi Chemical Holdings, also recognizes the autonomy of our management, so there is very little risk of conflict of interest for our minority shareholders. In the future, the TSE plans to prepare and publish new guidelines on group governance. Accordingly, we are confident that we will be able to demonstrate that the functions of outside officers can be leveraged to secure the interests of minority shareholders.

Realizing Post-Merger Integration and Increasing Corporate Value

Yamada
In 2018, we made the huge decision to acquire a business in Europe. The biggest task going forward is to realize post-merger integration. This is an issue faced by many companies with global operations. Challenges include maximizing organizations and synergies, but because the paramount issue for us is ensuring safety how we go about expanding our operations around the world.

Katsumaru
This decision was of course deliberated by the Board of Directors. My position as an outside director made it easy for me to offer my opinion. On the issue of going forward with the acquisition, regardless of what others said, I stated that I was firmly in favor giving it the “Go” sign. I had various reasons, but the principal one is simply the fact that ensuring continuous, stable supplies of industrial gases is Taiyo Nippon Sanso’s mission and responsibility to society. I believe that it is important to our survival that we do not limit our presence to Japan, but rather create a global supply framework to address the challenge of ensuring stable supplies.

Yamada
I agree completely. This acquisition was completely different from moves we have made to date to enter overseas markets. When Linde and Praxair reached an agreement to merge, the EU antitrust authorities ruled that the transaction could not go ahead unless Praxair divested its European businesses as not doing so could restrict competition in the

“The purpose of Japan’s Corporate Governance Code is thus to increase the value of Japanese companies and facilitate the creation of management and business structures that can grow and support robust performance levels like those we are seeing in the United States and Europe.”

Mitsuhiro Katsumaru

“Our ability to deploy and combine positive practices from Europe, the United States and Southeast Asia to yield synergies will play a key role in the achievement of the targets of our medium-term management plan.”

Akio Yamada

European market. The merger was subsequently approved on the condition that the divested businesses were acquired by Taiyo Nippon Sanso because we are a company with extensive experience in the industrial gases field. While the size of the investment is substantial, I believe it is necessary for our future growth. I am confident that we will be able to deliberate and resolve any issues that might arise over the course of the investment as we continue to push forward. Supporting such forward-looking decisions by management is also a responsibility of outside directors.

Katsumaru

Compliance is the biggest challenge in promoting overseas operations. What constitutes fair practices varies in different countries and cultures. We have extensive experience in the United States, but now that we have expanded into Europe we need to also look at what is considered fair there and establish global standards for fair business practices. Safety, for example, is an important issue for us. The basic definition of safety is the elimination of accidents, which in other words means raising our technological capabilities. We have actively promoted technological training in Japan. Going forward, I think the exchange of technological information with Group companies in the United States and Europe will be key to raising our technological capabilities together.

Yamada

Ortus Stage 2 outlines targets for consolidated revenue of ¥910.0 billion and core operating profit of ¥100.0 billion in fiscal year 2021. Our ability to deploy and combine positive practices from Europe, the United States and Southeast Asia to yield synergies will play a key role in the achievement of the targets of our medium-term plan. As the Company as a whole moves in this direction, it will be necessary for outside directors to continue to monitor the situation.

Katsumaru

I agree. The main purpose of corporate governance is to increase corporate value. There is a big difference in the growth potential of global economies. The United States and Europe have grown over the past 10–20 years and are expected to continue doing so. In contrast, the Japanese economy remains stagnant. The purpose of Japan’s Corporate Governance Code is thus to increase the value of Japanese companies and facilitate the creation of management and business structures that can grow and support robust performance levels like those we are seeing in the United States and Europe. Taking advantage of this recent acquisition, I have high hopes that Taiyo Nippon Sanso will succeed in creating a unique growth model based on a Japan-centered management structure.

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

(As of June 20, 2019)

Members of the Board of Directors

Yujiro Ichihara

Representative Director,
President CEO

Member of the Advisory Committee on Appointments and Remuneration

April 1974	Joined the Company
June 2005	Executive officer, deputy general manager of Business Planning Division and General Affairs Division
June 2008	Senior executive officer and general manager of General Affairs Division
June 2010	Managing director and general manager of General Affairs Division
June 2012	Senior managing director and general manager of Corporate Administration Division
June 2013	Executive vice president, director, and general manager of Corporate Administration Division
April 2014	Executive vice president and director, with responsibility for Corporate Administration Division and Corporate Planning & Global Operations Division
June 2014	President and representative director, CEO (current)

Masahiro Uehara

Member of the Board,
Senior Managing Executive Officer
Executive General Manager,
Engineering Division

April 1981	Joined the Company
June 2013	Executive officer, deputy general manager of On-site & Plant Division
June 2015	Senior executive officer, deputy general manager of On-site & Plant Division
June 2016	Senior executive officer, general manager of On-site & Plant Division
April 2017	Senior executive officer, general manager of Engineering Division
June 2018	Senior managing executive officer, director, general manager of Engineering Division (current)

Kenji Nagata

Member of the Board,
Senior Managing Executive Officer
Executive General Manager,
Gases Business Division

April 1981	Joined the Company
June 2013	Executive officer, general manager of North Kanto Branch
April 2016	Executive officer, deputy general manager of Gases Business Division
June 2016	Senior executive officer, deputy general manager of Gases Business Division
April 2017	Senior executive officer, general manager of Gases Business Division
June 2018	Senior managing executive officer, director, executive general manager of Gases Business Division (current)

Kazuyuki Futamata

Member of the Board,
Managing Executive Officer
Chief Compliance Officer,
(TNSC Group CCO)

April 1980	Joined Mitsubishi Chemical Industries Limited (now Mitsubishi Chemical Corporation)
June 2011	Executive officer, general manager of Human Resources Division, Mitsubishi Chemical Corporation; Executive officer, general manager of CEO's office, Mitsubishi Chemical Holdings Corporation
April 2013	Executive officer, Mitsubishi Rayon Co., Ltd. (now Mitsubishi Chemical Corporation) (responsible for Internal Control division)
April 2015	Executive officer, Mitsubishi Rayon Co., Ltd. (now Mitsubishi Chemical Corporation) (responsible for Human Resources, General Affairs, Information Systems, and Internal Control divisions); executive officer, general manager of Human Resources Office, Mitsubishi Chemical Holdings Corporation
April 2017	Director and managing executive officer, Chief Compliance Officer (responsible for Human Resources, General Affairs, Internal Control divisions), Mitsubishi Chemical Corporation
January 2019	Managing executive officer, CCO of the Company (Taiyo Nissan Sanso Corporation Group CCO)
June 2019	Managing executive officer, director, CCO (Taiyo Nissan Sanso Corporation Group CCO), (current)

Thomas Scott Kallman

Member of the Board

July 1981	Joined BOC Group, plc.
January 2000	Vice-president, general manager responsible for Eastern Region, BOC Group, plc.
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)

Eduardo Gil Elejoste

Member of the Board

April 1981	Joined Argon S.A.
January 1992	Director Marketing responsible for Spain and Portugal, Argon S.A.
September 1996	Director Business Development responsible for Europe, Praxair España S.L.
January 2000	Director 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.; 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)

Akio Yamada

Member of the Board
(Outside Director)

Independent outside director

Chairman of the Advisory Committee on Appointments and Remuneration

April 1967	Joined General Secretariat of Japan Fair Trade Commission
June 1996	Director general of Trade Practices Department, General Secretariat of Japan Fair Trade Commission
June 1997	Director general of Investigation Bureau, General Secretariat of Japan Fair Trade Commission
June 1998	Director general of Economic Affairs Bureau, General Secretariat of Japan Fair Trade Commission
June 2000	Secretary general, Japan Fair Trade Commission
December 2003	Commissioner, Japan Fair Trade Commission
April 2009	Senior advisor to Jones Day (current)
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)

Mitsuhiro Katsumaru

Member of the Board
(Outside Director)

Independent outside director

Member of the 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
June 2000	Director of Criminal Affairs Division, Criminal Affairs Bureau, Ministry of Justice
June 2001	Director of General Affairs Division, Criminal Affairs Bureau, Ministry of Justice
January 2003	Director of Finance Division, Minister's Secretariat, Ministry of Justice
April 2005	Assistant vice-minister, Ministry of Justice (responsible for general policy integration)
December 2005	Chief prosecutor, Fukui District Public Prosecutors Office
June 2007	Chief prosecutor, Mito District Public Prosecutors Office
October 2008	Chief prosecutor, Saitama District Public Prosecutors Office
January 2010	Director, Public Security Department, Supreme Public Prosecutors Office
December 2010	Superintending prosecutor, Takamatsu High Public Prosecutors Office
June 2012	Superintending prosecutor, Hiroshima High Public Prosecutors Office
July 2014	Retired from superintending prosecutor position
October 2014	Registered as an attorney
June 2015	Outside director of the Company (current)
November 2015	Director of MoriX Co., Ltd. (current)
March 2017	Director of Shimano Inc. (current)

Hidefumi Date

Member of the Board

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 (current)
June 2019	Director of the Company (current)

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

(As of June 20, 2019)

Members of the Audit & Supervisory Board

Kazunari Higuchi

Member of the Audit & Supervisory Board (Outside Auditor)

Independent outside auditor

April 1980	Joined The Fuji Bank, Limited (now Mizuho Bank, Ltd.)
April 2009	Executive officer, general manager, Operational Audit Division, Mizuho Corporate Bank, Ltd. (now Mizuho Bank, Ltd.)
April 2010	Adviser, Mizuho Research Institute Ltd.
May 2010	Managing executive officer, Mizuho Research Institute Ltd.
June 2011	President and representative director, UC Card Co., Ltd.
April 2016	Adviser, UC Card Co., Ltd.
June 2016	Outside auditor of the Company (current)

Naoya Fujimori

Member of the Audit & Supervisory Board (Outside Auditor)

April 1978	Joined Mitsubishi Chemical Industries Limited (now Mitsubishi Chemical Corporation)
February 2001	Group manager, Accounting Department, Mitsubishi Chemical Corporation
June 2003	General manager, Accounting Department, Nippon Kasei Chemical Co., Ltd. (now Mitsubishi Chemical Corporation)
June 2010	General manager, Accounting Department, Mitsubishi Chemical Logistics Corporation
June 2012	Director, general manager, Accounting Department, Mitsubishi Chemical Logistics Corporation
April 2014	Director, executive officer, responsible for Accounting, LSI Medience Corporation
October 2014	Director, executive officer, general manager, Administration Department, LSI Medience Corporation
March 2016	Retired from LSI Medience Corporation
April 2016	Advisor of the Company
June 2016	Outside auditor (current)

Akihiro Hashimoto

Member of the Audit & Supervisory Board (Outside Auditor)

Independent outside auditor

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	Outside auditor of the Company (current)

Junzo Tai

Member of the Audit & Supervisory Board

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	Member of the Audit & Supervisory Board (current)

Senior Executive Officers

Hirohisa Yanagida
Senior Executive Officer
General Manager,
Kanto Regional Branch

Masahisa Kanzaki
Senior Executive Officer
Executive General Manager,
Energy Division

Nobuaki Kobayashi
Senior Executive Officer
Executive General Manager,
Research & Development Division

Executive Officers

Kunihiro Kobayashi
Executive Officer
Executive General Manager,
Innovation Division

Yasuhiko Kawano
Executive Officer
General Manager,
Chubu Regional Branch

Toshikazu Kurishita
Executive Officer
Deputy Executive General Manager, Gases Business Division

Satoshi Wataru
Executive Officer
Executive General Manager,
Human Resources Division and Corporate Planning Office, Chief Health Officer

Tsutomu Moroishi
Executive Officer
Executive General Manager,
Global Operations Division

Toyoyuki Sato
Executive Officer
Deputy Executive General Manager, Plant Engineering Center, Engineering Division

Masaharu Takagi
Executive Officer
Deputy Executive General Manager, Gases Business Division

Toru Yanagawa
Executive Officer
Executive General Manager,
On-site & Plant Division

Daiji Nakajima
Executive Officer
Executive General Manager,
Production & Logistics Division

Masanobu Narita
Executive Officer
General Manager,
Kitakanto Regional Branch

Yoshifumi Koide
Executive Officer
Executive General Manager,
Corporate Administration Division

Tsuneo Tanaka
Executive Officer
Executive General Manager,
Medical Division

Takeshi Miki
Executive Officer
Executive General Manager,
Technological Affairs Division,
Chief Sustainability Officer

Kouichi Take
Executive Officer
General Manager, Chugoku Shikoku Regional Branch

Masayuki Higano
Executive Officer
General Manager,
Tohoku Regional Branch

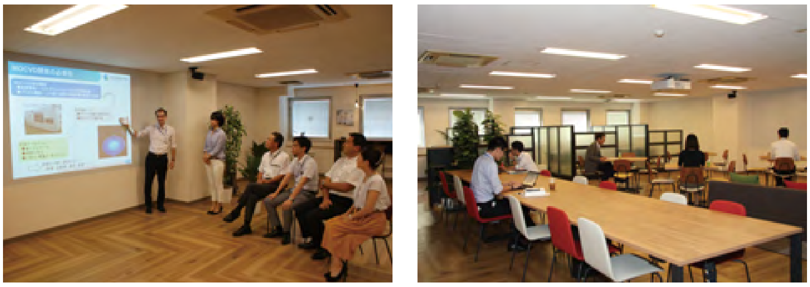
Working with Stakeholders

Recognizing that our longevity and future prosperity depend on our ability to earn the trust of society as a whole, we have established a framework for fulfilling our responsibilities to stakeholders and are implementing a variety of initiatives aimed at maintaining a strong corporate culture.

Providing a Working Environment that Encourages Innovation and Diversity

At our Shiba office, home of the Innovation Division, we strive to facilitate global business expansion and value creation by providing a working environment conducive to the development of original ideas and new value and to job satisfaction for a wide range of human resources. As part of this effort, we have established an open area on the eighth floor of the office based on the concept of “a work/lounge/office where employees can choose how and where they work.” The space is suitable for a wide range of uses, including for meetings, as a workspace and for presentations using large displays.

The Innovation Division brings together diverse human resources, including a number of foreign nationals. In addition to facilitating active in-house communication, the open area has also proven useful in encouraging innovation and diversity.



Eighth floor open area equipped with tables, counters, meeting spaces and large displays

Thermos Collaborates with Volunteer Environmental Initiative and Participates in Team ECO Work! 224 Event

In September 2018, 48 Thermos employees and family members took part in Team ECO Work! 224 Thermos Zero Waste Action at Teradomari Central Beach Resort, a post-season beach clean-up initiative sponsored by the UX Niigata Television Network 21, Inc., on the prefecture’s Teradomari coast. Thermos collaborates actively with the UX Niigata Television Network 21’s Team ECO: Nature Support Declaration project and has now participated in this particular volunteer initiative three times.

The Team ECO: Nature Support Declaration project is a volunteer initiative led by local residents and companies in Niigata Prefecture. In addition to beautifying the environment, the initiative aims to deepen people’s love of nature and thus is a good fit with Thermos’ own environmental activities. The event also provides a valuable opportunity for Thermos to communicate with local residents.

Team ECO Work! 224 participants

Matheson Tri-Gas Wins CGA Safety Awards

On April 24, 2018, the U.S. Compressed Gas Association (CGA) announced winners of its safety awards for 2018 at its annual meeting, which was held in Florida. In addition to earning its second consecutive Fleet Safety Excellence Award in the Bulk Vehicle Fleets category, Matheson Tri-Gas, Inc. won the Environmental Recognition Program Award for its efforts in 2017 to reduce argon gas losses. Matheson Tri-Gas subsidiary Western International Gas and Cylinders won its second consecutive Fleet Safety Excellence Award in the Cylinder Vehicle Fleets category.

The CGA was created to establish safety standards and promote safe practices in the industrial gases and medical gases industries. The association presents awards annually to companies and individuals exhibiting industry leadership in the areas of safety and environmental performance. Matheson Tri-Gas places a high priority on companywide safety and environmental considerations. As evidenced by its CGA awards, the company continues to earn recognition across the industry for its efforts.

Fleet Safety Excellence Award (Bulk Vehicle Fleets category) winner: Matheson Tri-Gas

Fleet Safety Excellence Award (Cylinder Vehicle Fleets category) winner: Western International Gas and Cylinders

Communication with Shareholders and Investors

In addition to our annual general meeting of shareholders, we conduct results presentations, facility tours and other events for institutional investors and sell-side analysts. Results presentations make use of visual aids to deepen understanding of our operations, operating results and our forecasts for the future. Facility tours are designed to enhance understanding of what we do and include regularly scheduled visits to both production facilities and research laboratories. In March 2019, we conducted a tour of the Chiba Sanso Center with the aim of introducing shareholders and investors to our industrial gases business. In September 2018, we conducted a tour of subsidiary Japan Fine Products' Mie Plant in cooperation with Mitsubishi Chemical Holdings. We also organized a joint IR seminar with Mitsubishi Chemical Holdings and Tanabe Co., Ltd., another member of the Mitsubishi Chemical Holdings Group.

We also released a number of regular publications for shareholders and investors, including full-term and interim business reports and a single integrated report that provides both financial information, such as that related to business strategies and operations, and non-financial information, including that related to environmental protection, social contribution and corporate governance, with the aim of giving readers an accurate overall picture of the Taiyo Nippon Sanso Group.

Enhancing our corporate website is another key focus of our efforts. As well as various key documents, the website provides a compact outline of our various businesses in a compact, easy-to-understand form and other content that give even first timers a clear view of the Group and its activities.

Corporate website's IR section:
https://www.tn-sanso.co.jp/en/ir/index.html

Tour of Japan Fine Products' Mie Plant for institutional investors and securities analysts

Results presentation

Taiyo Nippon Sanso Major Club Official Dealer System

In April 2005, we launched an official dealer system, dubbed the Taiyo Nippon Sanso Major Club, with the aim of responding accurately and effectively to the needs of end users across Japan. In addition to providing official dealers ("partner companies") with competitive products, we leverage our position to provide a wide range of services, including domestic and overseas sales support, technical assistance and management consultation.

The Taiyo Nippon Sanso Major Club—comprising the core Partners' Club and two functional subgroups, the LP Gas Club and the Medical Club—boasts a robust national network that is instrumental in ensuring our products are delivered safely and reliably to end users. For each constituent club, we offer seminars and training sessions on operational safety and other themes. Partner companies also promote a variety of ongoing independent skill-building initiatives aimed at enhancing customer satisfaction and improving their own performance as responsible corporate citizens. In fiscal year 2019, the Medical Club conducted training sessions at six locations, in which a total of 270 individuals participated. A training session held by the LP Gas Club in Tokyo welcomed 87 participants from 63 companies. Exchanges, training sessions and production facility tours were also conducted for Partners' Club companies in multiple other areas.

Going forward, we will continue working to reinforce customer satisfaction and enhance our reputation as an organization worthy of trust through ongoing initiatives with Taiyo Nippon Sanso Major Club partners.

Organization of the Taiyo Nippon Sanso Major Club

MAJOR CLUB Logo

*The Partners Club is divided into seven regional blocks:
Tohoku, Kita-Kanto, Kanto, Chubu, Kansai, Chugoku–Shikoku and Kyushu.

LP Gas Club (Functional subgroup) — Partners' Club* — Medical Club (Functional subgroup)

Inaugurated: April 1, 2005

Chairperson: Representative Director, President CEO Taiyo Nippon Sanso

Number of participating dealers: 284 (as of July 2019)

Secretariat: Gases Business Division, Taiyo Nippon Sanso

The *Major Club Magazine* helps us communicate with Major Club members.

Fiscal year 2018 annual meeting of the LP Gas Club and production facility tour conducted by Kyushu-based LP Gas Club partners

Environmental Protection Initiatives

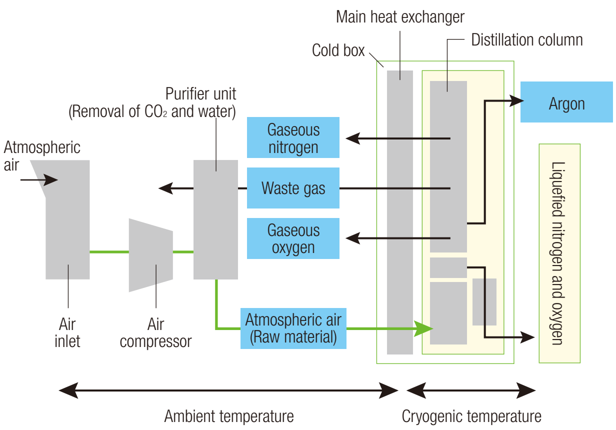
We promote a broad range of initiatives to combat climate change with the aim of helping mitigate global warming, the central theme of our environmental protection efforts. Of particular note, we are taking steps to reduce energy consumed per unit of production at gas production facilities, promoting energy-saving measures at various sites and striving to increase the efficiency of transport by tanker truck. We also promote the development of products and propose solutions that reduce our impact on the environment and contribute to global environmental conservation.

Environmental Impact of Oxygen, Nitrogen and Argon Production

The production of the Taiyo Nippon Sanso Group's core air separated gases (oxygen, nitrogen and argon) requires a considerable amount of electric power. CO_2 emissions attributable to the use of electric power used for this purpose accounts for approximately 98% of total Group CO_2 emissions.

Air separation units produce oxygen, nitrogen and argon simultaneously by separating atmospheric air into its constituent gases. Air is first compressed, a process that is highly energy-intensive and thus uses a significant amount of electric power. Compressed air is cooled almost to the point where the gases liquefy, after which it is ready for the distillation column, where it is separated into its gas and liquid components using a thermal distillation process. Nitrogen, which has a low boiling point, concentrates in the gas and is withdrawn from the top of the column, while oxygen, which has a higher boiling point, concentrates in the liquid and is withdrawn from the bottom of the column. Argon, which has an intermediate boiling point, is withdrawn from the middle of the column.

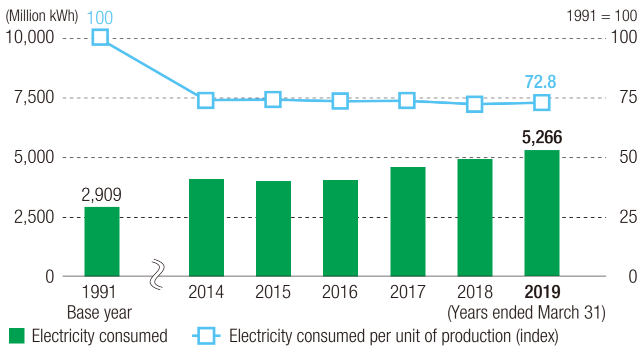
Air Separation Unit: Simplified Process Flow



Preventing Global Warming

Our efforts to contribute to the prevention of global warming center on reducing energy consumption at gas production facilities. We have established an Energy Saving Working Group as a subsection of our Environmental Management Committee to guide these efforts. In fiscal year 2019, consumption of energy per unit of production by such facilities was up 0.2% from fiscal year 2006, the base year used for this measurement, reflecting changes in the consumption of gases supplied by pipeline by major users. Moreover, these facilities' consumption of electric power per unit of production was down 27.2% from fiscal year 1991. Efforts by gas production facilities to reduce energy consumption included developing and installing energy-saving air separation units, replacing air separation unit components with new high-efficiency versions and optimizing facility operations to better reflect demand. These facilities also promote initiatives in line with the Commitment to a Low-Carbon Society plan formulated by the Keidanren (Japan Business Federation) and the Japan Chemical Industry Association (JCIA)'s action plan for realizing a low-carbon society.

Consumption of Energy and Electricity per Unit of Production by Gas Production Facilities



Reporting boundary: Gas production facilities belonging to and gas production companies managed by Taiyo Nippon Sanso.

Notes: 1. For information on relevant companies/departments/sites, see the Environmental Data page of the CSR section of the Taiyo Nippon Sanso corporate website.
2. Increases in fiscal years 2018 and 2019 reflect a change in the reporting boundary to include JFE Sanso Center's Kurashiki Plant.

Other Initiatives

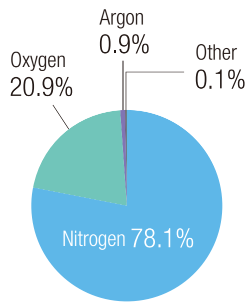
Challenges and targets	Principal initiatives	Progress as of fiscal year 2019	Relevant companies/ departments/sites
(1) Promote energy-saving measures at various sites to reduce electric power consumption (Target: Average annual reduction of 1.0% over the medium to long term)	• Cut unnecessary electric power consumption by office and lighting equipment • Replace air conditioning, OA, lighting, shared and other equipment with energy-efficient new models • Implement no overtime days and Cool Biz (liberal summer dress code to reduce use of air conditioning)	Down 2.1% (from fiscal year 2018)	All Taiyo Nippon Sanso sites (excluding gas production facilities)
(2) Increase the efficiency of transport by tanker truck to reduce fuel used in the transport of products	• Optimize shipping routes • Rethink delivery intervals • Promote the weighing of cargo in the presence of the customer • Introduce new-model tanker trucks • Reinforce green driving training	Down 29.1% (from fiscal year 1991)	Group and subcontracted logistics companies*1
(3) Contribute to environmental protection through our products by increasing sales of environment-friendly products	Take steps to bolster sales of hydrogen refueling stations, SCOPE-Jet®, MG Shield®, SF_6 Recovery Service, Thermos products, nitrogen supply systems for laser processing and combustion-type exhaust gas abatement systems	Contribution to overall reduction: 1,779,000 tonnes CO_2*2	Taiyo Nippon Sanso and directly owned consolidated subsidiaries in Japan

*1 For information on relevant companies/departments/sites, see the Environmental Data page of the CSR section of the Taiyo Nippon Sanso corporate website.
*2 Contributions to the reduction of greenhouse gas emissions are calculated in accordance with the Japanese Ministry of Economy, Trade and Industry's Guideline for Quantifying GHG Emission Reduction Contribution (formulated in March 2018).

Environmental Inputs and Outputs of the Taiyo Nippon Sanso Group's Operating Activities

Atmospheric air is the raw material used to produce industrial gases.

Raw material



Atmospheric air consists of oxygen, nitrogen, argon and other gases.

Electricity used here represented **99.8%** of the Group's total electricity consumption.

Development and production

Gas filling stations

Gas production facilities

INPUT

Electricity	7,278 million kWh
Heat	706,000 GJ
Fuel	316,000 GJ
Water	13.62 million m^3

OUTPUT

Greenhouse gas emissions 4,057,000 tonnes CO_2

Calculated in tonnes of CO_2

Emissions of CO_2 due to the use of electricity	4,009,000 tonnes CO_2
Emissions of CO_2 due to the use of heat	41,000 tonnes CO_2
Emissions of CO_2 due to the use of fuel	4,000 tonnes CO_2
Emissions of greenhouse gases other than CO_2	3,000 tonnes CO_2

Water discharged (Estimate) 4.54 million m^3

Supplied in cylinders

Supplied by tanker trucks

Supplied by pipeline

Supply

INPUT

Diesel oil/gasoline*1 2,000 kL

OUTPUT

Greenhouse gas emissions 5,000 tonnes CO_2

Oxygen O_2 · Nitrogen N_2 · Argon Ar

Carbon dioxide CO_2 · Hydrogen H_2 · Helium He · LPG · Specialty gases

Oxygen O_2 · Nitrogen N_2 · Argon Ar

Oxygen O_2 · Nitrogen N_2 · Argon Ar

Liquefied gases are transported from production facilities by tanker truck to filling stations, where vaporized gases are compressed into cylinders.

Sales

Sites

Service vehicles

INPUT

Electricity*2	12 million kWh
Fuel*2	14,000 GJ
Diesel oil/gasoline*3	300 kL

OUTPUT

Greenhouse gas emissions 8,000 tonnes CO_2

Calculated in tonnes of CO_2

Emissions of CO_2 due to the use of electricity	6,000 tonnes CO_2
Emissions of CO_2 due to the use of fuel	1,000 tonnes CO_2
Emissions of CO_2 due to the use of diesel oil/gasoline	1,000 tonnes CO_2

Most industrial gases return to the atmosphere after use, resulting in minimal waste.

Use

Customers

- Steel/nonferrous metals
- Electronics
- Petroleum/chemicals
- Automobiles/machinery
- Glass/papermaking
- Healthcare
- Food
- Others

Industrial gases are used in a broad range of industries, from healthcare and food to petroleum/chemicals and electronics.

Total greenhouse gas emissions
4,070,000 tonnes CO_2

Contribution to the reduction of greenhouse gas emissions*4
1,779,000 tonnes CO_2

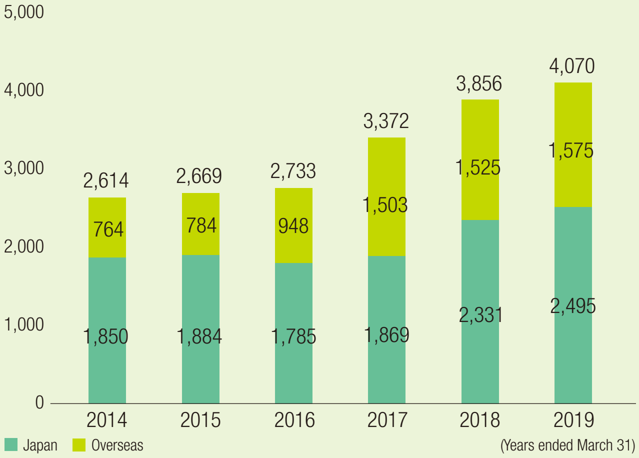
*1 Used by trucks in Japan
(Fuel used by Group-designated consignors is included in Scope 3.)
*2 Used by Group sites in Japan
*3 Used by Taiyo Nippon Sanso service vehicles
*4 Calculated based on item 3 in the "Other initiatives" table on page 46.

Note: Reporting boundary for environmental inputs and outputs
Development and production:
Taiyo Nippon Sanso, directly owned consolidated subsidiaries in Japan and principal consolidated subsidiaries overseas
Supply, Sales:
Taiyo Nippon Sanso and directly owned consolidated subsidiaries in Japan
(For information on principal overseas subsidiaries, see the Environmental Data section of the CSR portion of the Taiyo Nippon Sanso corporate website.)

Non-Financial Highlights

Greenhouse Gas Emissions

(Thousands of tonnes CO_2)

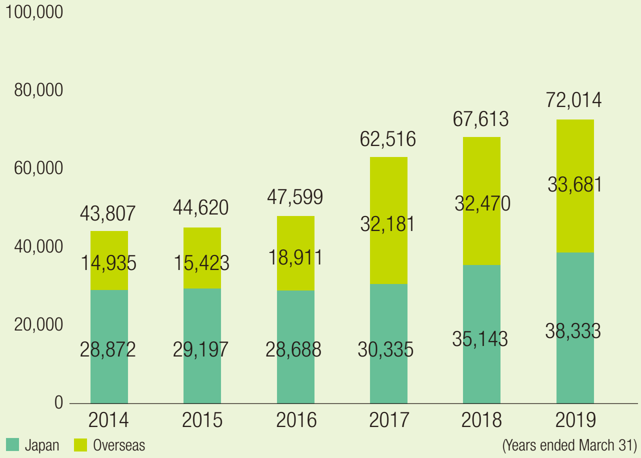


Reporting boundary: Taiyo Nippon Sanso, directly owned consolidated subsidiaries in Japan and principal consolidated subsidiaries overseas

Greenhouse gas emissions (Scope 1 and Scope 2) in fiscal year 2019 rose to 2,495,000 tonnes of CO_2 in Japan and 1,575,000 tonnes of CO_2 overseas, owing to the expansion of operations as a result of forward-looking M&As and capital investment.

Energy Consumption

(Thousands of GJ)

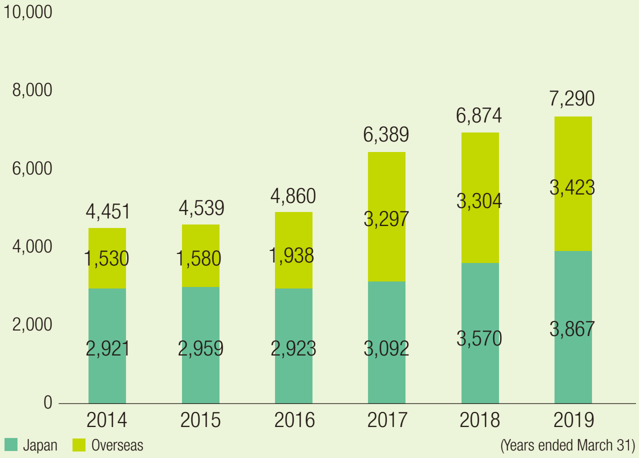


Reporting boundary: Taiyo Nippon Sanso, directly owned consolidated subsidiaries in Japan and principal consolidated subsidiaries overseas

Energy consumption in fiscal year 2019 rose to 38,333,000 tonnes in Japan and 33,681,000 metric tonnes overseas, owing to the expansion of operations as a result of forward-looking M&As and capital investment. We continue to promote the efficient use of energy by developing and installing energy-saving air separation units and replacing existing air separation unit components with new high-efficiency alternatives.

Electric Power Consumption

(Millions of kWh)

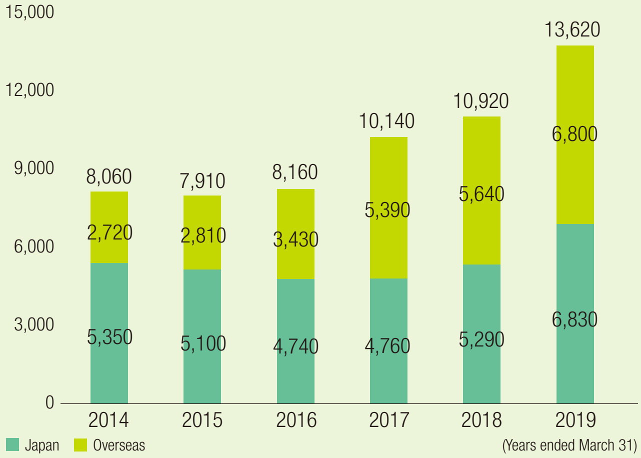


Reporting boundary: Taiyo Nippon Sanso, directly owned consolidated subsidiaries in Japan and principal consolidated subsidiaries overseas

Production processes for industrial gases use a significant amount of electric power. The bulk of our electric power consumption goes to the operation of air separation units. Owing to the establishment of JFE Sanso Center's Kurashiki Plant and other efforts to expand our operations, electric power consumption in fiscal year 2019 rose to 3,867 million kWh in Japan and 3,423 million kWh overseas. We continue to curb increases in our use of electric power by developing and installing energy-saving air separation units and replacing existing air separation unit components with new high-efficiency alternatives.

Fresh Water Withdrawn

(Thousands of m^3)



Reporting boundary: Gas production facilities of Taiyo Nippon Sanso and directly owned consolidated subsidiaries in Japan, and principal consolidated subsidiaries overseas

The production of industrial gases uses a water cooler to cool atmospheric air, the principal raw material. Replenishing the water for this purpose uses the bulk of our water withdrawal. Fresh water withdrawn in fiscal year 2019 rose to 6,830,000 m^3 in Japan and 6,800,000 m^3 overseas, owing to the expansion of operations as a result of forward-looking M&As and capital investment.

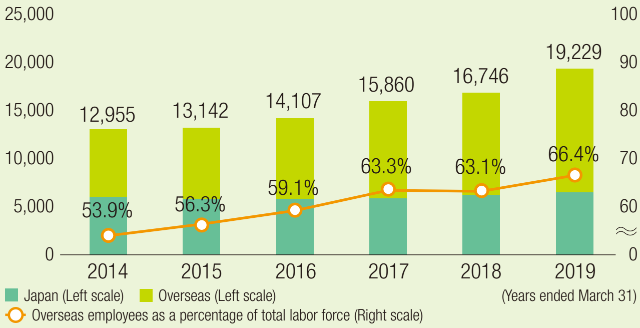
Reporting boundary: Owing to a change in the reporting boundary to Taiyo Nippon Sanso, directly owned consolidated subsidiaries in Japan and principal consolidated subsidiaries overseas effective from fiscal year 2019, data for previous periods (fiscal year 2014 through fiscal year 2018) has been revised. For information on principal overseas subsidiaries, see the Environmental Data section of the CSR portion of the Taiyo Nippon Sanso corporate website.

Greenhouse gas emissions: Greenhouse gas emissions in Japan are calculated using emissions factors provided in Japan's Act on Promotion of Global Warming Countermeasures. For greenhouse gas emissions overseas, Scope 1 emissions are calculated using emissions factors set forth in Japan's Act on Promotion of Global Warming Countermeasures, while Scope 2 emissions are calculated using country-specific emissions published by the International Energy Agency (IEA) in 2016.

Energy consumption: The unit calorific values for fuel used are calculated based on values provided in Japan's Act on the Rational Use of Energy.

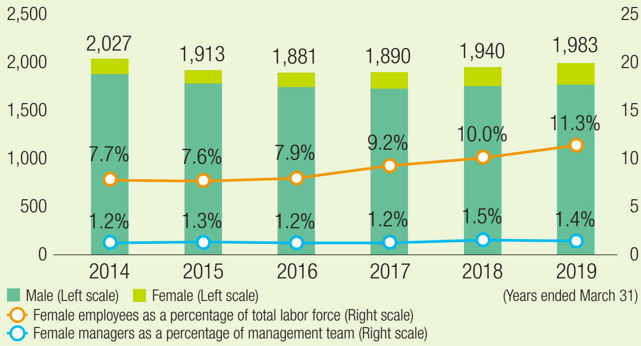
For additional non-financial data, see the Environmental Data page of the CSR section of the Taiyo Nippon Sanso corporate website:
https://www.tnsanso.co.jp/en/csr/non-financial_data.html

Number of Employees (Consolidated)



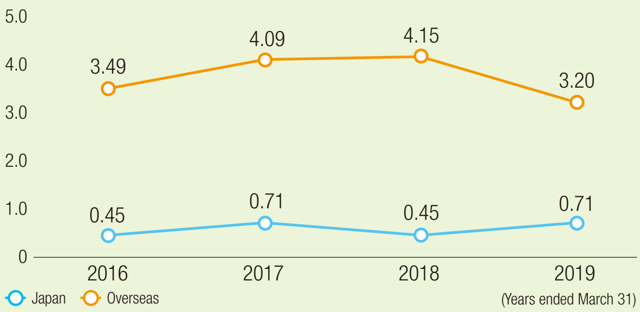
In fiscal year 2019, the number of individuals employed by the consolidated Taiyo Nippon Sanso Group rose to 6,461 in Japan and 12,768 overseas. Owing to the expansion of operations as a result of forward-looking M&As, overseas employees as a percentage of the total labor force was also up from fiscal year 2018.

Number of Employees (Parent Company)



In fiscal year 2019, the parent company's labor force comprised 1,758 male employees, 225 female employees and 76 foreign nationals. While female employees as a percentage of the parent company's total labor force rose 1.3 percentage points, female managers as a percentage of the management team remained level. Going forward, we will continue working to expand career opportunities for female employees by improving working environments and establishing pertinent systems.

Frequency Rate* of Occupational Accidents Resulting in Lost Workdays (Consolidated)

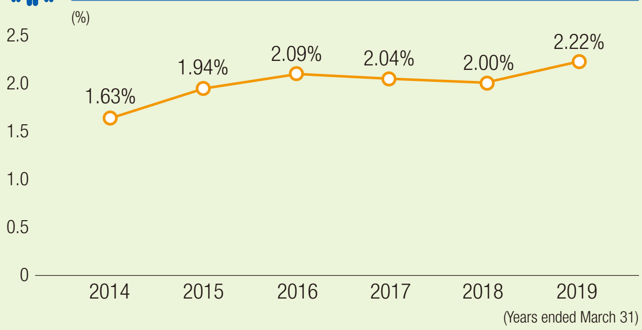


*The frequency rate expresses the frequency of accidents resulting in lost workdays in a fiscal year, calculated as the number of injuries/deaths due to occupational accidents per million work hours.

Reporting boundary: Taiyo Nippon Sanso, directly owned consolidated subsidiaries in Japan and consolidated subsidiaries overseas (principal production departments) (Data used in fiscal year 2019 includes data for Europe for the three months ended March 31, 2019.)

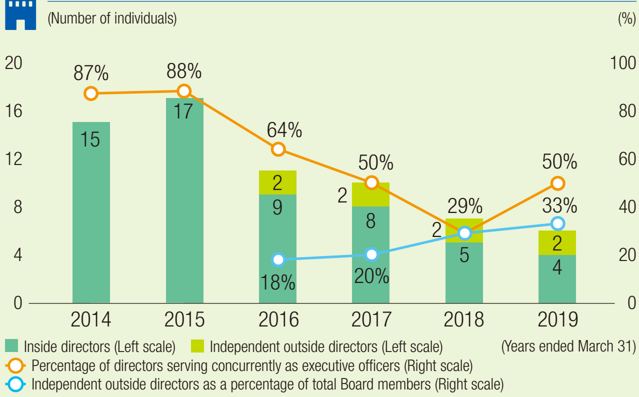
In fiscal year 2019, the frequency rate of accidents resulting in lost workdays was 0.71 in Japan and 3.20 overseas. We continue to promote efforts to prevent occupational accidents, including providing hands-on safety training to improve employees' ability to recognize danger, and Kiken Yochi Training (KYT) ("hazard prediction training"), introducing 5S (a workplace organization methodology based on five words (*Seiri* (Sort), *Seiton* (Set in Order), *Seiso* (Shine), *Seiketsu* (Standardize) and *Shitsuke* (Sustain)) and fostering a safety-oriented corporate culture.

Percentage of Labor Force Accounted for by Individuals with Disabilities



In fiscal year 2019, individuals with disabilities accounted for 2.22% of our labor force, slightly higher than the legally mandated rate for private-sector companies in Japan of 2.2%. We endeavor 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 and deputy chairman of the Board of Directors are counted as executive officers. Our executive officer system was introduced in fiscal year 2016. For prior years, directors responsible for business execution are counted as executive officers.

In fiscal year 2019, the Board of Directors comprised four inside and two independent outside directors, with directors serving concurrently as executive officers accounting for 50% of the Board as a whole and 33% of independent outside directors. 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.

Six-Year Summary

Taiyo Nippon Sanso Corporation and Consolidated Subsidiaries

(Millions of yen)

Financial indicators	Japanese GAAP	Japanese GAAP	Japanese GAAP	IFRS	IFRS	IFRS	IFRS
Years ended/as of March 31	**2014**	**2015**	**2016**	**2016**	**2017**	**2018**	**2019**
Revenue	¥522,746	¥559,373	¥641,516	¥594,421	¥581,586	¥646,218	¥ 740,341
Core operating profit*1	—	—	—	47,456	54,736	60,033	65,819
Core operating profit margin	—	—	—	8.0%	9.4%	9.3%	8.9%
Operating profit	31,489	35,297	43,362	48,925	53,664	59,862	66,863
Operating profit margin	6.0%	6.3%	6.8%	8.2%	9.2%	9.3%	9.0%
Profit (loss) attributable to owners of parent	20,194	20,764	25,845	29,030	34,740	48,919	41,291
Overseas revenue ratio	31.4%	35.0%	44.4%	40.7%	40.8%	43.3%	47.9%
Selling, general and administrative expenses/revenue	26.4%	26.7%	28.4%	27.1%	28.4%	27.7%	27.7%
Return on equity*2	8.4%	7.0%	8.2%	9.1%	10.3%	13.3%	10.4%
Return on capital employed*3	6.2%	6.2%	7.4%	8.1%	8.4%	8.4%	6.2%
Capital expenditures	32,532	35,201	53,611	52,657	43,796	62,569	76,657
Investment and loans	35,749	5,710	32,941	25,507	102,034	4,556	691,126
Depreciation and amortization	33,507	35,568	44,864	39,696	40,048	43,266	56,111
Amortization of goodwill	3,668	4,959	7,352	—	—	—	—
Research and development expenses	3,170	3,430	3,348	3,238	3,323	3,255	3,494
Interest-bearing debt	278,063	266,276	274,424	266,215	359,528	326,959	1,005,402
Net interest-bearing debt	219,727	212,855	223,638	215,492	304,308	274,968	941,117
Net debt-to-equity (times)	0.80	0.67	0.71	0.67	0.87	0.71	—
Adjusted net D/E ratio*4 (times)	—	—	—	—	—	—	1.54
Total equity attributable to owners of parent	298,475	341,207	337,974	320,457	351,576	386,457	406,602
Total assets	731,677	782,357	783,248	787,505	924,281	931,047	1,771,015
Cash flows from operating activities	56,716	58,615	81,555	73,347	74,596	83,199	98,685
Cash flows from investing activities	(55,295)	(30,583)	(82,130)	(74,252)	(147,082)	(52,088)	(754,969)
Cash flows from financing activities	27,884	(33,866)	(1,825)	(2,385)	80,777	(39,859)	664,925
Free cash flow	1,421	28,032	(575)	(905)	(72,486)	31,111	(656,284)
Amounts of per share of common stock							
Profit (loss) (yen)	49.42	47.98	59.72	67.08	80.28	113.04	95.42
Cash dividends (yen)	12.0	13.0	16.0	16.0	20.0	23.0	25.0
Dividends payout ratio	24.3%	27.1%	26.8%	23.9%	24.9%	20.3%	26.2%
Price earnings ratio (times)	16.43	34.16	17.88	15.92	16.22	14.25	17.67
Share price (March 31) (yen)	812	1,639	1,068	1,068	1,302	1,611	1,686

*1 Core operating profit is calculated by subtracting losses (nonoperating items) produced by nonrecurring factors from operating profit. Nonrecurring 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 equity (ROE) = Profit attributable to owners of parent / average shareholders' equity
Shareholders' equity = Net assets – non-controlling interests; average shareholders' equity = (Shareholders' equity at beginning of period + shareholders' equity at end of period) / 2

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

*4 Adjusted net debt-to-equity (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.

Management's Analysis of Operating Results and Financial Position

Operating Results

Consolidated revenue in fiscal year 2019, ended March 31, 2019, increased 14.6%, to ¥740,341 million.

Cost of sales climbed 15.0%, to ¥473,332 million, equivalent to 63.9% of revenue, up 0.2 percentage point. Selling, general and administrative expenses rose 14.6%, to ¥204,789 million, equivalent to 27.7% of revenue. As a consequence, operating profit advanced 11.7%, to ¥66,863 million, while the operating profit margin edged down 0.3 percentage point, to 9.0%. Core operating profit—operating profit excluding gains or losses associated with nonrecurring factors such as withdrawals from or the scaling back of businesses—amounted to ¥65,819 million, up 9.6%, or ¥5,786 million.

Owing to these and other factors, profit attributable to owners of the parent declined 15.6%, to ¥41,291 million. Basic earnings per share, at ¥95.42, were down ¥17.62, while ROCE, at 6.2%, was down 2.2 percentage points.

At the general meeting of shareholders held on June 20, 2019, shareholders approved a proposal to pay a year-end dividend of ¥13.00 per share, up ¥1.00, bringing cash dividends to the period, comprising interim and year-end dividends, to ¥25.00 per share. This represented a payout ratio of 26.2%.

Capital expenditures, on a final acceptance basis, totaled ¥76,657 million, an increase of ¥14,088 million. Depreciation and amortization rose ¥12,845 million, to ¥56,111 million.

Research and development expenses, at ¥3,494 million, were up ¥239 million, equivalent to approximately 0.5% of revenue.

Results by Segment

Gas Business in Japan

In the area of industrial gases, revenue from core air separated gases (oxygen, nitrogen and argon) were favorable, particularly to customers in the key steel and chemicals industries. Revenue from on-site gas services advanced, owing to the establishment of a new on-site plant in October 2017. Revenue from sales of hard goods soared, particularly for metal processing, was up sharply. The October 2018 acquisition of medical equipment sales company IMI contributed to revenue in the area of medical equipment. Among electronics-related products, sales of electronics materials gases declined. As a consequence of these and other factors, revenue from external customers rose 5.5%, to ¥363,951 million. Nonetheless, segment profit declined 5.0%, to ¥29,808 million.

Gas Business in the United States

In industrial gases, firm production levels underpinned significant increases in revenue from sales of both bulk gases and hard goods. Revenue in on-site gases was bolstered by the start of operations at a new on-site unit for a major chemicals manufacturer and the February 2019 acquisition of a HyCO* business from Linde AG subsidiary Linde Gas North America also contributed. In electronics-related products, revenue from equipment and installations rose substantially. As a consequence, revenue from external customers increased 8.5%, to ¥187,323 million, and segment profit advanced 15.3%, to ¥15,634 million.

*HyCO is an acronym for H_2 and CO, which are separated from natural and other gases using a technology called steam methane reforming (SMR). The newly acquired HyCO business provides large-scale supplies of H_2 and CO to oil refining and petrochemicals manufacturers via pipelines.

Gas Business in Europe

The European businesses acquired from Praxair of the United States include industrial gases businesses in Germany, Spain, Portugal, Italy, Norway, Denmark, Sweden, the Netherlands, Belgium and France, carbon dioxide businesses in the United Kingdom, Ireland, the Netherlands and France, and helium-related businesses. Four months of results from these businesses were included in fiscal year 2019, including revenue of ¥55,101 million and segment profit of ¥6,567 million.

Gas Business in Asia & Oceania

In the area of industrial gases, revenue from external customers was bolstered by steady sales, particularly of bulk gases in China and Southeast Asia. In Australia, sales of propane gas and related equipment were brisk. Revenue in electronics-related products declined, owing to the impact of a change in the accounting treatment of this business in Taiwan, although shipments of electronics materials gases were firm. Owing to these and other factors, revenue from external customers was up 2.9%, to ¥106,164 million, while segment profit edged down 0.9%, to ¥9,149 million.

Thermos

Revenue in Japan was robust, bolstered by solid sales of sports-use vacuum insulated bottles, as well as by the positive impact of sales promotions for a new frying pan with a detachable handle launched in February 2019. Overseas, revenue was firm in South Korea. As a consequence, revenue from external customers increased 9.6%, to ¥27,800 million. Segment profit rose 18.6%, to ¥9,189 million.

Financial Position

Total assets as of March 31, 2019, advanced ¥839,967 million, to ¥1,771,015 million, owing to the acquisition of certain European businesses from Praxair. The depreciation of the yen, which was down ¥4.75 against the U.S. dollar at fiscal year-end from a year earlier, had a positive impact of approximately ¥13,400 million. Total current assets rose ¥68,841 million, to ¥347,143 million, bolstered by higher trade receivables. Non-current assets climbed ¥771,126 million, to ¥1,423,871 million, reflecting increases in goodwill and both tangible and intangible assets.

Total current liabilities, at ¥719,177 million, were up ¥498,089 million, owing to higher bonds and borrowings and other factors. Non-current liabilities rose ¥318,095 million, to ¥615,983 million, also as a consequence of higher bonds and borrowings, among others. Interest-bearing debt as of March 31, 2019, amounted to ¥1,005,402 million, an increase of ¥678,443 million.

Total equity rose ¥23,782 million, to ¥435,854 million. This result reflected an increase in equity attributable to owners of parent and a decline in retained earnings paid as dividends. Total equity attributable to owners of parent accounted for 23.0% of total liabilities and equity, down 18.5 percentage points from the previous fiscal year-end. Total equity attributable to owners of parent per share was ¥939.6, up ¥46.6.

Cash Flows

Net cash provided by operating activities amounted to ¥98,685 million, up ¥15,486 million from fiscal year 2018. Contributing factors included increases in profit before income taxes, depreciation and amortization, and income taxes paid.

Net cash used in investing activities, at ¥754,969 million, was up ¥702,881 million. This was attributable to payments for acquisition of subsidiaries, purchase of property, plant and equipment, and payments for acquisition of business.

Net cash provided by financing activities was ¥664,925 million, compared with ¥39,859 million used in such activities in the previous fiscal year. Principal factors behind this result include net increases in short-term borrowings and long-term borrowings and proceeds from issuance of bonds.

As a result of the Company's operating, investing and financing activities, the balance of cash and cash equivalents at end of fiscal year, after accounting for the effects of exchange rates, was ¥59,620 million, up ¥11,810 million from fiscal year 2018. The Company reported a negative free cash flow of ¥656,284 million, compared with a positive free cash flow of ¥31,111 million in the previous fiscal year.

Business Risks

Management Policy- and Business-Related Risks

Capital Investment

The Company maintains large-scale gas supply facilities for major customers and needs to spend heavily to build, maintain and upgrade these facilities. Accordingly, interest rate trends could have a material impact on the Company's business performance.

Manufacturing Costs

Electricity is the major component of the cost of manufacturing such core products as oxygen, nitrogen and argon. Accordingly, a sharp increase in the price of crude oil could result in substantially higher electricity charges, which the Company may be unable to reflect in the pricing of its products, which may have an adverse impact on its business performance.

Overseas Factors

The Company maintains operations overseas, particularly in the United States, Europe, and Asia and Oceania. Political and economic changes in countries and territories where the Company has operations may have an adverse impact on its business performance.

Technological and Safety Factors

Technological Development

With the aim of realizing distinctive, market-leading technologies that will ensure its position as a leading global player, the Company promotes technological development activities aimed at facilitating future business expansion. However, the creation of new products and technologies entails various risks.

Intellectual Property
The Company's business depends on proprietary technological development. The Company endeavors to obtain intellectual property rights as necessary for its proprietary technologies. However, there are no guarantees that its technologies are completely protected.

Product Safety and Security
The Company sells compressed gases and related equipment, with a portfolio of electronics-related products that includes toxic and flammable gases. While the Company strives to ensure the effective management of related risks, it cannot guarantee the safety and security of all of its products.

Financial Risks and Other Factors

Foreign Exchange Risk
The Company exports products for sale outside of Japan. The Company strives to hedge foreign exchange risks by entering into forward exchange contracts and other derivative transactions. However, the Company may not be able to respond to sudden fluctuations in currency rates, which, therefore, may have an adverse impact on its business performance.

Retirement Benefit Liabilities
A sudden deterioration in retirement plan returns resulting in an increase in retirement benefit costs may have an adverse impact on the Company's business performance.

Natural Disasters and Contingencies
The occurrence of earthquakes or other natural disasters in areas where the Company has manufacturing facilities may damage those facilities. In particular, damage to the Company's large-scale manufacturing facilities may lead to a significant decline in production capacity, push down revenue and incur major recovery costs. Such factors may adversely affect the Company's business performance. Major accidents occurring as a result of contingencies, including those attributable to human factors, may also adversely affect the Company's business performance.

Legal Issues
Unanticipated changes to existing laws and the introduction of new laws—particularly in countries and territories overseas where the Company maintains operations—may adversely affect the Company's business performance. Revisions to environmental laws that result in a tightening of restrictions may lead to an increase in costs to ensure compliance, which may also adversely affect the Company's business performance.

Because the Company does business both in Japan and overseas, there is a risk that it may become involved in legal disputes or be the subject of investigations and/or legal action by relevant authorities in the markets in which it operates. Such legal and regulatory action may significantly affect the Company's operations, business performance, financial condition, reputation and reliability.

Medium-Term Management Plan
The Company's ability to meet the targets of its medium-term management plan may be adversely affected by a number of factors, including changes in the operating environment.

Capital Alliance with Mitsubishi Chemical Holdings
Mitsubishi Chemical Holdings Corporation owns a 50.59% stake in the Company. With the aim of further strengthening the capital alliance between the two companies, established on May 13, 2014, and enhancing corporate value, the two companies have agreed that Mitsubishi Chemical Holdings will maintain its stake in the Company at the current level. Accordingly, the Company does not at present anticipate any increase or decrease in the percentage of its shares held by Mitsubishi Chemical Holdings. However, there is still a chance that the capital alliance will change. Any such change has the potential to significantly affect the Company's financial condition and business performance.

Goodwill and Intangible Assets
The Company has recorded goodwill and intangible assets ("goodwill and others") as the result of recent business acquisitions. There is also a possibility that new goodwill and others may be recorded as a result of new acquisitions by the Group in the future. The Group tests goodwill and others for impairment on an annual basis. The recognition of any loss on impairment of goodwill and others has the potential to affect the Group's financial condition and business performance.

Consolidated Financial Statements

Taiyo Nippon Sanso Corporation and Consolidated Subsidiaries

Consolidated Statement of Financial Position

(Millions of Yen)

	Notes	FYE2019 (March 31, 2019)	FYE2018 (March 31, 2018)
Assets			
Current assets			
Cash and cash equivalents	6	¥ 59,620	¥ 47,809
Trade receivables	7	197,952	164,247
Inventories	8	66,288	51,481
Other financial assets	13	10,051	6,412
Other current assets	14	13,231	8,351
Total current assets		347,143	278,302
Non-current assets			
Property, plant and equipment	9	639,332	391,930
Goodwill	10	437,722	119,221
Intangible assets	10	253,897	44,932
Investments accounted for using the equity method	12	34,434	28,148
Other financial assets	13	51,314	60,836
Retirement benefit asset	19	1,773	2,338
Other non-current assets	14	720	704
Deferred tax assets	29	4,676	4,632
Total non-current assets		1,423,871	652,744
Total assets		¥1,771,015	¥931,047

See notes to consolidated financial statements.

(Millions of Yen)

	Notes	FYE2019 (March 31, 2019)	FYE2018 (March 31, 2018)
Liabilities and equity			
Liabilities			
Current liabilities			
Trade payables	15	¥ 105,966	¥ 79,483
Bonds and borrowings	16	533,925	87,372
Income taxes payable		10,704	9,342
Other financial liabilities	17	41,818	31,693
Provisions	20	352	754
Other current liabilities	21	26,410	12,441
Total current liabilities		719,177	221,087
Non-current liabilities			
Bonds and borrowings	16	466,206	233,694
Other financial liabilities	17	4,054	4,923
Retirement benefit liability	19	12,377	4,511
Provisions	20	7,603	5,742
Other non-current liabilities	21	20,336	14,937
Deferred tax liabilities	29	105,403	34,077
Total non-current liabilities		615,983	297,887
Total liabilities		1,335,160	518,975
Equity			
Share capital	22	37,344	37,344
Capital surplus	22	53,116	53,072
Treasury shares	22	(261)	(256)
Retained earnings	22	339,393	305,400
Other components of equity	22	(22,991)	(9,105)
Total equity attributable to owners of parent		406,602	386,457
Non-controlling interests		29,251	25,614
Total equity		435,854	412,072
Total liabilities and equity		¥1,771,015	¥931,047

Consolidated Statement of Profit or Loss

(Millions of Yen)

	Notes	FYE2019 (From April 1, 2018 to March 31, 2019)	FYE2018 (From April 1, 2017 to March 31, 2018)
Revenue	4, 26	¥ 740,341	¥ 646,218
Cost of sales		(473,332)	(411,447)
Gross profit		267,008	234,770
Selling, general and administrative expenses		(204,789)	(178,690)
Other operating income	27	4,748	4,069
Other operating expenses	27	(3,940)	(3,123)
Share of profit of investments accounted for using the equity method	12	3,836	2,836
Operating profit		66,863	59,862
Finance income	28	2,294	1,299
Finance costs	28	(7,074)	(5,264)
Profit before income taxes		62,083	55,897
Income taxes	29	(18,373)	(5,143)
Profit		¥ 43,709	¥ 50,754
Profit attributable to:			
Owners of parent		¥ 41,291	¥ 48,919
Non-controlling interests		2,417	1,834
Earnings per share			
Basic earnings per share (Yen)	30	¥ 95.42	¥ 113.04

See notes to consolidated financial statements.

Consolidated Statement of Comprehensive Income

(Millions of Yen)

	Notes	FYE2019 (From April 1, 2018 to March 31, 2019)	FYE2018 (From April 1, 2017 to March 31, 2018)
Profit		¥ 43,709	¥ 50,754
Other comprehensive income			
Items that will not be reclassified to profit or loss			
Financial assets measured at fair value through other comprehensive income	24	(2,485)	1,644
Remeasurements of defined benefit plans	24	(623)	819
Share of other comprehensive income of investments accounted for using the equity method	24	1	21
Total of items that will not be reclassified to profit or loss		(3,107)	2,485
Items that may be reclassified subsequently to profit or loss			
Exchange differences on translation of foreign operations	24	(7,955)	(10,099)
Effective portion of net change in fair value of cash flow hedges	24	(2,944)	26
Share of other comprehensive income of investments accounted for using the equity method	24	43	429
Total of items that may be reclassified subsequently to profit or loss		(10,856)	(9,643)
Total other comprehensive income		(13,963)	(7,157)
Comprehensive income		¥ 29,745	¥ 43,596
Comprehensive income attributable to:			
Owners of parent		¥ 27,532	¥ 41,871
Non-controlling interests		2,212	1,725

See notes to consolidated financial statements.

Consolidated Statement of Changes in Equity

(Millions of Yen)

		FYE2019 (From April 1, 2018 to March 31, 2019)			
	Notes	Share capital	Capital surplus	Treasury shares	Retained earnings
Balance at April 1, 2018		¥37,344	¥53,072	¥(256)	¥305,400
Profit		—	—	—	41,291
Other comprehensive income	24	—	—	—	—
Comprehensive income		—	—	—	41,291
Purchase of treasury shares	22	—	—	(5)	—
Disposal of treasury shares	22	—	0	0	—
Dividends	23	—	—	—	(10,389)
Changes in ownership interest in subsidiaries		—	43	—	—
Business combinations or business divestitures		—	—	—	—
Transfer from other components of equity to retained earnings		—	—	—	3,070
Transfer from other components of equity to non-financial assets		—	—	—	—
Change in scope of consolidation		—	—	—	20
Other changes		—	—	—	—
Total transactions with owners		—	43	(5)	(7,298)
Balance at March 31, 2019		¥37,344	¥53,116	¥(261)	¥339,393

		Other components of equity							
	Notes	Exchange differences on translation of foreign operations	Effective portion of net change in fair value of cash flow hedges	Financial assets measured at fair value through other comprehensive income	Remeasurements of defined benefit plans	Total	Total equity attributable to owners of parent	Non-controlling interests	Total equity
Balance at April 1, 2018		¥(25,699)	¥ (38)	¥16,632	¥ —	¥ (9,105)	¥386,457	¥25,614	¥412,072
Profit		—	—	—	—	—	41,291	2,417	43,709
Other comprehensive income	24	(7,740)	(2,944)	(2,470)	(602)	(13,759)	(13,759)	(204)	(13,963)
Comprehensive income		(7,740)	(2,944)	(2,470)	(602)	(13,759)	27,532	2,212	29,745
Purchase of treasury shares	22	—	—	—	—	—	(5)	—	(5)
Disposal of treasury shares	22	—	—	—	—	—	0	—	0
Dividends	23	—	—	—	—	—	(10,389)	(852)	(11,242)
Changes in ownership interest in subsidiaries		—	—	—	—	—	43	42	86
Business combinations or business divestitures		—	—	—	—	—	—	2,265	2,265
Transfer from other components of equity to retained earnings		—	—	(3,673)	602	(3,070)	—	—	—
Transfer from other components of equity to non-financial assets		—	2,943	—	—	2,943	2,943	—	2,943
Change in scope of consolidation		—	—	—	—	—	20	49	69
Other changes		—	—	—	—	—	—	(80)	(80)
Total transactions with owners		—	2,943	(3,673)	602	(127)	(7,387)	1,424	(5,963)
Balance at March 31, 2019		¥(33,440)	¥ (39)	¥10,488	¥ —	¥(22,991)	¥406,602	¥29,251	¥435,854

(Millions of Yen)

		FYE2018 (From April 1, 2017 to March 31, 2018)			
	Notes	Share capital	Capital surplus	Treasury shares	Retained earnings
Balance at April 1, 2017		¥37,344	¥52,988	¥(250)	¥261,717
Profit		—	—	—	48,919
Other comprehensive income	24	—	—	—	—
Comprehensive income		—	—	—	48,919
Purchase of treasury shares	22	—	—	(6)	—
Disposal of treasury shares	22	—	0	0	—
Dividends	23	—	—	—	(9,524)
Changes in ownership interest in subsidiaries		—	84	—	—
Transfer from other components of equity to retained earnings		—	—	—	1,832
Change in scope of consolidation		—	—	—	2,455
Other changes		—	—	—	—
Total transactions with owners		—	84	(6)	(5,236)
Balance at March 31, 2018		¥37,344	¥53,072	¥(256)	¥305,400

		Other components of equity							
	Notes	Exchange differences on translation of foreign operations	Effective portion of net change in fair value of cash flow hedges	Financial assets measured at fair value through other comprehensive income	Remeasurements of defined benefit plans	Total	Total equity attributable to owners of parent	Non-controlling interests	Total equity
Balance at April 1, 2017		¥(16,135)	¥(64)	¥15,975	¥ —	¥ (224)	¥351,576	¥25,286	¥376,862
Profit		—	—	—	—	—	48,919	1,834	50,754
Other comprehensive income	24	(9,563)	26	1,675	814	(7,048)	(7,048)	(108)	(7,157)
Comprehensive income		(9,563)	26	1,675	814	(7,048)	41,871	1,725	43,596
Purchase of treasury shares	22	—	—	—	—	—	(6)	—	(6)
Disposal of treasury shares	22	—	—	—	—	—	0	—	0
Dividends	23	—	—	—	—	—	(9,524)	(814)	(10,338)
Changes in ownership interest in subsidiaries		—	—	—	—	—	84	(1,161)	(1,077)
Transfer from other components of equity to retained earnings		—	—	(1,018)	(814)	(1,832)	—	—	—
Change in scope of consolidation		—	—	—	—	—	2,455	552	3,008
Other changes		—	—	—	—	—	—	26	26
Total transactions with owners		—	—	(1,018)	(814)	(1,832)	(6,990)	(1,396)	(8,387)
Balance at March 31, 2018		¥(25,699)	¥(38)	¥16,632	¥ —	¥(9,105)	¥386,457	¥25,614	¥412,072

See notes to consolidated financial statements.

Consolidated Statement of Cash Flows

(Millions of Yen)

	Notes	FYE2019 (From April 1, 2018 to March 31, 2019)	FYE2018 (From April 1, 2017 to March 31, 2018)
Cash flows from operating activities			
Profit before income taxes		¥ 62,083	¥ 55,897
Depreciation and amortization		56,111	43,266
Impairment losses		1,459	163
Interest and dividend income		(1,402)	(1,299)
Interest expenses		7,072	5,005
Share of (profit) loss of investments accounted for using the equity method		(3,836)	(2,836)
Loss (gain) on sales and retirement of property, plant and equipment, and intangible assets		(582)	(949)
(Increase) decrease in trade receivables		(20)	(13,857)
(Increase) decrease in inventories		(4,883)	1,061
Increase (decrease) in trade payables		2,469	5,871
(Increase) decrease in retirement benefit asset		(470)	(209)
Increase (decrease) in retirement benefit liability		588	144
Other		(2,376)	(722)
Subtotal		116,214	91,535
Interest received		250	226
Dividends received		4,718	2,687
Interest paid		(6,445)	(4,994)
Income taxes refund (paid)		(16,052)	(6,256)
Net cash provided by operating activities		98,685	83,199
Cash flows from investing activities			
Purchase of property, plant and equipment		(74,152)	(58,266)
Proceeds from sales of property, plant and equipment		2,649	2,387
Purchase of investments		(1,494)	(787)
Proceeds from sales and redemption of investments		8,740	7,543
Payments for acquisition of subsidiaries		(638,731)	—
Payments for acquisition of business		(50,899)	(343)
Other		(1,080)	(2,621)
Net cash used in investing activities		(754,969)	(52,088)
Cash flows from financing activities			
Net increase (decrease) in short-term borrowings		433,773	1,619
Net increase (decrease) in commercial papers		12,000	—
Proceeds from long-term borrowings		179,028	29,780
Repayments of long-term borrowings		(37,720)	(45,275)
Proceeds from issuance of bonds		107,035	—
Redemption of bonds		(15,000)	(10,000)
Purchases of investments in subsidiaries not resulting in change in scope of consolidation		(169)	(3,044)
Dividends paid	23	(10,389)	(9,524)
Dividends paid to non-controlling interests		(852)	(814)
Other		(2,780)	(2,600)
Net cash provided by (used in) financing activities		664,925	(39,859)
Effect of exchange rate changes on cash and cash equivalents		3,128	1,841
Net increase (decrease) in cash and cash equivalents		11,770	(6,907)
Balance of cash and cash equivalents at beginning of fiscal year		47,809	52,857
Increase (decrease) in cash and cash equivalents resulting from change of scope of consolidation		40	1,640
Increase in cash and cash equivalents resulting from merger		—	218
Balance of cash and cash equivalents at end of fiscal year	6	¥ 59,620	¥ 47,809

See notes to consolidated financial statements.

Notes to Consolidated Financial Statements

Taiyo Nippon Sanso Corporation and Consolidated Subsidiaries

1. Reporting Entity

Taiyo Nippon Sanso Corporation (the "Company") is a company located in Japan and is listed on the First Section of the Tokyo Stock Exchange. The registered address of the Company's head office is disclosed on its website (https://www.tn-sanso.co.jp/en). The consolidated financial statements of the Company and its subsidiaries (collectively, the "TNSC Group") comprise interests in the TNSC Group, its associates and joint arrangements, with March 31 as the end of the fiscal year. The TNSC Group conducts gas businesses in Japan and overseas, mainly for customers in the steel, chemical, and electronics industries. In addition, the TNSC Group manufactures and sells housewares such as stainless steel vacuum bottles. Details are described in Note "4. Segment Information."

The Company's parent is Mitsubishi Chemical Holdings Corporation.

2. Basis of Preparation

(1) Conformity with IFRS

The consolidated financial statements of the TNSC Group have been prepared in compliance with International Financial Reporting Standards (IFRS) published by the International Accounting Standards Board. Since the Company meets the requirements of a "Specified Company Applying Designated IFRS" prescribed under Article 1-2 of the Japanese Ordinance on Terminology, Forms, and Preparation Methods of Consolidated Financial Statements, the Company has adopted the provisions of Article 93 of said ordinance.

(2) Approval of financial statements

The TNSC Group's consolidated financial statements were approved by Yujiro Ichihara, President and CEO of the Company, on June 20, 2019.

(3) Basis of measurement

The TNSC Group's consolidated financial statements were prepared on a historical cost basis, except for certain assets and liabilities including financial instruments measured at fair value as described in Note "3. Significant Accounting Policies."

(4) Presentation currency

The TNSC Group's consolidated financial statements are presented in Japanese yen, which is the functional currency of the Company, and amounts are rounded down to the nearest million yen.

(5) Use of judgments, estimates, and assumptions

In preparing the TNSC Group's consolidated financial statements in accordance with IFRS, management is required to make judgments, estimates and assumptions that affect the application of accounting policies and reported amounts of assets, liabilities, income and expenses. Actual results may differ from these estimates.

Estimates and underlying assumptions are reviewed on an ongoing basis. The impacts of changes in accounting estimates are recognized in the accounting period in which the estimates are changed and in future accounting periods affected.

Major information on accounting judgments, estimates, and assumptions that may have significant impacts on the TNSC Group's consolidated financial statements is as follows:

- Impairment of non-financial assets ("11. Impairment Losses")
- Recoverability of deferred tax assets ("29. Income Taxes")
- Measurement of defined benefit obligations ("19. Post-employment Benefits")
- Fair value of financial instruments ("32. Financial Instruments")
- Contingent liabilities ("36. Contingent Liabilities")

(6) New accounting standard applied from the fiscal year

The major accounting standard applied by the TNSC Group from the fiscal year ended March 31, 2019 is as follows:

Accounting standard and interpretation		Outline of newly established/revised standard
IFRS 15	Revenue from Contracts with Customers	This standard revised the accounting treatments and disclosure requirements on revenue recognition. Primarily, the standard requires entities to recognize revenue to depict the transfer of goods or services to customers in an amount that reflects the compensation to which the entities expect to be entitled in exchange for such goods and services.

The impact of the application of IFRS 15 on the TNSC Group's consolidated financial statements was immaterial.

Regarding the application of IFRS 15, as a transitional measure in applying the accounting standard, the TNSC Group adopted a method to recognize cumulative effects of the application of IFRS 15 at the date of initial application. However, the amount of the cumulative effects on the date of initial application of this standard was immaterial. Information in the related note, "26. Revenue," has been disclosed following the aforementioned application.

(7) New accounting standards and interpretations that are not yet applied

Regarding the major accounting standards and interpretations issued before the approval date of the consolidated financial statements, the accounting standards and interpretations that are not yet applied as of March 31, 2019 because the application is not mandatory are as follows.

Meanwhile, it is estimated that the application of IFRS 16 will increase the carrying amount of the TNSC Group's lease-related assets approximately by ¥35.0 billion, while also increasing lease liabilities by approximately the same amount. As a transitional measure in applying the accounting standard, the TNSC Group adopts a method to retrospectively recognize cumulative effects at the date of initial application (modified retrospective method).

Accounting standard and interpretation		Timing of mandatory application (Effective fiscal year beginning on or after)	Effective fiscal year of the TNSC Group	Outline of newly established/revised standard and interpretation
IFRS 16	Leases	January 1, 2019	Fiscal year ending March 31, 2020	This standard revised the existing accounting standard and disclosure requirements on lease transactions. Specifically, the standard introduces a single model, and for all leases with a term of more than 12 months, the standard in principle requires a lessee to reflect the right-of-use of its assets and an obligation to make lease payments on the financial statements.

3. Significant Accounting Policies

(1) Basis of consolidation

1) Subsidiaries

Subsidiaries refer to companies controlled by the TNSC Group. The TNSC Group judges that it controls a company if the TNSC Group has the exposure or rights to variable returns arising from its involvement in the investee and has the ability to influence such returns due to power over the investee.

In preparing the consolidated financial statements, the financial statements of each Group company prepared at the same closing date based on the unified accounting policies of the TNSC Group are used. If accounting policies applied by a subsidiary are different from the accounting policies applied by the TNSC Group, adjustments are made to the financial statements of such subsidiary as necessary.

Consolidation of subsidiaries begins on the date when the TNSC Group acquires control over the subsidiaries until the date when the control over the subsidiaries is lost.

Transactions between consolidated companies, as well as the balance of receivables and payables and unrealized gains and losses arising from such transactions, are eliminated in preparing the consolidated financial statements.

If there is a change in interests in consolidated subsidiaries without involving a loss of control, it is accounted for as an equity transaction. The difference between the adjustment amount of the non-controlling interest and the fair value of the consideration is recognized directly in equity as equity attributable to owners of the parent.

In the event of a loss of control, the TNSC Group measures and recognizes the remaining investment at fair value on the date when the control has been lost. Gains and losses arising from the loss of control are recognized in profit or loss.

Non-controlling interests in consolidated subsidiaries' net assets are identified separately from the TNSC Group's interests. Comprehensive income of consolidated subsidiaries is attributable to owners of the parent and non-controlling interests, even if this results in the non-controlling interests having a deficit balance.

2) Associates

Associates refer to companies over which the TNSC Group has a significant influence on their financial and operating policies but does not have control or joint control.

The TNSC Group accounts for investments in associates using the equity method.

Investments in associates under the equity method are recognized at cost at the time of acquisition and recorded in the consolidated statement of financial position after adjusting the TNSC Group's interests in changes in net assets of the associates after acquisition.

The consolidated statement of profit or loss reflects the TNSC Group's interests in the performance of associates. If there is a change in the amount recognized in other comprehensive income of associates, the TNSC Group's interests in such change are recognized in other comprehensive income.

Adjustments are made to consolidated financial statements in order to eliminate the TNSC Group's interests in unrealized gains and losses arising from transactions between the TNSC Group and associates.

Financial statements of associates are prepared for the same reporting period as the TNSC Group. Adjustments are made to make accounting policies of the associates consistent with the TNSC Group's accounting policies.

In the event of loss of significant influence over associates, the TNSC Group measures and recognizes the remaining investment at fair value on the date when significant influence is lost. Gains and losses arising from the loss of significant influence are recognized in profit or loss.

3) Joint arrangements

Joint arrangements refer to arrangements that require the unanimous consent of the parties sharing control over decision-making on relevant activities.

A joint venture (jointly controlled entity) refers to a joint agreement where parties with joint control over the arrangement have the right to the net assets of such arrangement.

If the TNSC Group has a share in a joint venture, the TNSC Group accounts for such share using the equity method.

A joint operation (jointly controlled business) refers to a business in which parties with joint control substantially have the right to assets and the obligation to liabilities related to joint arrangements.

If the TNSC Group has a share in a joint operation, the TNSC Group recognizes the investment concerning such joint operation only at the equivalent amount of the TNSC Group's interests in the assets, liabilities, income, and expenses arising from jointly-controlled operating activities. Transactions between the TNSC Group companies, as well as the balance of receivables and payables and unrealized gains and losses arising from such transactions are eliminated.

The TNSC Group has more than 50% of voting rights of Sakai Gas Center, Inc. The TNSC Group judges that said company qualifies as a joint operation.

(2) Business combinations

Business combinations are accounted for using the acquisition method.

If the initial accounting for business combinations has not been completed by the end of the period in which the business combinations occurred, they are accounted for at a provisional amount for the items for which the accounting is incomplete. The provisional amount is adjusted during the measurement period, which is within one year from the acquisition date.

The consideration transferred in a business combination is calculated as the sum of acquisition-date fair values of assets transferred by the acquirer, liabilities incurred by the acquirer to former owners of the acquiree, and equity interests issued by the acquirer.

Non-controlling interests in the acquiree are measured for each business combination either at fair value or at the amount equivalent to the non-controlling interest in proportion to the fair value of identifiable net assets of the acquiree.

Acquisition-related costs incurred in connection with business combinations are recognized as expenses for the period in which such costs were incurred.

When the TNSC Group acquires a business, it classifies and designates assets to be acquired and liabilities to be assumed based on contract terms, economic conditions and related conditions at the acquisition date. In addition, identifiable assets acquired and liabilities assumed are in principle measured at fair value on the acquisition date.

If a business combination is achieved in stages, the interest held before acquiring the control of the acquiree is revalued at fair value at the acquisition date, and the difference is recognized in profit or loss. The amount of the interest in the acquiree that was recorded in other comprehensive income before the acquisition date is accounted for in the same manner as in the case where the acquirer disposed of its interests.

Goodwill is measured as the amount of the aggregate amount of the consideration transferred and the amount recognized as non-controlling interests exceeding the net of identifiable assets acquired and liabilities assumed.

If the aggregate amount recognized as the consideration transferred and non-controlling interests is less than the net of identifiable assets acquired and liabilities assumed, the difference is recognized in profit or loss.

After initial recognition, goodwill acquired through a business combination is not amortized but is recorded at the amount initially recognized less the accumulated impairment loss. In addition, impairment tests are performed each year and whenever there is an indication of impairment.

(3) Foreign currency translation

The consolidated financial statements of the TNSC Group are presented in Japanese yen, the functional currency of the Company. In addition, each company within the TNSC Group designates its own functional currency, and transactions of each company are measured in its functional currency.

Transactions denominated in a foreign currency are translated into functional currencies at the spot exchange rate at the transaction date or at a rate similar thereto.

Monetary assets and liabilities denominated in a foreign currency are translated into functional currencies at the spot exchange rate at the end of the reporting period. Translation differences arising from such translation and settlement are recognized in profit or loss. However, financial assets measured through other comprehensive income and translation differences arising from cash flow hedges are recognized in other comprehensive income.

The assets and liabilities of foreign operations are translated into Japanese yen at the spot exchange rate at the end of the reporting period, and the income and expenses of foreign operations are translated into Japanese yen at the spot exchange rate at the transaction date or at a rate similar thereto. The translation differences are recognized in other comprehensive income.

If a foreign operation is disposed of, the cumulative translation differences related to such operation are recognized in profit or loss for the period in which the disposal occurs.

(4) Financial instruments

1) Financial assets (excluding derivatives)

(i) Initial recognition and measurement

The TNSC Group initially recognizes trade receivables on the date of occurrence. All other financial assets are initially recognized at the transaction date when the TNSC Group becomes a contractual party to such financial assets.

The TNSC Group classifies its financial assets into (a) financial assets measured at amortized cost and (b) financial assets measured at fair value through other comprehensive income. The classification is determined at the time of initial recognition of the financial assets.

(a) Financial assets measured at amortized cost

Debt financial assets are classified as financial assets measured at amortized cost if both of the following criteria are met:

- Financial assets are held based on a business model with an objective of holding financial assets to recover contractual cash flows.
- Contractual terms of financial assets give rise to cash flows that are solely payments of principal and interest on the principal amount outstanding on a specified date.

Financial assets measured at amortized cost are measured at fair value plus transaction costs directly attributable to the acquisition of such financial assets.

(b) Financial assets measured at fair value through other comprehensive income

Debt financial assets are classified as financial assets measured at fair value through other comprehensive income if both of the following criteria are met:

- Financial assets are held based on a business model with an objective of collecting contractual cash flows and selling financial assets.
- Contractual terms of financial assets give rise to cash flows that are solely payments of principal and interest on the principal amount outstanding on a specified date.

Equity financial assets are designated as financial assets measured at fair value through other comprehensive income, and such designation is applied on an ongoing basis.

Financial assets measured at fair value through other comprehensive income are measured at fair value plus transaction costs directly attributable to the acquisition of such financial assets.

(ii) Subsequent measurement

After initial recognition, financial assets are measured according to their classification as follows:

(a) Financial assets measured at amortized cost

Financial assets measured at amortized cost are measured at amortized cost using the effective interest method.

(b) Financial assets measured at fair value through other comprehensive income

Financial assets other than financial assets measured at amortized cost are measured at fair value.

For financial assets measured at fair value through other comprehensive income, changes in fair value are recognized in other comprehensive income. If they are derecognized or their fair value significantly declines, they are transferred to retained earnings.

(iii) Derecognition

The TNSC Group derecognizes financial assets only if contractual rights to cash flows arising from the financial assets cease to exist, or if the financial assets are transferred and substantially all the risks and rewards have been transferred.

If the TNSC Group does not transfer or retain substantially all the risks or rewards but continues to control the financial assets transferred, recognition of such financial assets is continued to the extent to which the TNSC Group has a continuing involvement, and in that case, related liabilities are also recognized.

(iv) Impairment

The TNSC Group recognizes impairment of financial assets based on whether there is a significant increase in credit risk from the time of initial recognition in financial assets or financial asset groups measured at amortized cost at the end of each reporting period.

For financial assets or financial asset groups measured at amortized cost, expected credit losses for 12 months are recognized as allowance for doubtful accounts, if credit risk has not significantly increased from the time of initial recognition. However, for trade receivables, expected credit losses over the remaining period are recognized.

If there is a significant increase in credit risk from the time of initial recognition, expected credit losses over the remaining period are recognized as allowance for doubtful accounts.

Whether or not the credit risk has significantly increased is judged based on a change in the default risk. In judging whether there is any change in the default risk, overdue (past-due information) is mostly considered.

In addition, expected credit losses are measured based on the discounted present value of the difference between the amount receivable on a contract basis and the amount expected to be received based on past credit losses, etc.

2) Financial liabilities (excluding derivatives)

(i) Initial recognition and measurement

The TNSC Group classifies its financial liabilities into (a) financial liabilities measured at amortized cost and (b) financial liabilities measured at fair value through profit or loss. The classification is determined at initial recognition of the financial liabilities. All financial liabilities are initially measured at fair value. However, financial liabilities measured at amortized cost are measured at fair value less transaction costs directly attributable to such financial liabilities.

(ii) Subsequent measurement

After initial recognition, financial liabilities are measured according to their classification as follows:

(a) Financial liabilities measured at amortized cost

Financial liabilities measured at amortized cost are measured at amortized cost using the effective interest method after initial recognition. Amortization by the effective interest method and gains and losses from derecognition are recognized in profit or loss.

(b) Financial liabilities measured at fair value through profit or loss

For financial liabilities measured at fair value through profit or loss, the portion related to changes in the TNSC Group's credit risk from changes in fair value is recognized in other comprehensive income after initial recognition, and the remaining amount is recognized in profit or loss.

(iii) Derecognition

The TNSC Group derecognizes financial liabilities in cases of the performance, exemption or expiration of the obligation of financial liabilities, the exchange occurs under substantially different terms, or when there has been a substantial modification of the terms.

3) Offset of financial instruments

Financial assets and financial liabilities are offset only if there is a current enforceable legal right to offset the recognized amounts, and if there is an intention to settle at a net amount or realize the assets and settle the liabilities simultaneously. They are then recorded at a net amount in the consolidated statement of financial position.

4) Derivatives and hedge accounting

The TNSC Group uses derivatives such as forward exchange contracts, interest rate swap contracts and currency swap contracts to hedge currency risks and interest rate risks. These derivatives are initially measured at fair value at the time when the contracts were entered and remeasured at fair value thereafter.

Fair value changes of derivatives are recognized in profit or loss. However, the effective portion of cash flow hedges is recognized in other comprehensive income.

At inception of the hedge, the TNSC Group formally designates and documents the hedging relationships to which hedge accounting is applied and the risk management objective and strategy for undertaking the hedge. Such documentation includes specific hedging instruments, hedged items or transactions, the nature of the risk being hedged, and how the TNSC Group will assess effectiveness of the hedging instruments in fair value changes when offsetting the exposure to changes in fair value or cash flows of the hedged items attributable to the hedged risks. The TNSC Group evaluates whether or not derivatives used for hedging transactions are effective for offsetting changes in fair value or cash flows of the hedged items at inception of the hedge and on an ongoing basis. Specifically, the TNSC Group determined that a hedge is effective in the case where the economic relationship between the hedged item and the hedging instruments results in an offset.

Hedges that meet strict criteria for hedge accounting are classified and accounted for under IFRS 9 as follows.

(i) Fair value hedges

Fair value changes in derivatives are recognized in profit or loss. For fair value changes in the hedged items attributable to the risks to be hedged, the carrying amount of the hedged items is adjusted and recognized as profit or loss.

(ii) Cash flow hedges

The effective portion of gain or loss on the hedging instruments is recognized as other comprehensive income, and the ineffective portion is immediately recognized in profit or loss.

The amount related to the hedging instruments recorded in other comprehensive income is transferred to profit or loss when hedged transactions affect profit or loss. If the hedged item results in the recognition of non-financial assets or non-financial liabilities, the amount recognized in other comprehensive income is treated as an adjustment of the initial carrying amount of the non-financial assets or non-financial liabilities.

If forecasted transactions are no longer expected to occur, the cumulative gain or loss previously recognized as equity through other comprehensive income is transferred to profit or loss.

If the hedging instrument is terminated or exercised without expiration, sale or exchange or renewal to another hedging instrument, or if it no longer qualifies for hedge accounting due to events such as a change in risk management objective, the cumulative gain or loss previously recognized in equity through other comprehensive income is continuously recorded in equity until the forecasted transaction occurs, or is no longer expected to occur.

5) Fair value of financial instruments

The fair value of financial instruments traded in active financial markets as of the end of the reporting period refers to quoted prices in markets or dealer prices.

The fair value of financial instruments for which active markets do not exist is calculated by referring to appropriate valuation techniques or prices provided by counterparty financial institutions.

(5) Cash and cash equivalents

Cash and cash equivalents consist of cash on hand, deposits that can be withdrawn at any time, and short-term investments with a maturity of three months or less from the acquisition date that are readily convertible into cash and subject to an insignificant risk of changes in value.

(6) Inventories

The cost of inventories includes costs of purchase, costs of conversion, and all other costs incurred in bringing the inventories to their present location and condition.

Inventories are measured at the lower of cost and net realizable value. The weighted average method is principally used to calculate the cost. In addition, the net realizable value is calculated at the estimated selling price in the ordinary course of business less the estimated costs of completion and the estimated costs necessary to make the sale.

(7) Property, plant and equipment

The TNSC Group adopts the cost model for measurement of property, plant and equipment.

Property, plant and equipment are presented at cost less accumulated depreciation and accumulated impairment losses.

The cost includes the costs directly attributable to the acquisition of the assets, the costs of their dismantlement, removal or restoration, and the borrowing costs that meet the recognition criteria.

All property, plant and equipment other than land are depreciated so that the depreciable amount, which is cost less the residual value at the end of the fiscal year, is allocated on a systematic basis using the straight-line method.

Estimated useful lives of major property, plant and equipment are as follows:

Buildings and structures:	3 to 50 years
Machinery and vehicles:	3 to 20 years
Tools, furniture and fixtures:	2 to 25 years

(8) Intangible assets

The TNSC Group adopts the cost model for measurement of intangible assets.

Intangible assets are presented at cost less accumulated amortization and accumulated impairment losses.

Intangible assets acquired separately are initially measured at cost. The cost of intangible assets acquired through business combinations is measured at fair value as of the acquisition date. For internally generated intangible assets, except for development costs that qualify for capitalization, all expenditures are recognized as expenses for the periods when they are incurred.

Intangible assets with finite useful lives are amortized over their estimated useful lives using the straight-line method. Impairment tests are performed whenever there is an indication of impairment. Estimated useful lives and method of amortization of intangible assets with finite useful lives are reviewed at the end of each reporting period, and if there is any change, it is applied prospectively as a change in accounting estimates.

Estimated useful lives of major intangible assets are as follows:

Customer-related intangible assets: 5 to 30 years

Intangible assets with indefinite useful lives and intangible assets not available for use are not amortized. Impairment tests are performed separately or by a cash-generating unit whenever there is an indication of impairment.

(9) Leases

Lease contracts are classified as finance leases if the risks and rewards incidental to ownership of the lease assets are substantially transferred to the TNSC Group. Otherwise, they are classified as operating leases.

For finance lease transactions, lease assets and lease liabilities are recorded in the consolidated statement of financial position at the lower of the fair value of the leased property and the present value of the minimum lease payment calculated at the inception date of the lease. In addition, lease payments are allocated to financial expenses and repayment of lease liabilities under the interest method, and such financial expenses are recognized in profit or loss. Lease assets are depreciated using the straight-line method over the shorter of their estimated useful lives or the lease term.

For operating lease transactions, lease payments are recognized as expenses using the straight-line method over the lease term. In addition, variable lease payments are recognized as expenses for the period when they are incurred.

Whether or not a contract is a lease or whether or not a lease is included in a contract is determined according to the substance of the contract, even if it is not in the legal form of a lease.

(10) Impairment of assets

1) Impairment of non-financial assets

The TNSC Group assesses at the end of each reporting period whether there is any indication that an asset may be impaired. If any such indication exists, and if assets need to be annually tested for impairment, the TNSC Group estimates the recoverable amount of the asset. The recoverable amount of the asset is the higher of an asset's fair value less costs of disposal and its value in use. If the recoverable amount of each asset cannot be estimated, the recoverable amount of a cash-generating unit or a group of cash-generating units to which the asset belongs is estimated. If the carrying amount of a cash-generating unit or a group of cash-generating units exceeds the recoverable amount, impairment loss of the asset is recognized and write-downs of the asset are recorded up to the recoverable amount. In measuring the value in use, the discounted present value of expected future cash flows is calculated using the pre-tax discount rate that reflects current market assessments of the time value of money and the risks specific to the asset. The business plan used to estimate future cash flows is in principle limited to five years. Future cash flows beyond the projected period of the business plan are calculated based on the long-term average growth rate according to individual circumstances.

In calculating fair value less costs of disposal, an appropriate valuation model is used supported by indices of fair value available.

Goodwill is allocated to individual cash-generating units, or groups of cash-generating units, that are expected to benefit from the synergies of a business combination after the acquisition date.

Goodwill or intangible assets with indefinite useful lives, and intangible assets not available for use are tested for impairment annually or whenever there is an indication of impairment.

2) Reversal of an impairment loss

For assets other than goodwill, impairment losses recognized in the previous fiscal years are assessed at the end of the reporting period as to whether or not there is any indication of possibility of a decrease or extinguishment of loss, due to factors such as a change in the assumption used in calculating the recoverable amount. If such indication exists, the recoverable amount of such assets, cash-generating units or groups of cash-generating units is estimated. If such recoverable amount exceeds the carrying amount of such assets, cash-generating units or groups of cash-generating units, the impairment loss is reversed up to the lower of the recoverable amount calculated and the carrying amount less the accumulated depreciation if the impairment loss was not recognized in previous fiscal years. The reversal of impairment loss is recognized in profit or loss.

For goodwill, impairment loss is not reversed.

(11) Assets held for sale and discontinued operations

Non-current assets (or disposal groups) are classified as "assets held for sale" if their carrying amount is expected to be recovered principally through a sale transaction rather than through continuing use. The above requirements only apply if the sale is highly probable within one year and such assets (or disposal groups) are available for immediate sale in their present condition. Non-current assets (or disposal groups) classified as assets held for sale are measured at the lower of their carrying amount and fair value less costs to sell.

Property, plant and equipment and intangible assets classified as assets held for sale are not depreciated or amortized.

Discontinued operations include a component of an entity that has already been disposed of or classified as assets held for sale, and they are recognized if they constitute one operation of the TNSC Group and if there is a plan to dispose of one of the operations.

(12) Borrowing costs

For assets that necessarily take a substantial period of time to prepare for intended use or sale, borrowing costs directly attributable to acquisition, construction or production of such assets are capitalized as part of the cost of such assets. Other borrowing costs are recognized as an expense for the period when they are incurred.

(13) Retirement benefits

The TNSC Group provides defined benefit plans and defined contribution plans as retirement benefit plans for employees.

The TNSC Group separately calculates the present value of the defined benefit obligations, related current service costs and past service costs for each plan using the projected unit credit method.

The discount rate is calculated based on market yields at the end of the reporting period on high quality corporate bonds.

Liabilities or assets related to the defined benefit plans are calculated by deducting the fair value of plan assets from the present value of defined benefit obligations.

Remeasurements of liabilities or assets relating to the defined benefit plans are all recognized in other comprehensive income for the period when they are incurred, and immediately reflected in retained earnings. In addition, past service costs are expensed for the period when they are incurred.

Expenses related to defined contribution plans are recognized as expenses for the period when they are incurred.

(14) Provisions

A provision is recognized when the TNSC Group has a present obligation (legal or constructive) as a result of a past event, when it is probable that an outflow of resources embodying economic benefits will be required to settle the obligation, and when a reliable estimate can be made of the amount of the obligation.

The TNSC Group measures the provisions at the present value of expenditures expected to be required to settle the obligation, when the effect of the time value of money is material. In calculating the present value, the TNSC Group uses a pre-tax discount rate that reflects current market assessments of the time value of money and those risks specific to the liability.

(15) Equity

1) Ordinary shares

The issue price of ordinary shares is recorded in share capital and capital surplus.

2) Treasury shares

When the TNSC Group purchases treasury shares, the consideration paid is recognized as a deduction from equity.

When the TNSC Group disposes of treasury shares, the difference between the carrying amount and the consideration at the time of disposal is recognized in capital surplus.

(16) Revenue

The TNSC Group recognizes revenue in an amount that reflects the compensation to which the entities expect to be entitled in exchange for goods and services transferred to customers based on the following 5-step model.

Step 1: Identify the contract with the customer
Step 2: Identify performance obligations in the contract
Step 3: Determine the transaction price
Step 4: Allocate the transaction price to the performance obligations in the contract
Step 5: Recognize revenue when (or as) the performance obligations are satisfied

The TNSC Group conducts gas businesses in Japan and overseas, mainly for customers in the steel, chemical, and electronics industries, and has built production and sales structures for its main products in Japan, the United States, Europe, and Asia and Oceania. In addition, the TNSC Group manufactures and sells housewares such as stainless steel vacuum bottles.

Regarding product sales in these businesses, because a customer acquires control over a product at the time the product is delivered, TNSC judges that its performance obligations have been satisfied and recognizes revenue at the time the product is delivered.

Revenue is measured at the price promised in the contract with the customer, after deducting such amounts as discounts, rebates, and returns.

The amount of the price in the sales contract of a product is generally collected within one year from the time when control over the product is transferred to a customer, and does not include a significant financing component.

(17) Government grants

A government grant is recognized at fair value when there is reasonable assurance that the TNSC Group will comply with any conditions attached to the grant and the grant will be received.

Government grants are recognized in profit or loss on a systematic basis over the periods in which the TNSC Group recognizes expenses for the related costs for which the grants are intended to compensate.

Government grants related to assets are recorded by deducting the amount of such grants from the cost of the assets.

(18) Income taxes

Current taxes for the current and prior periods are calculated at the amount expected to be paid to (or recovered) from taxation authorities. The rates and laws used to calculate the tax amount are those that have been enacted or substantively enacted at the end of the reporting period.

Deferred taxes are recorded as the difference between the tax bases and the carrying amounts of assets and liabilities at the end of the reporting period (temporary difference) using the asset and liability method.

Deferred tax liabilities are in principle recognized for all taxable temporary differences. Deferred tax assets are recognized for deductible temporary differences, unused tax losses and unused tax credits to the extent that it is probable that taxable profit will be available against which the deductible temporary differences can be utilized.

However, there are exceptions in which deferred tax assets and liabilities are not recorded for the following temporary differences:

- Arising from initial recognition of goodwill
- Arising from initial recognition of an asset or liability in a transaction other than a business combination which does not affect either the accounting income or the taxable profit (or loss) at the time of the transaction
- For deductible temporary differences associated with investments in subsidiaries and associates, and interests in joint arrangements, when it is probable that the reversal will not occur in the foreseeable future, or it is less probable that taxable profit will be available against which the deductible temporary differences can be utilized
- For taxable temporary differences associated with investments in subsidiaries and associates, and interests in joint arrangements, when the TNSC Group is able to control the timing of the reversal of the temporary differences and it is probable that the reversal will not occur in the foreseeable future

The carrying amount of deferred tax assets and liabilities (including unrecognized deferred tax assets) is reviewed at the end of each reporting period. Deferred tax assets and liabilities are calculated at the tax rates that are expected to apply to the period when the assets are realized or liabilities are settled, based on tax rates and laws that have been enacted or substantively enacted at the end of the reporting period.

(19) Earnings per share

The amount of basic earnings per share is calculated by dividing net income attributable to ordinary shareholders of the Company by the weighted average number of ordinary shares outstanding after adjusting for treasury shares during the period. The amount of diluted earnings per share is calculated by adjusting the effects of all dilutive potential ordinary shares with dilutive effects.

4. Segment Information

(1) Overview of reportable segments

The reportable segments of the TNSC Group are those for which discrete financial information is available and whose operating results are regularly reviewed by the Board of Directors to make decisions about resource allocation and to assess performance.

The TNSC Group conducts gas businesses in Japan and overseas, mainly for customers in the steel, chemical, and electronics industries, and has built production and sales structures for its main products in Japan, the United States, Europe, and Asia and Oceania. In addition, the TNSC Group manufactures and sells housewares such as stainless steel vacuum bottles. Therefore, the Company has established the following five reportable segments: Gas Business in Japan, Gas Business in the United States, Gas Business in Europe, Gas Business in Asia and Oceania, and Thermos Business.

(Changes to reportable segments)

To display the results of the Thermos Business more clearly, from the fiscal year ended March 31, 2019, the TNSC Group has changed the four existing reportable segments of Gas Business in Japan, Gas Business in the United States, Gas Business in Asia and Oceania, and Thermos and Other Businesses, to the four segments of Gas Business in Japan, Gas Business in the United States, Gas Business in Asia and Oceania, and Thermos Business. Furthermore, the Gas Business in Europe has been added as a new reportable segment due to the acquisition of the European business of Praxair, Inc. headquartered in the United States.

To facilitate the year-on-year comparisons, the figures for the previous fiscal year have been reclassified based on the changes to the reportable segments.

The principal products and services included in the five segments are shown in the table below.

Reportable segments	Major products and services
Gas Business in Japan Gas Business in the United States Gas Business in Europe Gas Business in Asia and Oceania	Oxygen, nitrogen, argon, carbon dioxide, helium, hydrogen, acetylene, gas-related equipment, specialty gases (electronic materials gases, pure gases, etc.), electronics-related equipment and installation, semiconductor manufacturing equipment, cutting and welding equipment, welding materials, plants and machinery, liquid petroleum gas (LPG) and related equipment, medical-use gases (oxygen, nitrous oxide, etc.), medical equipment, stable isotopes
Thermos Business	Housewares

The accounting methods adopted for the reported operating segments are the same as the TNSC Group's accounting policies described in "3. Significant Accounting Policies."

Revenue from intersegment transactions and transfers is based primarily on prevailing market prices.

(2) Revenue and profit (loss) amounts by reportable segment

FYE2019 (From April 1, 2018 to March 31, 2019)

(Millions of Yen)

	Gas Business in Japan	Gas Business in the United States	Gas Business in Europe	Gas Business in Asia and Oceania	Thermos Business	Total	Reconciling items (Note 1)	Amounts on the Consolidated Statement of Profit or Loss
Revenue								
Revenues from external customers	¥363,951	¥187,323	¥55,101	¥106,164	¥27,800	¥740,341	¥ —	¥740,341
Intersegment revenues and transfers	8,177	14,426	—	3,813	37	26,454	(26,454)	—
Total	372,129	201,749	55,101	109,977	27,837	766,795	(26,454)	740,341
Segment profit (Note 2)	29,808	15,634	6,567	9,149	9,189	70,350	(4,531)	65,819
Other items								
Depreciation and amortization	18,077	21,710	8,855	6,257	1,090	55,992	118	56,111
Impairment losses	97	—	—	1,340	—	1,438	—	1,438
Share of profit (loss) of investments accounted for using the equity method	52	(121)	(6)	(10)	3,923	3,835	0	3,836

Notes: 1. The ¥4,531 million negative reconciling item for segment profit is comprised of ¥237 million of intersegment eliminations, companywide expenses of ¥1,598 million that were not allocated to any particular reportable segment, and acquisition-related costs of ¥2,695 million to acquire the European business. These companywide expenses related principally to basic research expenses that were not allocated to a particular reportable segment.

2. Segment profit represents core operating profit, which is calculated as operating profit excluding certain gains or losses attributable to non-recurring factors (losses incurred by business withdrawals, streamlining, and others).

FYE2018 (From April 1, 2017 to March 31, 2018)

(Millions of Yen)

	Gas Business in Japan	Gas Business in the United States	Gas Business in Europe	Gas Business in Asia and Oceania	Thermos Business	Total	Reconciling items (Note 1)	Amounts on the Consolidated Statement of Profit or Loss
Revenue								
Revenues from external customers	¥345,048	¥172,646	¥—	¥103,166	¥25,356	¥646,218	¥ —	¥646,218
Intersegment revenues and transfers	10,837	11,430	—	2,132	30	24,431	(24,431)	—
Total	355,886	184,076	—	105,299	25,386	670,649	(24,431)	646,218
Segment profit (Note 2)	31,380	13,559	—	9,236	7,749	61,925	(1,891)	60,033
Other items								
Depreciation and amortization	16,283	19,319	—	6,603	1,050	43,256	10	43,266
Impairment losses	0	—	—	—	—	0	—	0
Share of profit (loss) of investments accounted for using the equity method	279	(121)	—	(28)	3,357	3,487	0	3,488

Notes: 1. The ¥1,891 million negative reconciling item for segment profit is comprised of ¥312 million of intersegment eliminations and companywide expenses of ¥1,578 million that were not allocated to any particular reportable segment. These companywide expenses related principally to basic research expenses that were not allocated to a particular reportable segment.

2. Segment profit represents core operating profit, which is calculated as operating profit excluding certain gains or losses attributable to non-recurring factors (losses incurred by business withdrawals, streamlining, and others).

Reconciliation of segment profit with profit before income taxes is as follows:

(Millions of Yen)

	FYE2019 (From April 1, 2018 to March 31, 2019)	FYE2018 (From April 1, 2017 to March 31, 2018)
Segment profit	¥65,819	¥60,033
Gain on sales of fixed assets	1,336	1,209
Share of profit (loss) of investments accounted for using the equity method	—	(651)
Impairment losses	(20)	(162)
Other	(272)	(565)
Operating profit	66,863	59,862
Finance income	2,294	1,299
Finance costs	(7,074)	(5,264)
Profit before income taxes	¥62,083	¥55,897

(3) Information about geographical area

A breakdown of revenues from external customers and non-current assets by geographical area are as follows:

Revenues from external customers

(Millions of Yen)

	FYE2019 (From April 1, 2018 to March 31, 2019)	FYE2018 (From April 1, 2017 to March 31, 2018)
Japan	¥376,536	¥360,108
The United States	177,940	165,739
Europe	59,324	3,783
Asia, Oceania and others	126,540	116,587
Total	¥740,341	¥646,218

Note: Revenue is classified by country or region based on the customers' location.

Non-current assets

(Millions of Yen)

	FYE2019 (March 31, 2019)	FYE2018 (March 31, 2018)
Japan	¥ 170,094	¥155,759
The United States	367,101	292,821
Europe	682,686	—
Asia, Oceania and others	111,789	108,207
Total	¥1,331,673	¥556,788

Note: Non-current assets are classified by their location, and they do not include financial assets, deferred tax assets or retirement benefit asset.

(4) Information about major customers

Information about major customers is not disclosed since there is no single external customer that accounts for 10% or more of revenue.

5. Business Combinations

FYE2019 (From April 1, 2018 to March 31, 2019)

Acquisition (100% Ownership) of Praxair, Inc. ("Praxair")'s European Businesses (Praxair is headquartered in the United States)

(1) Overview of business combination

1) Name and business description of acquired companies

Names of acquired companies:
Praxair Espana S.L.U. and other 36 companies

Business description:
The industrial gas business of Praxair's European territories in Germany, Spain, Portugal, Italy, Norway, Denmark, Sweden, the Netherlands, and Belgium, the carbon dioxide gas business in the United Kingdom, Ireland, the Netherlands, and France, and the helium-related businesses.

2) Acquisition date

December 3, 2018

3) Main reason for business combination

The Company upholds a long-term vision with the aim of achieving consolidated revenue of ¥1 trillion, an operating profit margin of 10%, a return on capital employed (ROCE) of 10% or above and an overseas revenue ratio of 50% or above, with a view toward sharpening its global competitive edge and securing its position as a major player, amid a realignment of the industry. The Company regards this acquisition as a means to make a large advancement toward realizing such vision and an attractive investment opportunity with strategic significance at the same time.

The industrial gas market in Europe is the second largest behind the North American market, and its competition environment is stable. This acquisition will accelerate the TNSC Group's global expansion by obtaining businesses with a certain share in the market where it has not had previous participation. Furthermore, the TNSC Group will be able to acquire profitable businesses with a certain scale and network (e.g., manufacturing base) as well as talented personnel including the current top management and business platform. Based on such business foundation, the TNSC Group is planning to provide its products, such as environmentally responsive products, and to reinforce its groupwide functions, such as enhancement of marketing to global firms.

4) Percentage of voting rights acquired

Essentially 100.0%

5) Method for gaining control of acquired companies

Consolidated subsidiary, Nippon Gases Euro-Holding S.L.U. and other companies acquired the shares of the acquired companies by purchasing shares for cash.

(2) Fair value of consideration transferred

(Millions of Yen)

	Acquisition date (December 3, 2018)
Cash	¥635,847
Total of consideration transferred	¥635,847

(3) Goodwill, assets acquired, liabilities assumed and non-controlling interests

(Millions of Yen)

	Acquisition date (December 3, 2018)
Current assets:	
Cash and cash equivalents	¥ 4,354
Trade receivables (Note 2)	32,664
Inventories	8,368
Other	3,681
Non-current assets:	
Property, plant and equipment (Note 1)	190,561
Intangible assets (Note 1)	208,301
Investments accounted for using the equity method	5,998
Other	4,196
Assets acquired	458,123
Current liabilities:	
Trade payables	23,882
Other financial liabilities	13,593
Other	12,254
Non-current liabilities:	
Retirement benefit liability	6,942
Deferred tax liabilities	72,444
Other	1,297
Liabilities assumed	130,412
Net assets acquired and liabilities assumed	327,711
Non-controlling interests (Note 3)	2,265
Goodwill (Note 4, 5)	¥310,401

Notes: 1. Details of property, plant and equipment and intangible assets
Property, plant and equipment are mainly machinery and vehicles of ¥136,460 million. Intangible assets are mainly customer-related intangible assets of ¥203,900 million.

2. Fair value of acquired receivables, contractual amounts receivable and estimated uncollectible amount
The fair value of acquired receivables and contractual amounts receivable are approximately equal. None of the contractual amounts receivable are estimated to be uncollectible.

3. Non-controlling interest
Non-controlling interest is measured at the amount of the non-controlling interest in proportion to the fair value of identifiable net assets of the acquired company.

4. Goodwill
Goodwill mainly comprises anticipated synergies and excess earnings capabilities arising from the acquisition that do not match specific recognition criteria. Goodwill is not tax-deductible.

5. Basis adjustment
In order to hedge the currency risks involved in investment in the acquired company, a forward exchange contract was executed. For such forecasted transactions, hedge accounting was applied for the purpose of a cash flow hedge, with the fair value of the hedging instruments on the acquisition date of ¥3,791 million negative applied as a basis adjustment to goodwill derived from this business combination, resulting in an increase in the amount of goodwill initially recognized by the same amount.

(4) Acquisition-related costs

Acquisition-related costs were ¥6,722 million. Of these, "Selling, general and administrative expenses" and "Finance costs" were recorded at ¥2,695 million and ¥548 million, respectively, in the consolidated statement of profit or loss. "Bonds and borrowings" in "Current liabilities" and "Bonds and borrowings" in "Non-current liabilities" were recorded at ¥771 million negative and ¥2,708 million negative, respectively, in the consolidated statement of financial position. Acquisition-related costs recorded in the consolidated statement of financial position represent the unexpired balance yet to be recorded as financial costs, as of the end of the fiscal year, of the fair value at the initial recognition of such bonds and borrowings for financing the acquisition, less related bond issuance costs and organization fees.

(5) Impact on the TNSC Group's results

The TNSC Group's consolidated statement of profit or loss includes revenue and profit generated by the acquired companies subsequent to the acquisition date of ¥55,101 million and ¥6,167 million, respectively.

The TNSC Group's revenue and profit (pro forma information) assuming that the business combination was undertaken on April 1, 2018, the beginning of the fiscal year, were ¥857,543 million and ¥53,761 million, respectively. The pro forma information has not been audited.

Acquisition of the HyCO Business and Related Assets in the United States

(1) Overview of business combination

1) Name and business description of counterpart

Name of counterpart:
Linde Gas North America LLC ("Linde America")

Business description:
A portion of the HyCO business* operated in the United States by Linde America

* "HyCO" stands for hydrogen (H2) and carbon monoxide (CO), which are separated from natural gas and other gases through a technology called Steam Methane Reforming and other equipment. The HyCO business provides large-scale supply of H2 and CO to customers in oil refining and petrochemical industries by way of a pipeline.

2) Acquisition date

February 27, 2019

3) Main reason for business combination

The Company is aiming to expand in the gas technology field by utilizing M&A as a strategy for its medium-term management plan entitled "Ortus Stage 2." The Company decided on full-scale entry into the HyCO business from the perspective of strengthening its proposal capabilities with enhancements to its product lineup. The acquisition further realizes this endeavor, and the following can be expected as a result of the agreement:

(i) Steady generation of earnings over the medium to long term from on-site supply of H2 and CO
(ii) Acquisition of resources (people / technology) further facilitating efficient operation of HyCO business
(iii) Strengthening of the ability to offer proposals that will capture demand for new on-site projects in the U.S. (petroleum refining and petrochemicals, etc.)

4) Method for gaining control of acquired company

Consolidated subsidiary, Matheson Tri-Gas, Inc. acquired part of the HyCO business conducted in the United States by Linde America and related business assets thereto through purchases for cash.

(2) Fair value of consideration transferred

(Millions of Yen)

	Acquisition date (February 27, 2019)
Cash	¥46,133
Total of consideration transferred	¥46,133

(3) Goodwill, assets acquired and liabilities assumed

(Millions of Yen)

	Acquisition date (February 27, 2019)
Current assets	¥ 215
Non-current assets:	
Property, plant and equipment (Note 1)	30,875
Intangible assets (Note 1)	8,356
Assets acquired	39,446
Non-current liabilities	498
Liabilities assumed	498
Net assets acquired and liabilities assumed	38,948
Goodwill (Notes 2, 3)	¥ 7,185

As the initial accounting treatment at the time of the business combination has yet to be completed, the amounts above are provisional fair values based on prevailing best estimates. Amounts may be revised up to one year after the acquisition following an assessment of additional information relating to facts and circumstances at the acquisition date.

Notes: 1. Details of property, plant and equipment and intangible assets
Property, plant and equipment are mainly machinery and vehicles of ¥30,851 million. Intangible assets are customer-related intangible assets of ¥8,356 million.
2. Goodwill
Goodwill mainly comprises anticipated synergies and excess earnings capabilities arising from acquisition that do not match specific recognition criteria. Goodwill is deductible for a certain period under full taxation.
3. Basis adjustment
In order to hedge the currency risks involved in investment in the acquired company, a forward exchange contract was executed. For such forecasted transactions, hedge accounting was applied for the purpose of a cash flow hedge, with the fair value of the hedging instruments on the acquisition date of ¥452 million negative applied as a basis adjustment to the goodwill derived from this business combination, resulting in an increase in the initially recognized amount of goodwill by the same amount.

(4) Acquisition-related costs

Acquisition-related costs were ¥149 million, and are included in "Selling, general and administrative expenses" in the consolidated statement of profit or loss.

(5) Impact on the TNSC Group's results

The TNSC Group's revenue and profit (pro forma information) assuming that the business combination was undertaken on April 1, 2018, the beginning of the fiscal year, were ¥749,999 million and ¥46,026 million, respectively. The pro forma information has not been audited.

FYE2018 (From April 1, 2017 to March 31, 2018)

There were no significant business combinations.

6. Cash and Cash Equivalents

A breakdown of cash and cash equivalents is as follows:

(Millions of Yen)

	FYE2019 (March 31, 2019)	FYE2018 (March 31, 2018)
Cash and deposits	¥59,620	¥47,809
Total	¥59,620	¥47,809

7. Trade Receivables

A breakdown of trade receivables is as follows:

(Millions of Yen)

	FYE2019 (March 31, 2019)	FYE2018 (March 31, 2018)
Notes and accounts receivable—trade	¥204,418	¥166,578
Allowance for doubtful accounts	(6,466)	(2,330)
Total	¥197,952	¥164,247

Trade receivables are classified as financial assets measured at amortized cost.

8. Inventories

A breakdown of inventories is as follows:

(Millions of Yen)

	FYE2019 (March 31, 2019)	FYE2018 (March 31, 2018)
Merchandise and finished goods	¥43,815	¥33,604
Work in process	10,728	9,153
Raw materials and supplies	11,744	8,723
Total	¥66,288	¥51,481

Amounts of inventories measured based on net realizable value at March 31, 2019 and March 31, 2018 were ¥3,064 million and ¥3,362 million, respectively.

Amounts of write-downs of inventories recognized as expenses for FYE2019 and FYE2018 were ¥165 million and ¥262 million, respectively.

9. Property, Plant and Equipment

(1) Table of changes

Changes in costs, accumulated depreciation and accumulated impairment losses, and carrying amounts of property, plant and equipment are as follows:

FYE2019 (From April 1, 2018 to March 31, 2019)

Costs

(Millions of Yen)

	Machinery and vehicles	Buildings and structures	Land	Construction in progress	Tools, furniture and fixtures	Total
Balance at April 1, 2018	¥626,736	¥137,356	¥47,361	¥41,297	¥116,308	¥ 969,061
Individual acquisition	46,357	5,330	155	12,748	11,203	75,796
Impairment losses	—	—	—	(1,340)	—	(1,340)
Acquisition through business combination, etc.	167,690	11,624	9,526	6,798	28,446	224,087
Sale and disposal	(15,297)	(2,112)	(288)	(284)	(3,944)	(21,927)
Transfer	(584)	1,179	(1,449)	389	(177)	(641)
Exchange differences on translation of foreign operations, etc.	2,288	(395)	451	1,544	1,300	5,188
Balance at March 31, 2019	¥827,191	¥152,983	¥55,757	¥61,153	¥153,137	¥1,250,224

Accumulated depreciation and accumulated impairment losses

(Millions of Yen)

	Machinery and vehicles	Buildings and structures	Land	Construction in progress	Tools, furniture and fixtures	Total
Balance at April 1, 2018	¥(419,810)	¥(81,850)	¥(2,822)	¥—	¥(72,647)	¥(577,130)
Depreciation	(35,937)	(4,751)	—	—	(7,566)	(48,255)
Impairment losses	—	(13)	(84)	—	—	(97)
Sale and disposal	14,276	1,855	48	—	3,743	19,924
Transfer	624	29	—	—	48	702
Exchange differences on translation of foreign operations, etc.	(4,385)	(233)	(68)	—	(1,347)	(6,034)
Balance at March 31, 2019	¥(445,232)	¥(84,963)	¥(2,927)	¥—	¥(77,768)	¥(610,891)

Carrying amounts

(Millions of Yen)

	Machinery and vehicles	Buildings and structures	Land	Construction in progress	Tools, furniture and fixtures	Total
Balance at April 1, 2018	¥206,925	¥55,506	¥44,538	¥41,297	¥43,661	¥391,930
Balance at March 31, 2019	¥381,959	¥68,020	¥52,829	¥61,153	¥75,369	¥639,332

FYE2018 (From April 1, 2017 to March 31, 2018)

Costs

(Millions of Yen)

	Machinery and vehicles	Buildings and structures	Land	Construction in progress	Tools, furniture and fixtures	Total
Balance at April 1, 2017	¥608,772	¥131,784	¥46,873	¥36,358	¥114,870	¥938,659
Individual acquisition	37,071	4,776	609	11,097	8,468	62,023
Acquisition through business combination, etc.	1,510	2,619	1,214	—	216	5,560
Sale and disposal	(11,695)	(1,387)	(1,392)	(296)	(2,598)	(17,370)
Transfer	(1,064)	(0)	(96)	(235)	(29)	(1,426)
Exchange differences on translation of foreign operations, etc.	(7,857)	(436)	153	(5,626)	(4,618)	(18,386)
Balance at March 31, 2018	¥626,736	¥137,356	¥47,361	¥41,297	¥116,308	¥969,061

Accumulated depreciation and accumulated impairment losses

(Millions of Yen)

	Machinery and vehicles	Buildings and structures	Land	Construction in progress	Tools, furniture and fixtures	Total
Balance at April 1, 2017	¥(406,839)	¥(78,371)	¥(3,135)	¥—	¥(70,759)	¥(559,106)
Depreciation	(27,961)	(4,380)	—	—	(6,589)	(38,930)
Impairment losses	—	(162)	(0)	—	(0)	(163)
Sale and disposal	10,690	1,093	323	—	2,178	14,285
Transfer	599	0	(0)	—	12	612
Exchange differences on translation of foreign operations, etc.	3,699	(29)	(10)	—	2,511	6,170
Balance at March 31, 2018	¥(419,810)	¥(81,850)	¥(2,822)	¥—	¥(72,647)	¥(577,130)

Carrying amounts

(Millions of Yen)

	Machinery and vehicles	Buildings and structures	Land	Construction in progress	Tools, furniture and fixtures	Total
Balance at April 1, 2017	¥201,933	¥53,413	¥43,737	¥36,358	¥44,111	¥379,553
Balance at March 31, 2018	¥206,925	¥55,506	¥44,538	¥41,297	¥43,661	¥391,930

Depreciation of property, plant and equipment is included in “Cost of sales” and “Selling, general and administrative expenses” in the consolidated statement of profit or loss.

(2) Leased assets

Carrying amounts of leased assets under finance leases included in property, plant and equipment are as follows:

(Millions of Yen)

	FYE2019 (March 31, 2019)	FYE2018 (March 31, 2018)
Machinery and vehicles	¥2,050	¥2,248
Other	1,718	1,838
Total	¥3,768	¥4,087

10. Goodwill and Intangible Assets

(1) Table of changes

Changes in costs, accumulated amortization and accumulated impairment losses, and the carrying amounts of goodwill and intangible assets are as follows:

FYE2019 (From April 1, 2018 to March 31, 2019)

Costs

(Millions of Yen)

		Intangible assets		
	Goodwill	Customer-related intangible assets	Other	Total
Balance at April 1, 2018	¥120,773	¥ 56,490	¥16,059	¥ 72,549
Individual acquisition	223	—	646	646
Acquisition through business combination, etc.	324,284	216,899	4,600	221,500
Sale and disposal	(13)	—	(156)	(156)
Exchange differences on translation of foreign operations, etc.	(5,907)	(4,479)	110	(4,369)
Balance at March 31, 2019	¥439,361	¥268,910	¥21,259	¥290,170

Accumulated amortization and accumulated impairment losses

(Millions of Yen)

		Intangible assets		
	Goodwill	Customer-related intangible assets	Other	Total
Balance at April 1, 2018	¥(1,551)	¥(16,778)	¥(10,838)	¥(27,617)
Amortization	—	(6,635)	(1,221)	(7,856)
Impairment losses	(20)	—	—	—
Sale and disposal	—	—	152	152
Exchange differences on translation of foreign operations, etc.	(66)	(671)	(279)	(951)
Balance at March 31, 2019	¥(1,638)	¥(24,085)	¥(12,186)	¥(36,272)

Carrying amounts

(Millions of Yen)

		Intangible assets		
	Goodwill	Customer-related intangible assets	Other	Total
Balance at April 1, 2018	¥119,221	¥ 39,711	¥5,220	¥ 44,932
Balance at March 31, 2019	¥437,722	¥244,824	¥9,073	¥253,897

FYE2018 (From April 1, 2017 to March 31, 2018)

Costs

(Millions of Yen)

	Goodwill	Intangible assets: Customer-related intangible assets	Other	Total
Balance at April 1, 2017	¥125,238	¥59,648	¥16,252	¥75,900
Individual acquisition	264	—	478	478
Acquisition through business combination, etc.	1,046	—	9	9
Sale and disposal	—	—	(145)	(145)
Exchange differences on translation of foreign operations, etc.	(5,776)	(3,157)	(535)	(3,693)
Balance at March 31, 2018	¥120,773	¥56,490	¥16,059	¥72,549

Accumulated amortization and accumulated impairment losses

(Millions of Yen)

	Goodwill	Intangible assets: Customer-related intangible assets	Other	Total
Balance at April 1, 2017	¥(1,636)	¥(14,235)	¥(10,359)	¥(24,594)
Amortization	—	(3,416)	(977)	(4,394)
Sale and disposal	—	—	142	142
Exchange differences on translation of foreign operations, etc.	84	873	355	1,229
Balance at March 31, 2018	¥(1,551)	¥(16,778)	¥(10,838)	¥(27,617)

Carrying amounts

(Millions of Yen)

	Goodwill	Intangible assets: Customer-related intangible assets	Other	Total
Balance at April 1, 2017	¥123,602	¥45,412	¥5,892	¥51,305
Balance at March 31, 2018	¥119,221	¥39,711	¥5,220	¥44,932

There were no significant internally generated intangible assets for FYE2019 or FYE2018.

Amortization of intangible assets is included in "Cost of sales" and "Selling, general and administrative expenses" in the consolidated statement of profit or loss.

Research and development costs recognized as expenses for FYE2019 and FYE2018 were ¥3,494 million and ¥3,255 million, respectively.

The carrying amount of assets with indefinite useful lives in the intangible assets above was ¥1,069 million at March 31, 2019 and ¥1,110 million at March 31, 2018. Principally, the assets were trademarks acquired at the time of a business combination, and the TNSC Group determined that their useful lives cannot be estimated because the assets will exist for as long as the business continues.

(2) Significant intangible assets

Significant intangible assets recorded in the consolidated statement of financial position were customer-related intangible assets held by Nippon Gases Euro-Holding S.L.U. and Matheson Tri-Gas, Inc., which are consolidated subsidiaries. Their carrying amounts and the remaining period of amortization are as follows:

(Millions of Yen)

	FYE2019 (March 31, 2019)	FYE2018 (March 31, 2018)	Remaining period of amortization
Nippon Gases Euro-Holding S.L.U.	¥194,267	—	Mainly 29 years
Matheson Tri-Gas, Inc.	¥ 43,966	¥35,912	Mainly 17 years

11. Impairment Losses

The TNSC Group groups assets into the smallest cash-generating units that generate cash flows largely independently. For idle assets, recognition of impairment loss is determined by individual assets.

Impairment losses for FYE2019 and FYE2018 were ¥1,459 million and ¥163 million, respectively. Impairment losses were included in “Other operating expenses” in the consolidated statement of profit or loss.

Major assets for which impairment losses were recognized are as follows:

FYE2019 (April 1, 2018 to March 31, 2019)

(Millions of Yen)

Usage	Location	Type	Reportable segment	Impairment losses
Natural gas liquefier	Indonesia	Construction in progress	Gas Business in Asia and Oceania	¥1,340

Breakdown of impairment losses
• Natural gas liquefier ¥1,340 million
The carrying amount of the natural gas liquefaction business in progress in Indonesia was reduced to the recoverable amount, since its profitability was expected to decline due to drastic changes in the market environment surrounding the raw fuel. The recoverable amount is measured at value in use, and calculated by discounting the future cash flows at 11.0%.

FYE2018 (April 1, 2017 to March 31, 2018)
There were no individually significant impairment losses incurred for FYE2018.

Carrying amounts of goodwill and intangible assets with indefinite useful lives allocated to a cash-generating unit (group of cash-generating units) are as follows:

(Millions of Yen)

Cash-generating unit (group of cash-generating units)	FYE2019 (March 31, 2019)	FYE2018 (March 31, 2018)
Nippon Gases Euro-Holding S.L.U.	¥300,702	¥ —
Matheson Tri-Gas, Inc.	100,343	87,540
TNSC (Australia) Pty Ltd	23,550	23,692
Other	14,195	9,100
Total	¥438,792	¥120,332

Note: The two entities, Renegade Gas Pty Ltd and Supagas Holdings Pty Ltd, which separately constituted cash-generating units as of the end of the previous fiscal year, integrated their business operations on April 1, 2018, and were renamed as Supagas Pty Ltd. Accordingly, the holding company of Supagas Pty Ltd, TNSC (Australia) Pty Ltd is presented as a cash-generating unit.

The carrying amounts of intangible assets with indefinite useful lives at March 31, 2019 and March 31, 2018 were ¥1,069 million and ¥1,110 million, respectively, and were included in TNSC (Australia) Pty Ltd.

The recoverable amount of a cash-generating unit (group of cash-generating units) is measured by value in use.

Value in use is calculated reflecting past experiences and external information based on business plans within five years approved by the management. Cash flows exceeding the period of a business plan are determined by reference to the long-term average growth rate of a market or a country that the cash-generating unit belongs to.

Growth rates and discount rates used in the measurement of the value in use are as follows:

Cash-generating unit (group of cash-generating units)	FYE2019 (March 31, 2019)		FYE2018 (March 31, 2018)	
	Growth rate	Discount rate	Growth rate	Discount rate
Nippon Gases Euro-Holding S.L.U.	1.7%	6.9%	—	—
Matheson Tri-Gas, Inc.	3.9%	9.6%	3.8%	9.7%
TNSC (Australia) Pty Ltd	3.0%	8.5%	3.0%	8.5%

The recoverable amount of Nippon Gases Euro-Holding S.L.U. as of March 31, 2019 exceeded its carrying amount by ¥58,060 million; it is estimated that if the discount rate rises by 0.5% these amounts would be approximately the same.

12. Investments Accounted for Using the Equity Method

The carrying amount of investments in joint ventures accounted for using the equity method that are individually insignificant is as follows:

(Millions of Yen)

	FYE2019 (March 31, 2019)	FYE2018 (March 31, 2018)
Carrying amount of investments in joint ventures	¥6,256	¥914

Share of comprehensive income of joint ventures accounted for using the equity method is as follows:

(Millions of Yen)

	FYE2019 (From April 1, 2018 to March 31, 2019)	FYE2018 (From April 1, 2017 to March 31, 2018)
Share of profit	¥(205)	¥(1,048)
Share of other comprehensive income	1	30
Total share of comprehensive income	¥(203)	¥(1,017)

The carrying amount of investments in associates accounted for using the equity method that are insignificant is as follows:

(Millions of Yen)

	FYE2019 (March 31, 2019)	FYE2018 (March 31, 2018)
Carrying amount of investments in associates	¥28,177	¥27,234

Share of comprehensive income of associates accounted for using the equity method is as follows:

(Millions of Yen)

	FYE2019 (From April 1, 2018 to March 31, 2019)	FYE2018 (From April 1, 2017 to March 31, 2018)
Share of profit	¥4,042	¥3,884
Share of other comprehensive income	43	420
Total share of comprehensive income	¥4,085	¥4,305

13. Other Financial Assets

A breakdown of other financial assets is as follows:

(Millions of Yen)

	FYE2019 (March 31, 2019)	FYE2018 (March 31, 2018)
Equity securities and investments in capital	¥38,676	¥48,675
Other	23,331	19,424
Allowance for doubtful accounts	(642)	(850)
Total	¥61,365	¥67,248
Current assets	¥10,051	¥ 6,412
Non-current assets	51,314	60,836
Total	¥61,365	¥67,248

Equity securities and investments are classified as equity financial assets measured at fair value through other comprehensive income. Other is classified mainly as financial assets measured at amortized cost.

Equity securities are designated as equity financial assets measured at fair value through other comprehensive income because they are held mainly for the purpose of maintaining and strengthening business and collaborative relationships and financial transaction relationships, etc. Names of issuers and fair value of principal equity financial assets measured at fair value through other comprehensive income are as follows:

FYE2019 (March 31, 2019)

(Millions of Yen)

Name	Amount
JFE Holdings, Inc.	¥4,833
Tosoh Corporation	3,834
Koatsu Gas Kogyo Co., Ltd.	2,862
IBIDEN CO., LTD.	2,227
Tokyo Tatemono Co., Ltd.	1,723

FYE2018 (March 31, 2018)

(Millions of Yen)

Name	Amount
JFE Holdings, Inc.	¥5,515
Tosoh Corporation	4,649
Azbil Corporation	3,468
Koatsu Gas Kogyo Co., Ltd.	2,957
IBIDEN CO., LTD.	2,096

In order to improve the efficiency and effective utilization of assets held, the TNSC Group conducts sales (derecognition) of equity financial assets measured at fair value through other comprehensive income. The fair value at the time of sales and cumulative gains or losses on sales are as follows. Cumulative gains or losses (after tax) recognized in other comprehensive income in equity were transferred to retained earnings at the time of sales.

(Millions of Yen)

	FYE2019 (From April 1, 2018 to March 31, 2019)	FYE2018 (From April 1, 2017 to March 31, 2018)
Fair value	¥8,740	¥7,503
Cumulative gains or losses	4,428	1,507

For equity financial assets measured at fair value through other comprehensive income, dividends received were recognized as follows:

(Millions of Yen)

	FYE2019 (From April 1, 2018 to March 31, 2019)	FYE2018 (From April 1, 2017 to March 31, 2018)
Financial assets that were derecognized	¥ 149	¥ 72
Financial assets held at the end of the fiscal year	1,006	994

14. Other Assets

A breakdown of other assets is as follows:

(Millions of Yen)

	FYE2019 (March 31, 2019)	FYE2018 (March 31, 2018)
Prepaid expenses	¥ 5,500	¥3,796
Other	8,451	5,260
Total	¥13,951	¥9,056
Current assets	¥13,231	¥8,351
Non-current assets	720	704
Total	¥13,951	¥9,056

15. Trade Payables

A breakdown of trade payables is as follows:

(Millions of Yen)

	FYE2019 (March 31, 2019)	FYE2018 (March 31, 2018)
Notes and accounts payable—trade	¥105,966	¥79,483
Total	¥105,966	¥79,483

Trade payables are classified as financial liabilities measured at amortized cost.

16. Bonds and Borrowings

A breakdown of bonds and borrowings is as follows:

(Millions of Yen)

	FYE2019 (March 31, 2019)	FYE2018 (March 31, 2018)
Short-term borrowings	¥ 461,510	¥ 35,403
Current portion of long-term borrowings	60,415	36,969
Commercial papers	12,000	—
Current portion of bonds	—	15,000
Long-term borrowings	319,141	193,694
Bonds	147,065	40,000
Total	¥1,000,132	¥321,067
Current liabilities	¥ 533,925	¥ 87,372
Non-current liabilities	466,206	233,694
Total	¥1,000,132	¥321,067

Bonds and borrowings are classified as financial liabilities measured at amortized cost.

Average interest rates applicable to short-term borrowings and long-term borrowings at March 31, 2019 were 0.67% and 1.84%, respectively. Average interest rates applicable to short-term borrowings and long-term borrowings at March 31, 2018 were 2.22% and 1.52%, respectively. The repayment term of long-term borrowings at March 31, 2019 is from 2019 to 2059.

A breakdown of bonds is as follows:

(Millions of Yen)

Company name	Name	Issuance date	FYE2019 (March 31, 2019)	FYE2018 (March 31, 2018)	Interest rate (%)	Collateral	Maturity date
*1	The 11th Domestic Unsecured Straight Corporate Bonds	February 27, 2014	¥ —	¥15,000	0.32	None	February 27, 2019
*1	The 12th Domestic Unsecured Straight Corporate Bonds	February 27, 2014	10,000	10,000	0.56	None	February 26, 2021
*1	The 13th Domestic Unsecured Straight Corporate Bonds	December 15, 2016	15,000	15,000	0.14	None	December 15, 2021
*1	The 14th Domestic Unsecured Straight Corporate Bonds	December 15, 2016	15,000	15,000	0.39	None	December 15, 2026
*1	The 1st Series Deferrable Interest and Callable Unsecured Subordinated Bonds	January 29, 2019	99,153	—	1.41 (*2)	None	January 29, 2054
*1	The 2nd Series Deferrable Interest and Callable Unsecured Subordinated Bonds	January 29, 2019	7,911	—	1.87 (*3)	None	January 29, 2059
	Total		¥147,065	¥55,000			

*1 The bonds were issued by the Company.

*2 A fixed interest rate is applied to the period between the day following January 29, 2019 and January 29, 2024, while a variable interest rate is to be applied from the day following January 29, 2024 (step-up in interest rate occurring on January 30, 2024).

*3 A fixed interest rate is applied to the period between the day following January 29, 2019 and January 29, 2029, while a variable interest rate is to be applied from the day following January 29, 2029 (step-up in interest rate occurring on January 30, 2029).

Assets pledged as collateral and secured obligations are as follows:

Assets pledged as collateral

(Millions of Yen)

	FYE2019 (March 31, 2019)	FYE2018 (March 31, 2018)
Property, plant and equipment	¥1,463	¥1,540
Total	¥1,463	¥1,540

Secured obligations

(Millions of Yen)

	FYE2019 (March 31, 2019)	FYE2018 (March 31, 2018)
Bonds and borrowings	¥716	¥826
Other financial liabilities (current)	126	137
Total	¥843	¥963

17. Other Financial Liabilities

A breakdown of other financial liabilities is as follows:

(Millions of Yen)

	FYE2019 (March 31, 2019)	FYE2018 (March 31, 2018)
Lease liabilities	¥ 5,269	¥ 5,892
Accrued expenses	30,589	21,680
Accounts payable—other	8,064	7,002
Other	1,949	2,041
Total	¥45,873	¥36,617
Current liabilities	¥41,818	¥31,693
Non-current liabilities	4,054	4,923
Total	¥45,873	¥36,617

Other financial liabilities are mainly classified as financial liabilities measured at amortized cost.

18. Lease Transactions

(1) Finance leases
Minimum lease payments and their present value are as follows:

(Millions of Yen)

	FYE2019 (March 31, 2019)			FYE2018 (March 31, 2018)		
	Minimum lease payments	Future finance charges	Present value	Minimum lease payments	Future finance charges	Present value
One year or less	¥2,227	¥(25)	¥2,201	¥2,016	¥ (24)	¥1,992
More than one year but within five years	2,627	(39)	2,587	3,375	(72)	3,303
More than five years	503	(22)	480	615	(18)	597
Total	¥5,358	¥(88)	¥5,269	¥6,008	¥(115)	¥5,892

(2) Operating leases
Future minimum lease payments under non-cancellable operating lease contracts are as follows:

(Millions of Yen)

	FYE2019 (March 31, 2019)	FYE2018 (March 31, 2018)
One year or less	¥ 5,709	¥ 3,159
More than one year but within five years	12,108	7,161
More than five years	5,210	3,897
Total	¥23,029	¥14,219

Lease payments recognized as expenses for FYE2019 and FYE2018 were ¥7,388 million and ¥6,745 million, respectively.

19. Post-employment Benefits

The Company and certain consolidated subsidiaries have funded and unfunded retirement defined benefit plans and defined contribution plans for employees' retirement benefits, and the plans cover substantially all the employees.

(1) Defined benefit plans

Major defined benefit plans of the Company's consolidated subsidiaries are cash balance plans. Amounts of benefits under the cash balance plans are set based on various conditions such as years of service, points based on achievements during the service period, etc. The investment yield is determined taking into consideration the yield on government bonds.

In accordance with laws and regulations, the pension plans are managed by the Company's consolidated subsidiaries or a pension fund that is legally separate from the Company's consolidated subsidiaries. The Company's consolidated subsidiaries, or the Board of Directors of the pension fund and the trustees of pension fund management are required by laws and regulations to act in the best interest of policyholders, and responsible for operating plan assets based on the prescribed policies.

Amounts of defined benefit plans in the consolidated statement of financial position are as follows:

(Millions of Yen)

	FYE2019 (March 31, 2019)	FYE2018 (March 31, 2018)
Present value of defined benefit obligations	¥ 45,920	¥ 32,929
Fair value of plan assets	(35,317)	(30,756)
Net amount of defined benefit obligations and assets	¥ 10,603	¥ 2,173
Retirement benefit liability	¥ 12,377	¥ 4,511
Retirement benefit asset	(1,773)	(2,338)
Net amount of defined benefit obligations and assets	¥ 10,603	¥ 2,173

For defined benefit plans, amounts recognized as expenses in the consolidated statement of profit or loss are as follows:

(Millions of Yen)

	FYE2019 (From April 1, 2018 to March 31, 2019)	FYE2018 (From April 1, 2017 to March 31, 2018)
Current service cost	¥1,872	¥1,294
Interest expenses	269	198
Interest income	(444)	(178)
Total	¥1,696	¥1,314

Changes related to the present value of defined benefit obligations are as follows:

(Millions of Yen)

	FYE2019 (From April 1, 2018 to March 31, 2019)	FYE2018 (From April 1, 2017 to March 31, 2018)
Balance at beginning of the fiscal year	¥32,929	¥32,694
Current service cost	1,872	1,294
Interest expenses	269	198
Remeasurements		
Actuarial gains and losses arising from changes in financial assumptions	922	132
Retirement benefits paid	(2,349)	(1,645)
Changes from business combinations	12,816	—
Other	(540)	255
Balance at end of the fiscal year	¥45,920	¥32,929

Changes related to the fair value of plan assets are as follows:

(Millions of Yen)

	FYE2019 (From April 1, 2018 to March 31, 2019)	FYE2018 (From April 1, 2017 to March 31, 2018)
Balance at beginning of the fiscal year	¥30,756	¥36,921
Interest income	444	178
Remeasurements		
Return on plan assets	(47)	1,343
Contributions from companies	972	918
Retirement benefits paid	(1,925)	(1,403)
Changes from business combinations	5,275	—
Other (Note)	(157)	(7,201)
Balance at end of the fiscal year	¥35,317	¥30,756

Note: Plan assets decreased by ¥7,185 million, due to the cancellation of the retirement benefit trust during the fiscal year ended March 31, 2018.

Major actuarial assumptions used to calculate the present value of defined benefit obligations are as follows:

	FYE2019 (March 31, 2019)	FYE2018 (March 31, 2018)
Discount rate	0.45%	0.57%

If discount rates, the major actuarial assumptions, fluctuate, the present values of defined benefit obligations at March 31, 2019 and 2018 change as follows. This sensitivity analysis is based on the assumption that all actuarial assumptions other than actuarial assumptions subject to analysis remain constant.

(Millions of Yen)

	FYE2019 (March 31, 2019)	FYE2018 (March 31, 2018)
Increase by 0.5%	¥(2,818)	¥(1,522)
Decrease by 0.5%	2,700	1,659

Fair values of plan assets at March 31, 2019 are as follows:

(Millions of Yen)

	Plan assets for which there are quoted market prices in an active market	Plan assets for which there are no quoted market prices in an active market	Total
Cash and cash equivalents	¥1,967	¥ —	¥ 1,967
Equity financial instruments			
Jointly managed trusts	—	2,444	2,444
Total equity financial instruments	—	2,444	2,444
Debt financial instruments			
Jointly managed trusts	—	15,812	15,812
Total debt financial instruments	—	15,812	15,812
Life insurance general accounts	—	15,051	15,051
Other	—	40	40
Total	¥1,967	¥33,349	¥35,317

Fair values of plan assets at March 31, 2018 are as follows:

(Millions of Yen)

	Plan assets for which there are quoted market prices in an active market	Plan assets for which there are no quoted market prices in an active market	Total
Cash and cash equivalents	¥1,618	¥ —	¥ 1,618
Equity financial instruments			
Jointly managed trusts	—	4,494	4,494
Total equity financial instruments	—	4,494	4,494
Debt financial instruments			
Jointly managed trusts	—	12,856	12,856
Total debt financial instruments	—	12,856	12,856
Life insurance general accounts	—	11,767	11,767
Other	—	19	19
Total	¥1,618	¥29,137	¥30,756

Under the TNSC Group's plan asset management policy, the purpose of management is to secure the required combined returns over the medium and long term to the extent of allowable risks in order to ensure payments of the benefits of the defined benefit obligations in the future.

For plan assets, the TNSC Group seeks to reduce risks by diversifying investments widely in domestic and foreign equity securities, debt securities and life insurance general accounts based on asset allocation objectives of a policy asset mix formulated to achieve management objectives.

For asset allocation, the TNSC Group sets the allocation to be maintained for the medium and long term, based on the correlation between expectations of risks and returns for the medium and long term and actual management results of each asset. The TNSC Group reviews asset allocation according to the situation as necessary, such as when there is a significant change in the market environment.

Contributions to the defined benefit plans are readjusted based on periodic actuarial reviews, in order to ensure balanced pension finance in the future. In such actuarial reviews, the adequacy of contribution is verified by reviewing the basic rates for determining contributions (such as expected rate of interest, expected mortality, and expected rate of withdrawal).

For FYE2020, the TNSC Group plans to contribute ¥1,789 million to plan assets.

The weighted average durations of the defined benefit obligation at March 31, 2019 and 2018 were 11.9 years and 12.0 years, respectively.

(2) Defined contribution plans and public pension systems

Amounts recognized as expenses under defined contribution plans and public pension systems are as follows:

(Millions of Yen)

	FYE2019 (From April 1, 2018 to March 31, 2019)	FYE2018 (From April 1, 2017 to March 31, 2018)
Expenses under defined contribution plans	¥2,174	¥1,867
Expenses under public pension systems	4,261	4,079

20. Provisions

A breakdown of changes in provisions is as follows:

FYE2019 (From April 1, 2018 to March 31, 2019)

(Millions of Yen)

	Provision for construction warranties	Asset retirement obligations	Other provisions	Total
Balance at April 1, 2018	¥ 674	¥5,742	¥ 80	¥6,496
Increase during the fiscal year	24	1,261	12	1,298
Decrease during the fiscal year (intended use)	(373)	(32)	(50)	(456)
Decrease during the fiscal year (reversal)	(14)	—	—	(14)
Other	0	633	—	633
Balance at March 31, 2019	¥ 310	¥7,603	¥ 42	¥7,956
Current liabilities	¥ 310	¥ —	¥ 42	¥ 352
Non-current liabilities	—	7,603	—	7,603
Total	¥ 310	¥7,603	¥ 42	¥7,956

FYE2018 (From April 1, 2017 to March 31, 2018)

(Millions of Yen)

	Provision for construction warranties	Asset retirement obligations	Other provisions	Total
Balance at April 1, 2017	¥ 471	¥5,859	¥ 63	¥6,394
Increase during the fiscal year	410	67	80	557
Decrease during the fiscal year (intended use)	(172)	(102)	(48)	(323)
Decrease during the fiscal year (reversal)	(34)	—	(14)	(49)
Other	—	(81)	—	(81)
Balance at March 31, 2018	¥ 674	¥5,742	¥ 80	¥6,496
Current liabilities	¥ 674	¥ —	¥ 80	¥ 754
Non-current liabilities	—	5,742	—	5,742
Total	¥ 674	¥5,742	¥ 80	¥6,496

Provision for construction warranties

In order to prepare for construction-related compensation expenses for machinery and device products, provision for construction warranties is recorded based on the latest estimated amount of compensation based on shipment amounts of machinery and device products in the previous fiscal year. Of these, amounts expected to be paid within one year are recorded. However, there is uncertainty in the occurrence of construction-related compensation expenses.

Asset retirement obligations

If the TNSC Group has legal obligations required by laws and regulations or contracts concerning retirement of fixed assets that are used for the ordinary course of business, such as obligations to restore the original condition accompanying lease contracts of factory facilities and properties used by the TNSC Group, asset retirement obligations are recognized based on the estimated amount of future expenditures calculated based on historical results, etc.

Although these expenses are expected to be paid mainly after one year or more, they will be affected by future business plans, etc.

21. Other Liabilities

A breakdown of other liabilities is as follows:

(Millions of Yen)

	FYE2019 (March 31, 2019)	FYE2018 (March 31, 2018)
Advances received	¥ 3,924	¥ 2,499
Deferred income	6,290	4,233
Employees' bonuses	4,545	3,908
Employees' paid absence	3,709	2,193
Other	28,277	14,543
Total	¥46,747	¥27,378
Current liabilities	¥26,410	¥12,441
Non-current liabilities	20,336	14,937
Total	¥46,747	¥27,378

22. Equity

(1) Share capital and treasury shares

Numbers of shares authorized and shares issued are as follows:

(Thousand shares)

	FYE2019 (From April 1, 2018 to March 31, 2019)	FYE2018 (From April 1, 2017 to March 31, 2018)
Number of shares authorized	1,600,000	1,600,000
Number of shares issued		
Beginning of the fiscal year	433,092	433,092
Changes during the fiscal year	—	—
End of the fiscal year	433,092	433,092

All shares are ordinary shares with no par value. Shares issued are fully paid.

Changes in the number of treasury shares during the fiscal year are as follows:

(Thousand shares)

	FYE2019 (From April 1, 2018 to March 31, 2019)	FYE2018 (From April 1, 2017 to March 31, 2018)
Beginning of the fiscal year	332	328
Increase	3	4
Decrease	(0)	(0)
End of the fiscal year	335	332

Major factors of changes during the fiscal year were due to the purchase or requests for sales of shares less than one unit.

(2) Capital surplus and retained earnings

Capital surplus consists of amounts not included in share capital as part of the amounts arising from capital transactions, and the main component is capital reserve. Retained earnings consist of legal retained earnings and other reserves.

The Companies Act of Japan stipulates that more than one-half of payments or delivery in relation to the issuance of shares shall be included in share capital, and the remaining shall be included in capital reserve. Capital reserve may be incorporated into share capital by resolutions of the shareholders' meeting.

In addition, the Act stipulates that one-tenth of the amount to be paid as cash dividends from surplus shall be appropriated as capital reserve or legal retained earnings until the total amount of capital reserve and legal retained earnings equals one-fourth of share capital.

The accumulated legal retained earnings may be used to eliminate or reduce a deficit, and the legal retained earnings may be reversed by resolution of the shareholders' meeting.

(3) Other components of equity

Other components of equity are as follows:

(Exchange differences on translation of foreign operations)
Exchange differences on translation of foreign operations are translation differences arising when consolidating the financial statements of foreign operations prepared in foreign currencies.

(Effective portion of net change in fair value of cash flow hedges)
The effective portion of net change in fair value of cash flow hedges is the cumulative amount of the effective portion of hedges as part of gains or losses arising from changes in fair value of the hedging instrument related to cash flow hedges.

(Financial assets measured at fair value through other comprehensive income)
Other components of equity include valuation differences in fair value of financial assets measured at fair value through other comprehensive income.

(Remeasurements of defined benefit plans)
Remeasurements of defined benefit plans are the effect of differences between actuarial assumptions at the beginning of the fiscal year and the actual results and the effect of changes in actuarial assumptions. These are recognized in other comprehensive income when incurred, and immediately transferred from other components of equity to retained earnings.

23. Dividends

Payments of dividends are as follows:

FYE2019 (From April 1, 2018 to March 31, 2019)

Resolution	Type of stock	Total cash dividends (Millions of Yen)	Dividends per share (Yen)	Record date	Effective date
Ordinary General Meeting of Shareholders held on June 20, 2018	Ordinary shares	¥5,194	¥12	March 31, 2018	June 21, 2018
Board of Directors' meeting held on October 31, 2018	Ordinary shares	5,194	12	September 30, 2018	December 3, 2018

FYE2018 (From April 1, 2017 to March 31, 2018)

Resolution	Type of stock	Total cash dividends (Millions of Yen)	Dividends per share (Yen)	Record date	Effective date
Ordinary General Meeting of Shareholders held on June 20, 2017	Ordinary shares	¥4,762	¥11	March 31, 2017	June 21, 2017
Board of Directors' meeting held on November 1, 2017	Ordinary shares	4,762	11	September 30, 2017	December 1, 2017

The dividends of whose effective date falls in the next fiscal year are as follows:

FYE2019 (From April 1, 2018 to March 31, 2019)

Resolution	Type of stock	Total cash dividends (Millions of Yen)	Dividends per share (Yen)	Record date	Effective date
Ordinary General Meeting of Shareholders held on June 20, 2019	Ordinary shares	¥5,627	¥13	March 31, 2019	June 21, 2019

FYE2018 (From April 1, 2017 to March 31, 2018)

Resolution	Type of stock	Total cash dividends (Millions of Yen)	Dividends per share (Yen)	Record date	Effective date
Ordinary General Meeting of Shareholders held on June 20, 2018	Ordinary shares	¥5,194	¥12	March 31, 2018	June 21, 2018

24. Other Comprehensive Income

Changes in each item in other comprehensive income during the year are as follows:

(Millions of Yen)

	FYE2019 (From April 1, 2018 to March 31, 2019)	FYE2018 (From April 1, 2017 to March 31, 2018)
Financial assets measured at fair value through other comprehensive income		
Amount arising during the fiscal year	¥ (3,247)	¥ 2,434
Tax effects	761	(789)
Net amount	(2,485)	1,644
Remeasurements of defined benefit plans		
Amount arising during the fiscal year	(970)	1,210
Tax effects	346	(391)
Net amount	(623)	819
Exchange differences on translation of foreign operations		
Amount arising during the fiscal year	(7,955)	(10,099)
Net amount	(7,955)	(10,099)
Effective portion of net change in fair value of cash flow hedges		
Amount arising during the fiscal year	(4,148)	(15)
Reclassification adjustments	(95)	52
Tax effects	1,299	(11)
Net amount	(2,944)	26
Share of other comprehensive income of investments accounted for using the equity method		
Amount arising during the fiscal year	45	451
Net amount	45	451
Total other comprehensive income	¥(13,963)	¥ (7,157)

25. Employee Benefit Expenses

Employee benefit expenses other than post-employment benefits are as follows:

(Millions of Yen)

	FYE2019 (From April 1, 2018 to March 31, 2019)	FYE2018 (From April 1, 2017 to March 31, 2018)
Wages and salaries	¥102,985	¥91,537
Total	¥102,985	¥91,537

26. Revenue

(1) Revenue disaggregated by source and by reportable segment
FYE2019 (From April 1, 2018 to March 31, 2019)

(Millions of Yen)

	Reportable segment					
	Gas Business in Japan	Gas Business in the United States	Gas Business in Europe	Gas Business in Asia and Oceania	Thermos Business	Total
Revenue						
Gas	¥243,038	¥146,136	¥50,347	¥ 78,565	¥ —	¥518,088
Equipment and other	120,913	41,186	4,753	27,599	—	194,453
Housewares	—	—	—	—	27,800	27,800
Total	¥363,951	¥187,323	¥55,101	¥106,164	¥27,800	¥740,341

Determination of the timing of the fulfillment of performance obligations in contracts with customers, and the method for calculating the transaction price and its allocation to performance obligations are as described in “3. Significant Accounting Policies.” The amount of revenue recognized arising from other revenue sources is insignificant.

(2) Outstanding contract amount

Contract assets mainly comprise consideration for construction in progress. Contract liabilities mainly comprise consideration received from customers prior to the delivery of products. Receivables, contract assets, and contract liabilities derived from contracts with customers are as follows:

(Millions of Yen)

	At the beginning of the fiscal year ended March 31, 2019 (April 1, 2018)	At the end of the fiscal year ended March 31, 2019 (March 31, 2019)
Receivables arising from contracts with customers	¥165,626	¥202,568
Contract assets	951	1,850
Contract liabilities	7,402	11,316

Of the outstanding amount of contract liabilities, as of the beginning of the fiscal year ended March 31, 2019, the amount recognized as revenue for the fiscal year is insignificant. For FYE2019, the amount of revenue recognized based on the performance obligations that were fulfilled in prior periods is also insignificant. Outstanding amounts of contract assets and contract liabilities have not undergone any significant changes.

(3) Transaction price allocated to remaining performance obligations

Since the TNSC Group has no significant transactions with individual expected contract periods exceeding one year, information on the remaining performance obligations has been omitted, as a practical expedient. Meanwhile, there is no significant variable consideration included in the transaction price arising from contracts with customers.

27. Other Operating Income and Other Operating Expenses

A breakdown of other operating income is as follows:

(Millions of Yen)

	FYE2019 (From April 1, 2018 to March 31, 2019)	FYE2018 (From April 1, 2017 to March 31, 2018)
Grant income	¥ 61	¥ 714
Gain on sales of property, plant and equipment	1,479	1,518
Other	3,208	1,836
Total	¥4,748	¥4,069

A breakdown of other operating expenses is as follows:

(Millions of Yen)

	FYE2019 (From April 1, 2018 to March 31, 2019)	FYE2018 (From April 1, 2017 to March 31, 2018)
Impairment losses	¥1,459	¥ 163
Loss on sales and retirement of property, plant and equipment	897	569
Loss on reduction of property, plant and equipment	57	714
Other	1,526	1,677
Total	¥3,940	¥3,123

28. Finance Income and Finance Costs

A breakdown of finance income is as follows:

(Millions of Yen)

	FYE2019 (From April 1, 2018 to March 31, 2019)	FYE2018 (From April 1, 2017 to March 31, 2018)
Interest income		
Financial assets measured at amortized cost	¥ 246	¥ 232
Dividend income		
Financial assets measured at fair value through other comprehensive income	1,156	1,066
Foreign exchange gains	881	—
Other	9	—
Total	¥2,294	¥1,299

A breakdown of finance costs is as follows:

(Millions of Yen)

	FYE2019 (From April 1, 2018 to March 31, 2019)	FYE2018 (From April 1, 2017 to March 31, 2018)
Interest expenses		
Financial liabilities measured at amortized cost	¥7,072	¥5,005
Foreign exchange losses	—	189
Other	1	69
Total	¥7,074	¥5,264

29. Income Taxes

(1) Deferred tax assets and deferred tax liabilities

Major factors giving rise to deferred tax assets and deferred tax liabilities and their changes are as follows:

FYE2019 (From April 1, 2018 to March 31, 2019)

(Millions of Yen)

	April 1, 2018	Recognized in profit or loss	Recognized in other comprehensive income	Other (Note)	March 31, 2019
Deferred tax assets					
Employees' bonuses	¥ 2,400	¥ (127)	¥ —	¥ 59	¥ 2,332
Accrued expenses	3,172	241	—	107	3,521
Property, plant and equipment and intangible assets	4,022	142	—	2	4,166
Retirement benefit liability	1,232	539	209	1,855	3,835
Unused tax losses	—	7,666	—	(5)	7,661
Unrealized gains (inventories and property, plant and equipment)	1,931	248	—	—	2,179
Other	2,589	1,860	1,462	(507)	5,404
Total	15,347	10,570	1,671	1,511	29,101
Deferred tax liabilities					
Securities and other investments	(7,938)	—	1,039	1,954	(4,944)
Property, plant and equipment and intangible assets	(31,825)	(15,525)	—	(70,835)	(118,186)
Retained earnings of overseas consolidated subsidiaries, etc.	(4,341)	(1,039)	—	—	(5,381)
Other	(687)	952	(302)	(1,278)	(1,317)
Total	(44,793)	(15,613)	736	(70,159)	(129,829)
Net deferred tax liabilities	¥(29,445)	¥ (5,042)	¥2,408	¥(68,648)	¥(100,727)

FYE2018 (From April 1, 2017 to March 31, 2018)

(Millions of Yen)

	April 1, 2017	Recognized in profit or loss	Recognized in other comprehensive income	Other (Note)	March 31, 2018
Deferred tax assets					
Employees' bonuses	¥ 2,266	¥ 134	¥ —	¥ —	¥ 2,400
Accrued expenses	4,489	(1,316)	—	—	3,172
Property, plant and equipment and intangible assets	3,999	24	—	—	4,022
Retirement benefit liability	1,046	196	(11)	—	1,232
Unrealized gains (inventories and property, plant and equipment)	2,117	(186)	—	—	1,931
Other	2,843	(216)	(38)	—	2,589
Total	16,762	(1,364)	(49)	—	15,347
Deferred tax liabilities					
Securities and other investments	(7,186)	—	(752)	—	(7,938)
Property, plant and equipment and intangible assets	(41,053)	9,228	—	—	(31,825)
Retained earnings of overseas consolidated subsidiaries, etc.	(4,235)	(105)	—	—	(4,341)
Other	(388)	(589)	(390)	681	(687)
Total	(52,864)	8,533	(1,142)	681	(44,793)
Net deferred tax liabilities	¥(36,102)	¥ 7,168	¥(1,192)	¥681	¥(29,445)

Note: Other includes exchange differences on translation of foreign operations and changes from business combinations, etc.

For recognition of deferred tax assets, the TNSC Group considers the possibility that some or all deductible temporary differences will be available for future taxable income. For the assessment of the recoverability of deferred tax assets, the TNSC Group considers the planned reversal of deferred tax liabilities, projected future taxable income and tax planning. For deferred tax assets recognized, the TNSC Group believes that it is probable the tax benefits will be realized based on historical taxable income levels and the projection of future taxable income during periods when deferred tax assets may be deducted.

Deductible temporary differences for which deferred tax assets have not been recognized at March 31, 2019 and 2018 were ¥18,385 million and ¥14,799 million, respectively.

(2) Income taxes

A breakdown of income taxes is as follows:

(Millions of Yen)

	FYE2019 (From April 1, 2018 to March 31, 2019)	FYE2018 (From April 1, 2017 to March 31, 2018)
Current income taxes	¥13,331	¥12,311
Deferred income taxes	5,042	(7,168)
Total	¥18,373	¥ 5,143

In the United States, the Tax Cuts and Jobs Act was enacted on December 22, 2017, and the federal corporate income tax rate has been reduced effective January 1, 2018. Accordingly, deferred tax assets and deferred tax liabilities as of the end of the third quarter of the fiscal year ended March 31, 2018 and thereafter are calculated using an effective tax rate based on the revised tax rate corresponding to the fiscal year in which the temporary differences, etc. are expected to reverse.

As a result, income taxes decreased by ¥12,193 million for the fiscal year ended March 31, 2018.

(3) Table of reconciliation of effective tax rates

The Company is mainly subject to corporate income tax, inhabitant tax and enterprise tax. The statutory tax rates based on these taxes for FYE2019 and FYE2018 were 30.62% and 30.86%, respectively. Overseas subsidiaries are subject to the corporate income tax, etc. of their location.

A breakdown of major items that caused differences between the statutory tax rate and the effective tax rate is as follows:

	FYE2019 (From April 1, 2018 to March 31, 2019)	FYE2018 (From April 1, 2017 to March 31, 2018)
Statutory tax rate	30.62%	30.86%
Permanently non-deductible or non-taxable items	0.86	0.27
Unrecognized deferred tax assets	1.33	0.13
Differences in tax rates for overseas consolidated subsidiaries	(2.46)	(1.17)
Retained earnings of overseas consolidated subsidiaries, etc.	1.68	0.19
Share of profit of investments accounted for using the equity method	(1.89)	(1.57)
Impact of reduction in U.S. federal corporate income tax rate	—	(21.81)
Other	(0.54)	2.30
Effective tax rates	29.60%	9.20%

30. Earnings Per Share

Basic earnings per share and the basis of calculation are as follows:

	FYE2019 (From April 1, 2018 to March 31, 2019)	FYE2018 (From April 1, 2017 to March 31, 2018)
Profit attributable to owners of parent (Millions of Yen)	¥41,291	¥48,919
Average number of shares during the fiscal year (Thousand shares)	432,758	432,762
Basic earnings per share (Yen)	¥95.42	¥113.04

Note: Diluted earnings per share are not presented as there are no dilutive potential shares.

31. Cash Flow Information

Changes in liabilities arising from financing activities

Changes in liabilities arising from financing activities are as follows:

FYE2019 (From April 1, 2018 to March 31, 2019)

(Millions of Yen)

			Non-cash changes		
	Balance at April 1, 2018	Changes from cash flows	Changes from business combinations, etc.	Exchange differences on translation of foreign operations, etc.	Balance at March 31, 2019
Short-term borrowings	¥ 35,403	¥433,773	¥ 87	¥(7,754)	¥ 461,510
Commercial papers	—	12,000	—	—	12,000
Long-term borrowings (Note)	230,664	141,307	2,026	5,559	379,556
Bonds (Note)	55,000	92,035	—	29	147,065
Total	¥321,067	¥679,117	¥2,113	¥(2,165)	¥1,000,132

Note: Balances include the current portion of long-term borrowings and bonds.

FYE2018 (From April 1, 2017 to March 31, 2018)

(Millions of Yen)

			Non-cash changes		
	Balance at April 1, 2017	Changes from cash flows	Changes from business combinations, etc.	Exchange differences on translation of foreign operations, etc.	Balance at March 31, 2018
Short-term borrowings	¥ 34,973	¥ 1,619	¥ —	¥(1,190)	¥ 35,403
Long-term borrowings (Note)	252,580	(15,495)	54	(6,475)	230,664
Bonds (Note)	65,000	(10,000)	—	—	55,000
Total	¥352,553	¥(23,875)	¥54	¥(7,665)	¥321,067

Note: Balances include the current portion of long-term borrowings and bonds.

32. Financial Instruments

(1) Equity management

The TNSC Group manages equity aiming at maximizing corporate value through sustainable growth. The major indices used by the Company in equity management are return on capital employed (ROCE) and adjusted net D/E ratio.

	FYE2019 (March 31, 2019)	FYE2018 (March 31, 2018)
Return on capital employed (ROCE) (Note 1)	6.2%	8.4%
Adjusted net D/E ratio (Note 2)	1.54	0.71

Note 1: Core operating profit / invested capital (average of the beginning and the end of the fiscal year)
Invested capital refers to total of interest-bearing liabilities and equity attributable to owners of parent.
Note 2: (Net interest-bearing liabilities - equity-type liabilities) / (equity attributable to owners of parent + equity-type liabilities)
Net interest-bearing liabilities refer to interest-bearing liabilities less cash and cash equivalents.
Equity-type liabilities refer to liabilities created through financing activities that are certified as equity-type by credit rating agencies.

(2) Matters related to risk management

The TNSC Group is exposed to financial risks in the course of conducting business activities in various countries and regions throughout a wide range of fields. In order to reduce or avoid such risks, the TNSC Group manages risks based on certain policies, etc.

In addition, derivative transactions are used to hedge currency fluctuation risk or interest rate fluctuation risk. In principle, derivative transactions are only conducted based on actual demand and not used for speculative purposes.

(3) Credit risk

Trade receivables, etc., which are receivables arising from the TNSC Group's business activities, are exposed to the credit risk of customers. In addition, derivative transactions that the TNSC Group uses to hedge financial risks are exposed to the credit risk of financial institutions that are counterparties to the transactions.

In accordance with internal policies of each Group company, such as credit management regulations, the TNSC Group monitors due dates and outstanding balances of individual customers and establishes a system to periodically assess credit status. The TNSC Group thereby aims to early identify and alleviate collection concerns due to a deteriorating financial situation. In addition, derivative transactions are limited to financial institutions with high creditworthiness in order to minimize counterparties' credit risk related to contract default.

The TNSC Group records allowance for doubtful accounts at an unrecoverable amount for individually significant financial assets, and at an amount based on historical experience, etc. for individually insignificant financial assets, at the end of each fiscal year. Allowance for doubtful accounts related to such financial assets is included in "Trade receivables" and "Other financial assets" in the consolidated statement of financial position.

Allowance for doubtful accounts is as follows. Since the amount of expected credit losses for 12 months is not material, it is included in the amount of the expected credit losses for the entire period.

(Millions of Yen)

	FYE2019 (From April 1, 2018 to March 31, 2019)	FYE2018 (From April 1, 2017 to March 31, 2018)
Balance at beginning of the fiscal year	¥3,180	¥2,495
Increase during the fiscal year	4,871	1,253
Decrease during the fiscal year (intended use)	(605)	(249)
Decrease during the fiscal year (reversal)	(364)	(255)
Other	26	(62)
Balance at end of the fiscal year	¥7,108	¥3,180

The maximum exposure to credit risk of financial assets is the carrying amount after impairment that is presented in the consolidated financial statements.

(4) Liquidity risk

The TNSC Group's trade payables and borrowings, etc. are exposed to liquidity risk. The TNSC Group manages the risk by preparing cash management plans and secures liquidity by establishing commitment lines with several financial institutions.

Balances of financial liabilities (including derivative instruments) by due date are as follows:

FYE2019 (March 31, 2019)

(Millions of Yen)

	Carrying amount	Undiscounted contractual cash flows	One year or less	More than one year but within two years	More than two years but within three years	More than three years but within four years	More than four years but within five years	More than five years
Non-derivative financial liabilities								
Trade payables	¥105,966	¥105,966	¥105,966	¥ —	¥ —	¥ —	¥ —	¥ —
Accounts payable—other	8,064	8,064	8,064	—	—	—	—	—
Short-term borrowings	461,510	461,510	461,510	—	—	—	—	—
Long-term borrowings	379,556	381,603	60,415	58,474	45,781	23,564	31,275	162,092
Commercial papers	12,000	12,000	12,000	—	—	—	—	—
Bonds	147,065	148,000	—	10,000	15,000	—	—	123,000
Lease liabilities	5,269	5,358	2,226	1,152	805	460	209	503
Accrued expenses	30,589	30,589	30,589	—	—	—	—	—
Other	1,881	1,881	904	3	1	1	1	968
Derivative liabilities								
Forward exchange contracts	22	22	22	—	—	—	—	—
Currency swaps	3	3	0	0	0	0	0	1
Interest rate swaps	41	41	33	8	—	—	—	—

FYE2018 (March 31, 2018)

(Millions of Yen)

	Carrying amount	Undiscounted contractual cash flows	One year or less	More than one year but within two years	More than two years but within three years	More than three years but within four years	More than four years but within five years	More than five years
Non-derivative financial liabilities								
Trade payables	¥ 79,483	¥ 79,483	¥79,483	¥ —	¥ —	¥ —	¥ —	¥ —
Accounts payable—other	7,002	7,002	7,002	—	—	—	—	—
Short-term borrowings	35,403	35,403	35,403	—	—	—	—	—
Long-term borrowings	230,664	230,664	36,969	56,712	56,335	39,794	15,835	25,017
Bonds	55,000	55,000	15,000	—	10,000	15,000	—	15,000
Lease liabilities	5,892	5,981	2,016	1,896	798	463	190	615
Accrued expenses	21,680	21,680	21,680	—	—	—	—	—
Other	1,829	1,829	856	277	1	1	1	690
Derivative liabilities								
Forward exchange contracts	97	97	97	—	—	—	—	—
Currency swaps	24	24	4	4	4	4	2	4
Interest rate swaps	90	99	56	30	5	—	—	6

(5) Currency risk

Receivables and payables denominated in foreign currencies arising from the TNSC Group's global business development are exposed to the risk of exchange rate fluctuations. The TNSC Group hedges trade receivables and payables denominated in foreign currencies, borrowings, and loans by using forward exchange contracts and currency swaps as necessary.

Currency sensitivity analysis

The following is the impact on profit before income taxes on the consolidated statement of profit or loss from the foreign currency financial instruments held by the TNSC Group at the end of the fiscal year, if the yen appreciates by 1% against the U.S. dollar and Euro, respectively, at the end of the fiscal year.

This analysis is calculated by multiplying each exposure of currency risk by 1%. It is assumed that there is no impact of the fluctuation of each exchange rate on other variables (foreign exchange rates of other currencies, interest rates, etc.).

(Millions of Yen)

	FYE2019 (March 31, 2019)	FYE2018 (March 31, 2018)
U.S. dollar (1% appreciation of the yen)	¥ (40)	¥(21)
Euro (1% appreciation of the yen)	125	(4)

(6) Interest rate risk

The TNSC Group's interest rate risk arises from interest-bearing liabilities, net of cash equivalents, etc. Borrowings and corporate bonds that are based on floating interest rates are exposed to interest rate fluctuation risk.

The TNSC Group hedges such risks by using derivative transactions (interest rate swaps) as necessary.

Interest rate sensitivity analysis

The following is the impact on profit before income taxes on the consolidated statement of profit or loss if the interest rate rises by 1% for financial instruments held by the TNSC Group at the end of the fiscal year.

This analysis is intended for financial instruments impacted by fluctuations in interest rates, and it is assumed that other factors, such as the impact of exchange rate fluctuations, remain constant.

(Millions of Yen)

	FYE2019 (March 31, 2019)	FYE2018 (March 31, 2018)
Profit before income taxes	¥(2,522)	¥(674)

(7) Risk of market price fluctuations

Securities, etc. held by the TNSC Group are exposed to the risk of market price fluctuations.

The TNSC Group periodically evaluates the fair value and the financial status of issuers (business partners) for securities, etc., and each supervising department reviews the holding status taking into consideration the relationship with the business partners on an ongoing basis.

(8) Fair value of financial instruments

For fair value hierarchy of financial instruments, Level 1 to Level 3 is categorized as follows:

Level 1: Fair value measured by the unadjusted quoted prices in active markets of identical assets or liabilities
Level 2: Fair value calculated using observable prices directly or indirectly, other than Level 1
Level 3: Fair value calculated by valuation techniques including inputs not based on significant observable market data

Transfers between levels of financial instruments are determined at the end of each reporting period. There were no financial instruments with significant transfers between levels for FYE2019 or FYE2018.

1) Financial instruments measured at fair value on a recurring basis

Financial instruments measured at fair value are as follows:

FYE2019 (March 31, 2019)

(Millions of Yen)

	Level 1	Level 2	Level 3	Total
Assets				
Equity securities and investments in capital	¥29,050	¥ —	¥9,625	¥38,676
Derivative assets	—	65	—	65
Total	¥29,050	¥65	¥9,625	¥38,741
Liabilities				
Derivative liabilities	¥ —	¥67	¥ —	¥ 67
Total	¥ —	¥67	¥ —	¥ 67

FYE2018 (March 31, 2018)

(Millions of Yen)

	Level 1	Level 2	Level 3	Total
Assets				
Equity securities and investments in capital	¥38,272	¥ —	¥10,403	¥48,675
Derivative assets	—	192	—	192
Total	¥38,272	¥192	¥10,403	¥48,867
Liabilities				
Derivative liabilities	¥ —	¥212	¥ —	¥ 212
Total	¥ —	¥212	¥ —	¥ 212

Equity securities and investments in capital

The fair value of marketable equity securities categorized as Level 1 is based on unadjusted quoted prices in active markets of identical assets or liabilities.

The fair value of unlisted stocks categorized as Level 3, for which quoted prices are not available in active markets, is calculated using the similar company comparison method or other appropriate valuation techniques based on reasonably available inputs. In addition, certain illiquidity discounts, etc. are added as necessary.

Derivative assets and liabilities

The fair value of derivative assets and derivative liabilities categorized as Level 2 is calculated based on observable inputs such as prices provided by counterparty financial institutions or exchange rates and interest rates.

For financial instruments categorized as Level 3, the evaluator determines the valuation techniques to measure each financial instrument covered in accordance with valuation policies and procedures including valuation techniques to measure fair value approved by the appropriate authorized person, and the fair value is calculated. The results are reviewed and approved by the appropriate authorized person.

Changes in financial instruments classified as Level 3 are as follows:

(Millions of Yen)

	FYE2019 (From April 1, 2018 to March 31, 2019)	FYE2018 (From April 1, 2017 to March 31, 2018)
Balance at beginning of the fiscal year	¥10,403	¥16,548
Other comprehensive income (Note)	1,394	(2,200)
Purchase	1,119	752
Sale	(3,137)	(71)
Change in the scope of consolidation	(104)	(4,104)
Other changes	(49)	(521)
Balance at end of the fiscal year	¥ 9,625	¥10,403

Note: This is included in “Financial assets measured at fair value through other comprehensive income” in the consolidated statement of comprehensive income.

2) Financial instruments measured at amortized cost

The carrying amount and fair value of financial instruments measured at amortized cost are as follows:

FYE2019 (March 31, 2019)

(Millions of Yen)

					Fair value
	Carrying amount	Level 1	Level 2	Level 3	Total
Liabilities					
Long-term borrowings	¥379,556	¥—	¥392,708	¥—	¥392,708
Bonds	147,065	—	148,830	—	148,830
Total	¥526,622	¥—	¥541,538	¥—	¥541,538

FYE2018 (March 31, 2018)

(Millions of Yen)

		Fair value			
	Carrying amount	Level 1	Level 2	Level 3	Total
Liabilities					
Long-term borrowings	¥230,664	¥—	¥229,382	¥—	¥229,382
Bonds	55,000	—	55,127	—	55,127
Total	¥285,664	¥—	¥284,509	¥—	¥284,509

For financial instruments measured at amortized cost other than long-term borrowings and bonds, their fair value reasonably approximates the carrying amount.

Long-term borrowings
The fair value of long-term borrowings is calculated based on the present value calculated by discounting the total amount of principal and interest by the interest rate assumed when similar borrowings are newly made.

Bonds
The fair value of bonds is calculated based on market price.

(9) Transfer of financial assets
At March 31, 2019 and 2018, for trade receivables transferred without meeting the requirements for derecognition of financial assets, ¥2,057 million and ¥2,101 million were included in “Trade receivables,” respectively, and the amounts received due to the transfer of ¥1,446 million and ¥1,520 million were included in “Bonds and borrowings,” respectively. Of these Trade receivables, it is determined that the TNSC Group holds almost all of the risks and rewards related to ownership of the transferred assets, because it will assume the payment obligations if the issuer of the notes or the debtor fails to make payment.

(10) Derivative transactions
1) Derivative transactions for which hedge accounting is applied
Analysis of contract amounts, etc. of the hedging instruments by due date is as follows:

FYE2019 (March 31, 2019)

(Millions of Yen)

	Contract amounts, etc.	One year or less	More than one year but within two years	More than two years but within three years	More than three years but within four years	More than four years but within five years	More than five years
Cash flow hedges							
Currency risk							
Forward exchange contracts	¥ 2,294	¥ 1,624	¥ 670	¥ —	¥ —	¥ —	¥ —
Interest rate risk							
Interest rate swaps	18,844	16,284	1,283	283	283	283	425

FYE2018 (March 31, 2018)

(Millions of Yen)

	Contract amounts, etc.	One year or less	More than one year but within two years	More than two years but within three years	More than three years but within four years	More than four years but within five years	More than five years
Cash flow hedges							
Currency risk							
Forward exchange contracts	¥ 6,673	¥6,634	¥ 39	¥ —	¥ —	¥ —	¥ —
Interest rate risk							
Interest rate swaps	19,820	1,064	15,451	1,271	271	271	1,489

Major forward rates of foreign exchange contracts and major interest rates of interest rate swaps are as follows:

	FYE2019 (March 31, 2019)	FYE2018 (March 31, 2018)
Cash flow hedges		
Currency risk		
Forward exchange contracts		
U.S. dollar	¥107.13–¥111.68	¥103.36–¥111.91
Euro	¥124.43–¥131.48	¥130.41–¥132.96
Interest rate risk		
Interest rate swaps		
Fixed payables and floating receivables	0.34%–0.70%	0.34%–0.70%

Amounts related to items designated as hedging instruments are as follows:

FYE2019 (March 31, 2019)

(Millions of Yen)

	Contract amounts, etc.	Carrying amount: Assets	Carrying amount: Liabilities	Items on the consolidated statement of financial position	Changes in fair value used to calculate ineffective portion of hedges for the fiscal year
Cash flow hedges					
Currency risk					
Forward exchange contracts	¥ 2,294	¥ 0	¥22	Other financial assets Other financial liabilities	¥(40)
Interest rate risk					
Interest rate swaps	18,844	22	41	Other financial assets Other financial liabilities	24

FYE2018 (March 31, 2018)

(Millions of Yen)

	Contract amounts, etc.	Carrying amount: Assets	Carrying amount: Liabilities	Items on the consolidated statement of financial position	Changes in fair value used to calculate ineffective portion of hedges for the fiscal year
Cash flow hedges					
Currency risk					
Forward exchange contracts	¥ 6,673	¥115	¥97	Other financial assets Other financial liabilities	¥ 27
Interest rate risk					
Interest rate swaps	19,820	47	90	Other financial assets Other financial liabilities	121

Amounts related to items designated as hedged items are as follows:

(Millions of Yen)

	FYE2019 (March 31, 2019)		FYE2018 (March 31, 2018)	
	Changes in fair value used to calculate ineffective portion of hedges for the fiscal year	Cash flow hedge reserves	Changes in fair value used to calculate ineffective portion of hedges for the fiscal year	Cash flow hedge reserves
Cash flow hedges				
Currency risk				
Planned purchase	¥(40)	¥(12)	¥ 27	¥ 17
Interest rate risk				
Interest on borrowings	24	(27)	121	(56)

Details of cash flow hedges are as follows:

FYE2019 (From April 1, 2018 to March 31, 2019)

(Millions of Yen)

	Changes in fair value of hedging instruments recognized in other comprehensive income	Ineffective portion of hedges recognized in profit or loss	Items on the consolidated statement of profit or loss that include ineffective portion of gain or loss on hedges	Reclassification adjustments from cash flow hedge reserves to profit or loss	Items on the consolidated statement of profit or loss that include gain or loss due to reclassification adjustments
Cash flow hedges					
Currency risk					
Forward exchange contracts	¥(2,973)	¥—	¥—	¥(115)	Finance costs
Interest rate risk					
Interest rate swaps	29	—	—	48	Finance costs

FYE2018 (From April 1, 2017 to March 31, 2018)

(Millions of Yen)

	Changes in fair value of hedging instruments recognized in other comprehensive income	Ineffective portion of hedges recognized in profit or loss	Items on the consolidated statement of profit or loss that include ineffective portion of gain or loss on hedges	Reclassification adjustments from cash flow hedge reserves to profit or loss	Items on the consolidated statement of profit or loss that include gain or loss due to reclassification adjustments
Cash flow hedges					
Currency risk					
Forward exchange contracts	¥ 27	¥—	¥—	¥(14)	Finance costs
Interest rate risk					
Interest rate swaps	121	—	—	51	Finance costs

2) Derivative transactions for which hedge accounting is not applied
Amounts related to items not designated as hedging instruments are as follows:

(Millions of Yen)

	FYE2019 (March 31, 2019)			FYE2018 (March 31, 2018)		
	Contract amount, etc.	More than one year	Fair value	Contract amount, etc.	More than one year	Fair value
Currency swaps	¥627	¥168	¥38	¥793	¥171	¥5

33. Subsidiaries

For FYE2019 or FYE2018, there were no individually significant subsidiaries with non-controlling interests.

34. Related Parties

Remuneration for major executives
Remuneration for the TNSC Group's major executives is as follows:

(Millions of Yen)

	FYE2019 (From April 1, 2018 to March 31, 2019)	FYE2018 (From April 1, 2017 to March 31, 2018)
Remuneration and bonuses	¥377	¥458
Total	¥377	¥458

35. Commitments

Commitments on acquisition of property, plant and equipment and intangible assets are as follows:

(Millions of Yen)

	FYE2019 (March 31, 2019)	FYE2018 (March 31, 2018)
Acquisition of property, plant and equipment and intangible assets	¥3,952	¥12,057

36. Contingent Liabilities

Guaranteed obligations
Guarantees and quasi-guarantees for borrowings from financial institutions are as follows:

(Millions of Yen)

	FYE2019 (March 31, 2019)	FYE2018 (March 31, 2018)
Joint ventures	¥ 55	¥ 77
Associates	372	343
Other (Note)	1,002	1,333
Total	¥1,430	¥1,754

Note: Other mainly consists of guarantees for employees' bank loans based on the employees' house ownership support system.

37. Subsequent Events

(1) Not applicable.

(2) Other

Quarterly information for FYE2019 (From April 1, 2018 to March 31, 2019)

(Cumulative period)	First quarter of FYE2019	First half of FYE2019	First three quarters of FYE2019	FYE2019
Revenue (Millions of Yen)	¥158,662	¥329,426	¥518,030	¥740,341
Profit before income taxes (Millions of Yen)	14,223	27,073	42,200	62,083
Profit attributable to owners of parent (Millions of Yen)	9,684	17,677	27,234	41,291
Basic earnings per share (Yen)	22.38	40.85	62.93	95.42

(Quarterly period)	First quarter	Second quarter	Third quarter	Fourth quarter
Basic earnings per share (Yen)	22.38	18.47	22.08	32.48

Report of Independent Auditors

Building a better working world

Ernst & Young ShinNihon LLC
Hibiya Mitsui Tower, Tokyo Midtown Hibiya
1-1-2 Yurakucho, Chiyoda-ku
Tokyo 100-0006, Japan

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Independent Auditor's Report

The Board of Directors
TAIYO NIPPON SANSO CORPORATION

We have audited the accompanying consolidated financial statements of TAIYO NIPPON SANSO CORPORATION and its consolidated subsidiaries, which comprise the consolidated statement of financial position as at March 31, 2019, and the consolidated statements of profit or loss, comprehensive income, changes in equity, and cash flows for the year then ended and notes to consolidated financial statements, all expressed in Japanese yen.

Management's Responsibility for the Consolidated Financial Statements

Management is responsible for the preparation and fair presentation of these consolidated financial statements in accordance with International Financial Reporting Standards, and for designing and operating such internal control as management determines is necessary to enable the preparation and fair presentation of the consolidated financial statements that are free from material misstatement, whether due to fraud or error.

Auditor's Responsibility

Our responsibility is to express an opinion on these consolidated financial statements based on our audit. We conducted our audit in accordance with auditing standards generally accepted in Japan. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the consolidated financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the consolidated financial statements. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the consolidated financial statements, whether due to fraud or error. The purpose of an audit of the consolidated financial statements is not to express an opinion on the effectiveness of the entity's internal control, but in making these risk assessments the auditor considers internal controls relevant to the entity's preparation and fair presentation of the consolidated financial statements in order to design audit procedures that are appropriate in the circumstances. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Opinion

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the consolidated financial position of TAIYO NIPPON SANSO CORPORATION and its consolidated subsidiaries as at March 31, 2019, and their consolidated financial performance and cash flows for the year then ended in conformity with International Financial Reporting Standards.

June 20, 2019

Ernst & Young ShinNihon LLC

A member firm of Ernst & Young Global Limited

Investor Information

(At March 31, 2019)

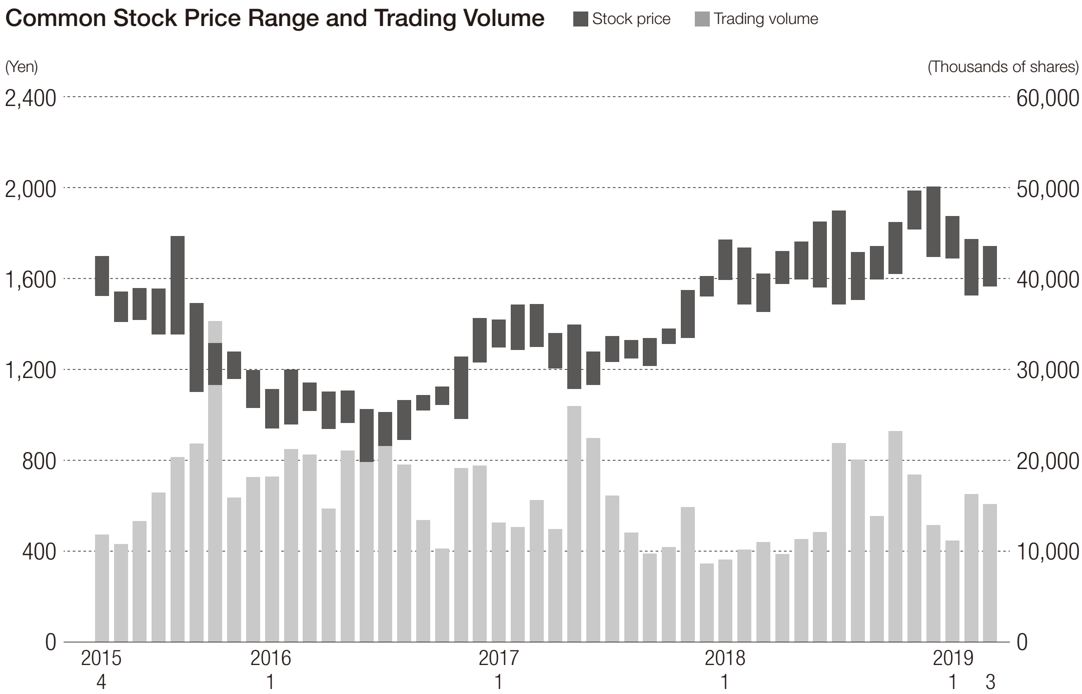
Number of shares authorized:	1,600,000,000
Number of shares issued:	433,092,837
Number of shareholders:	14,831

Major Shareholders:

	Thousands of shares owned	Percentage of total
Mitsubishi Chemical Holdings Corporation	218,996	50.59
Taiyo Nippon Sanso Client Shareholding Society	18,595	4.30
JFE Steel Corporation	12,627	2.92
Japan Trustee Services Bank, Ltd. (Trust Account)	11,916	2.75
The Master Trust Bank of Japan, Ltd. (Trust Account)	10,146	2.34
Meiji Yasuda Life Insurance Company	10,007	2.31
Mizuho Bank, Ltd.	8,182	1.89
The Norinchukin Bank	7,000	1.62
THE CHASE MANHATTAN BANK, N.A. LONDON SPECIAL ACCOUNT NO.1	6,633	1.53
SSBTC CLIENT OMNIBUS ACCOUNT	5,020	1.16

Notes: 1. The Company holds 179,000 treasury shares.
2. Percentage of total is calculated excluding treasury shares.

Common Stock Price Range and Trading Volume



Investor Information

(At March 31, 2019)

Total Shareholder Return (TSR*) (Tokyo Stock Exchange)

TSR (Annual rate)

(Years ended March 31)

Rate (%)	2015	2016	2017	2018	2019
Taiyo Nippon Sanso	203.4	135.1	166.4	207.3	219.6
TOPIX (including dividends)	130.7	116.5	133.7	154.9	147.1

*TSR = Total capital return to shareholders, including capital gains and income gains

Reference: Share Price Index (Tokyo Stock Exchange)

Notes: 1. Taiyo Nippon Sanso and TOPIX share price index: Fiscal year 2014 closing prices =100.
2. Share price and trading volume data is for the First Section of the Tokyo Stock Exchange.

Global Network

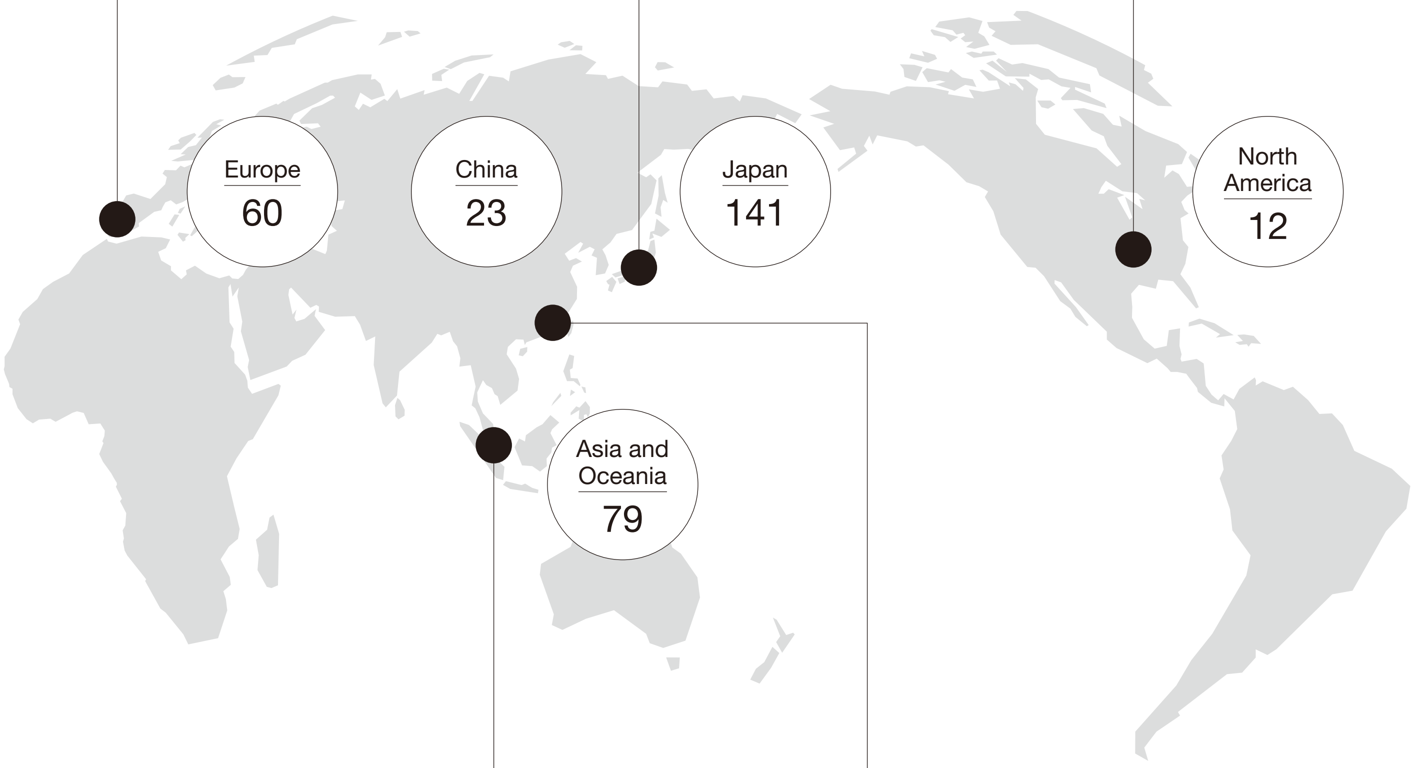
(At March 31, 2019)

Affiliated Companies in Japan	Affiliated Companies Overseas
141	174

Nippon Gases Euro-Holding S.L.U.
Calle Orense, 11, 9th floor,
28020 Madrid, Spain
Tel: +34-91-453-72-00

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, Texas 75039, U.S.A.
Tel: +1-972-560-5700



Taiyo Nippon Sanso Holdings Singapore Pte. Ltd.
8 Jurong Town Hall Road, #23-03/04,
The JTC Summit, Singapore 609434
Tel: + 65-6804-6230

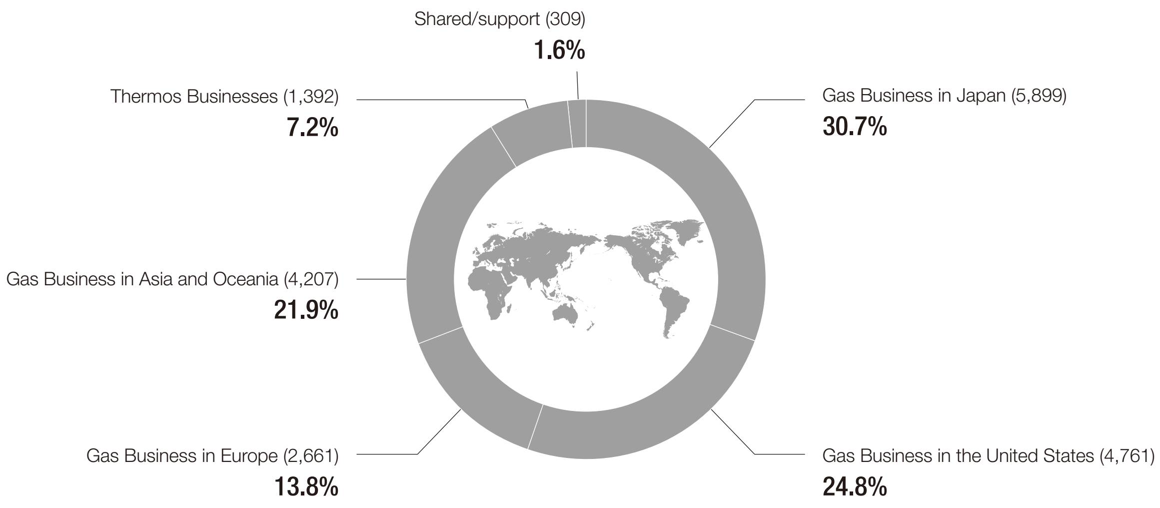
Taiyo Nippon Sanso (China) Investment Co., Ltd.
3F, No. 2 Bldg. BaoWu Tower,
1859 Expo Boulevard,
Shanghai, P.R. China
Tel: +86-411-6528-4066

Corporate Data

(At March 31, 2019)

Company name:	Taiyo Nippon Sanso Corporation (Stock code: 4091)
Date founded:	October 30, 1910
Paid-in capital:	¥37,344 million
Head office:	1-3-26 Koyama, Shinagawa-ku, Tokyo 142-8558, Japan Tel: +81-3-5788-8000
Number of employees:	19,229
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:	Corporate Communications Department, Taiyo Nippon Sanso Corporation Tel: +81-3-5788-8015

Number of Employees and Percentage of Total Labor Force by Reportable Segment



Disclaimer Regarding Forward-Looking Statements

This integrated report contains forward-looking statements, including operating results forecasts, which reflect management's assumptions and beliefs based on information available at the time of publication. These statements are inherently subject to risks and uncertainties and are not intended as a guarantee or promise regarding the achievement of these results. Investors are cautioned to refrain from relying solely on these forward-looking statements in making investment decisions. Please note that various factors may cause actual results to differ materially from these statements.

TAIYO NIPPON SANSO
The Gas Professionals

Corporate Symbol

Taiyo Nippon Sanso's corporate logo represents the seamless integration of state-of-the-art technology and nature, as well as the Company's business domain, founded on its advanced technologies for controlling oxygen, nitrogen, argon and other gases. The logo also evokes the Company's resolve to achieve growth through superior quality and transparency and to ensure a future that is clean, safe and healthy.

KAITEKI Value for Tomorrow
Mitsubishi Chemical Holdings Group

TAIYO NIPPON SANSO
The Gas Professionals

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