NTN Report 2023

For the fiscal year ended March 31, 2023



NTN®

Make the world **NAMERAKA**

Make the world “NAMERAKA”

NAMERAKA is a Japanese word meaning smooth and harmonious.

Bearing technology to make every rotating part of a machine smooth.

With more precise bearing techniques,

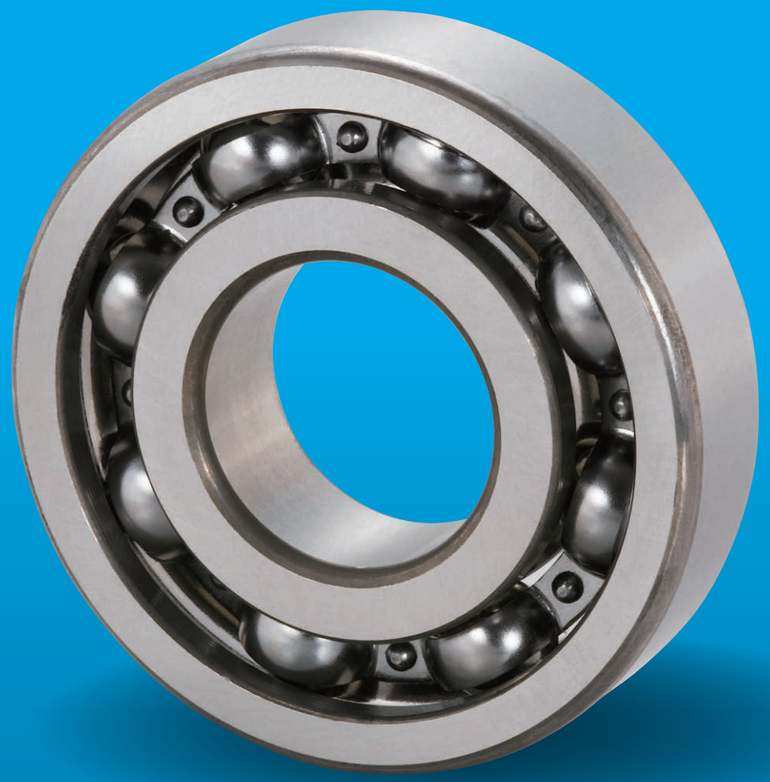
shafts will rotate more smoothly and with infinitely less energy loss.

So bearing is a technology for energy conservation.

Its technology, which has been refined in bearings,

will smoothly change the future of electric vehicles, robots,

and even the natural energy society.



Overview for realizing a “NAMERAKA Society*”

Founders’ Spirits

The Frontier Spirit / The Coexistence and Co-prosperity Spirit

Corporate Philosophy

We shall contribute to international society through creating new technologies and developing new products.

NTN SPIRIT

Credos		Guidelines
Challenge	Buds appear when we challenge with frontier spirit	● We challenge passionately without being satisfied with the current situation. ● We respond quickly to any changes, emphasizing on-site verification. ● We enrich our lives by thinking, acting with initiative and continuing to grow.
Collaboration	Leaves grow through the spirit of collaboration with coexistence and co-prosperity	● We accept and respect differences in each other. ● We help each other, treating all associates honestly. ● We take care of the natural environment and maintain coexistence with local community.
Commitment	Flowers bloom and fruits grow through fulfilling our commitments	● We maximize the quality of work aiming for first-class quality under safety-first policy. ● We intend to be the strongest partner delivering customer delight beyond satisfaction. ● We support improving lives of people around the world through our work.

Management Policy

NTN Group aims to realize a “NAMERAKA Society” through practicing its corporate philosophy. As a company that is trusted and needed by communities including stakeholders, we engage in business activities with an emphasis on respect of human rights and compliance.

Stance to Stakeholders

Employees	NTN Group respects diversity, individuality and a safe and healthy workplace environment where employees can work successfully.
Customers	NTN Group seeks to maximize customer satisfaction and trust by providing products and services of superior quality, safety and reliability.
Business partners	NTN Group, in a fair and free environment, builds good partnerships with its business partners and works together for mutual growth and development.
Local communities	NTN Group respects cultures and customs in the local communities and builds long-term trust relationships by meeting their expectations through its business activities.
Shareholders	NTN Group focuses on return for shareholders by sustainable profitable growth and builds long-term trust relationships with shareholders through active communications.
Environment	NTN Group harmonizes its business activities with nature and contributes to preserve the global environment by providing its technologies, products and services.

Our Vision

1 A company where its corporate philosophy is understood by all employees around the world, and where all employees think and act by themselves
2 A company that has a global presence with original new products and services appreciated for high quality and functions
3 A company which everyone involved can be proud of the “NTN” brand

Realization of a “NAMERAKA Society”

*NAMERAKA Society: A society where people can easily lead a secure and fulfilling life in harmony with nature.

NTN Corporation

My “NAMERAKA” initiative is to contribute to the development of a sustainable society by balancing procurement work and childcare.

The procurement division builds relationships of trust with suppliers and engages in procurement activities based on the perspectives of “fairness and impartiality,” “compliance with laws and regulations,” “green procurement,” and “co-existence and co-prosperity.” In addition to balancing quality, price, and delivery time, we also want to contribute to the realization of a global environmentally friendly society by selecting products that are environmentally friendly.

I focus on childcare at the same time as I work efficiently. I have two children, ages 4 and 8, and I cherish the time I get to spend with them after work, such as reading books to them and help them study. I believe that another contribution I can make to society is to nurture healthy bodies and kind, compassionate hearts in the children who will be responsible for the future of our society.



Dandan Cui
CVJ Group Project Manager
Procurement Dept., SCM Strategy HQ,

NTN Bearing Thailand Co., Ltd.

The important thing I realize about “NAMERAKA” is how to live and work smoothly by minimizing actions lead to problems while generating activities of good relationships and collaborations with people in our daily lives and work.

As the aftermarket sales manager, I found various challenges in the past years such as big fluctuation of market demand and supply, highly competitive market, cost increase situation and price up activities. To deal with these challenges and difficulties, I took NAMERAKA concepts to work smoothly with customers and our internal teams.

For example, I help dealers to achieve their purchase plans and to expand their market share by uniting those dealers’ capability and NTN technical support and stock management with sincere and honest two-way communications. I believe the respectfulness, harmony and responsibility are the key fundamentals of job accomplishment and sustainable growth.



Kittitat Lasorn
Aftermarket Sales Manager
Aftermarket Sales Department

A “NAMERAKA Society” which we aim for

SNR CEVENNES

As part of our Corporate Social Responsibility approach, SNR CEVENNES decided to become an actor in the process of maintaining the employment of disabled workers. We first outsourced some of our activities in the workshops of our “ESAT” (Work Aid Establishment and Service) partner.

Then, we included disabled “ESAT” workers in our production workshop to make them fully participate in the life of the plant up to the running of a GEN3 bearing’s production line.

Jean-François is now autonomous for bearings’ production.

“I am happy and proud of myself with this work at NTN. Even if you are a person with disability, you can have access to the regular environment. With the help of a monitor, anything is possible! Don’t be afraid, you can try like me! ”



Jean-François BOISSONNADE
GEN3 Hub Bearing Manufacturing Dept.
Croupillac’s Plant

NTN Bearing Corp. of America

The automotive industry is undergoing a major transition from ICE to electrified vehicles. NTN can play an important role to make this a smooth transition by practicing and promoting our core philosophy and spirit.

Engineering R&D is listening to the voice of the customer for what is needed to meet or exceed the technical requirements of electric vehicles and to promote our best technologies. We know lighter weight, more efficient and long life bearing products are a key. NTN will lead by practicing the 3C’s of NTN Spirit. The challenges of the future are accepted now as we collaborate internally and with our customers and are committed to be a leading automotive supplier to reach the end goal of a “NAMERAKA Society” for everyone.



Eric Whipple
Engineering Director,
Automotive OE Business Unit

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Editorial policy

The Group believes that building relationships of trust with shareholders, investors, customers, business partners, the international community, local communities, and employees and contributing to the global environment will enhance corporate value. To report to our stakeholders on the business and sustainability activities of our group, we have been publishing the NTN Report (Integrated Report) since the fiscal year ended March 31, 2010. We will use this Report as a tool for dialog with our stakeholders to deepen their understanding of our company and contribute to the realization of a “NAMERAKA Society.”

Production concept of “NTN Report 2023”

“DRIVE NTN100” Phase 2, a three-year medium-term management plan started under a new organization led by President Ukai, who took office in April 2021, aims to revitalize NTN by strengthening our financial structure. In the fiscal year ended March 31, 2023, our business performance was improved steadily even under a tough business environment due to continued influence of global semiconductor shortage and unprecedented cost inflation including raw materials, energy, and logistics cost. Still, we posted higher sales and profits compared to the previous fiscal year, but the operating income fell short of the announced forecast. We will continue to implement each initiative with firm resolve also in the final year.

In addition, we are promoting ESG management based on our roadmap to realize a “NAMERAKA Society” for sustainable growth over the medium to long term, while strengthening initiatives related to climate change and human capital.

This report describes these topics.

Period and scope of coverage

Period of coverage	Fiscal year ended March 31, 2023 (April 1, 2022 to March 31, 2023) Includes some activities for the fiscal year ending March 31, 2024
Scope of coverage	NTN Group Includes some non-consolidated reporting of NTN

Target guidelines

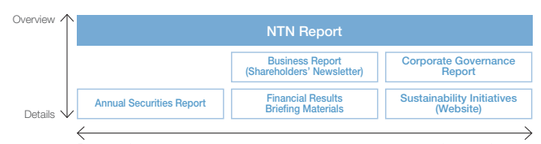
We are enhancing information disclosure by referring to the following guidelines, etc.

- IFRS Foundation “International Integrated Reporting Framework”
- Ministry of Economy, Trade and Industry “Guidance on Integrated Disclosure and Dialogue for Value Creation”.
- SASB (U.S. Sustainability Accounting Standards Board) Standards
- GRI (Global Reporting Initiative)
  Sustainability Reporting Standards
  https://www.ntnglobal.com/en/csr/gri.html

Disclaimer

This report contains projections and outlooks regarding our plans, strategies and performance for the future. Please understand that actual results may differ materially from those discussed in this report.

NTN communication



This report focuses on the most important financial and non-financial information. For more detailed financial information, please refer to the annual securities report and financial results presentation materials. In addition, our sustainability activities are introduced in detail on our website.

https://www.ntnglobal.com/en/index.html

A History of Challenge and Development

Since the company's inception, NTN has been committed to the "Quality First" principle, and has built up trust and achievements through its advanced technology. NTN will continue to contribute to the international society through creating new technologies and developing new products, aiming to realize a "NAMERAKA Society".

History of NTN

1918

"Frontier Spirit" and "Coexistence and Co-prosperity Spirit" handed down from the company's founding

Begins research and production of ball bearings at Nishizono Ironworks in Uchibori, Kuwana-cho, Kuwana-gun, Mie Prefecture

Since its founding in 1918, NTN has always valued two of its founder's spirits: the "Frontier Spirit" of continually challenging ourselves and the "Co-existence and Co-prosperity Spirit" of developing alongside society. These founder's spirits are embedded in the corporate philosophy as part of NTN's DNA, and we still possess them more than 100 years later. In 1918, Jiro Nishizono, a 21-year-old young engineer, founded Nishizono Ironworks in Kuwana, Mie Prefecture. Noboru Niwa, who later became the company's first president, started his own business at the age of 22, running a machine tool business in Osaka called Tomoe Trading Co.

In 1922, Tomoe Trading Co. purchased the entire cargo of bearings from a Swedish ship that sank in Japan and asked Nishizono Ironworks, with whom it had a business relationship, to recondition the bearings. With the profits from the sale of these bearings, new grinding machines were purchased and full-scale bearing production was started. From the beginning of production, the bearings were marked with NTN, the initials of Niwa, Tomoe and Nishizono.



Noboru Niwa　Jiro Nishizono



Bearings at the time of the start of the business

1927

Established "NTN Mfg. Co., Ltd." with capital of 50,000 yen

1937

Company name changed to Toyo Bearing Mfg. Co., Ltd.



Old head office building

1954

First in the Japanese machinery industry to receive the Deming Prize*

The Deming Prize is the world's highest ranking award for TQM (Total Quality Management), and NTN was the first company to receive this award in the bearing industry, as well as in the Japanese machinery industry. The company was the first in the machinery industry to introduce statistical quality control, and was recognized for its efforts in promoting quality control throughout the company.



*Deming Prize: Established by the Union of Japanese Scientists and Engineers to commemorate the achievements of Dr. Deming of the U.S., who popularized statistical quality control in postwar Japan and laid the foundation for raising the quality of Japanese products to a world-class level.



Mettmann Plant, Germany

1960s to 1970s

Strengthened and expanded overseas sales and local production

Since 1950, momentum has been building for the expansion of bearing exports. In 1961, we established our first overseas sales company in Düsseldorf, Germany, to respond flexibly to local demand. In terms of manufacturing, in 1971 we became the first Japanese company to establish a manufacturing company in Europe in Germany, and in the same year we established a bearing manufacturing subsidiary in the U.S. Subsequently, the local production system was strengthened by establishing not only plants for finished products but also plants for pre-production processes.

Through these overseas expansions, we have promoted the shift to local production, producing our products where our customers around the world need them.

1989

Company name changed to NTN Corporation

In conjunction with the company name change, the meaning of NTN was changed to N.T.N, which stands for "For New Technology Network (connecting the world with new technology)," as a guiding principle for the new future.

2008

SNR ROULEMENTS becomes a subsidiary

To expand our business in the European market, we invested in SNR ROULEMENTS of France in 2007 and made it a subsidiary the following year.

2018

100th anniversary of the company's founding

On March 1, 2018, the company celebrated its 100th anniversary, and on this occasion, launched the communication word "Make the world NAMERAKA(smooth), NTN"

2020

Established the brand statement "Make the world NAMERAKA"

We have established a brand statement to communicate our commitment to a sustainable "NAMERAKA Society" in a consistent manner on a global basis.

NTN Make the world NAMERAKA

2023

Toward improved brand awareness in Europe

The company name of NTN-SNR ROULEMENTS S.A. changed to NTN Europe S.A.

Head office relocation

The head office was relocated to Daibiru-Honkan to secure the business continuity and the safety and security of employees in the event of natural disaster.

1900 1910 1920 1930 1940 1950 1960 1970 1980 1990 2000 2010 2020

History of Product and Services

1963

Started production of driveshafts

The company entered into a technical tie-up with Hardy Spicer Co., Ltd. of the U.K. and began production of driveshafts (constant velocity joints) at the Kuwana Works as a promising product for which demand for automotive applications was expected to rapidly increase in the future.



Driveshaft at the beginning of production

1964

Delivered journal bearings for the first 0 Series Shinkansen

We have contributed to the higher speed and lower weight of rolling stock by developing technologies in line with the evolution of high-speed rail and providing high-quality, highly reliable products.

Our products have been used on the first generation 0 series Shinkansen as well as on the latest generation of Shinkansens. The journal bearings for the 0 Series Shinkansen have also been recognized as a "Tribology Heritage*" by the Japanese Society of Tribologists.

*Tribology Heritage: Tribology-related technologies and objects recognized by the Japanese Society of Tribologists as having made particularly important contributions to the development of science and technology.



Late 1970s

Evolution of hub bearings

The axle bearing (GEN1), the predecessor of the hub bearing for which we hold the top class share of the global market, was commercialized in the late 1970s. In the 1980s, the GEN1 evolved into a hub bearing (GEN2) with a knuckle and other peripheral parts integrated as a unit. The GEN3 was further evolved to integrate all of hub bolts, flange, and knuckle for easier assembly on vehicle assembly lines, and mass production of the GEN3 began in Japan for the first time in the mid-1980s. Even today, the product continues to evolve, such as in combination with various sensors and further improvements in ease of assembly.

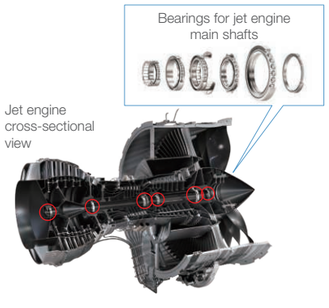


GEN1　GEN2　GEN3

1986

Constructed Japan's first plant specialized in aerospace bearings

We have been producing high-function, high-quality bearings for aerospace applications and are currently the only company in Japan to be certified as a supplier of main shaft bearings by the four major jet engine manufacturers in the world.



From 2000 onward

Technical service units driving worldwide



For sales sites of the technical service cars running around the world, we visit our customers with fully customized, multifunctional technical service cars equipped with product samples and maintenance tools, and offer technical diagnosis and technical training sessions to provide detailed support for solving customer problems. Even after delivery of our products, we continue to support our customers to improve productivity and safe operation of their facilities by using our technical service cars. Above all, we work to solve problems in our society by talking directly with customers to find out what problems "customers around the world" are having.

2014

Provided bearings for the Asteroid Explorer "Hayabusa 2"

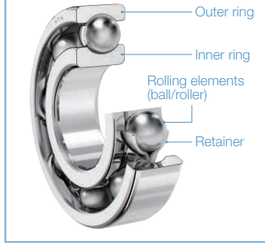
The H-IIA Launch Vehicle No. 26 with the Asteroid Explorer "Hayabusa 2" and others onboard was launched from the Tanegashima Space Center.

Our spherical plain bearings are installed in the hinge section where Hayabusa 2 opens its solar panels in space, contributing to the accomplishment of Hayabusa 2's mission in space.



Spherical plain bearing used in Hayabusa 2

What is a bearing?



Bearings are eco-friendly products that support the rotation of all kinds of machinery and reduce energy consumption by reducing friction. The coefficient of friction of a smoothly rotating bearing is 0.001. This means that an object weighing 1,000 kg placed on the ground can be moved by the pulling force of an object weighing about 1 kg. Bearings are used to move things lightly, contributing to reduced energy consumption.

A typical bearing consists of four parts: the outer ring, the inner ring, the rolling elements, such as steel balls, between the rings, and the retainer, which sets the position of the rolling elements and maintains the spacing between them. Although the configuration is seemingly simple, bumps and distortions in the inner and outer rings and rolling elements prevent smooth rotation. Even a single ball in a bearing is so precise that the difference in surface bumps is less than 1/10,000th of a millimeter, requiring high technology in manufacturing.

Bearings are built into machines and used in places that are usually out of sight, but they are important parts that play a role in enhancing the safety and reliability of machines, contributing to the realization of a "NAMERAKA Society".

Bearings, Let's Learn!

NTN's Strengths (Competitive Advantages) ➔P.23

Original Technologies

Quality

Services

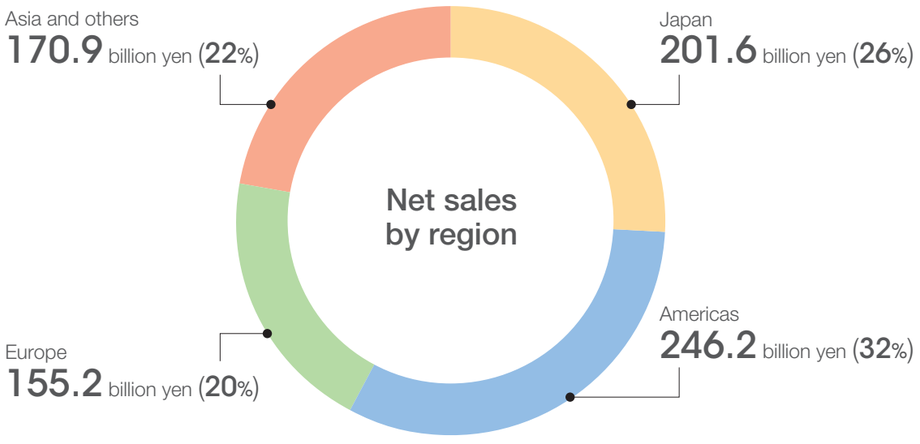
Net sales **774.0** billion yen　　Operating income **17.1** billion yen

Fiscal year ended March 31, 2023



(billion yen)

		Fiscal year ended March 31, 2022 Results		Fiscal year ended March 31, 2023 Results		Fiscal year ending March 31, 2024 Forecast	
Net sales	Aftermarket	112.2		134.0		133.0	
	Industrial machinery	126.1		139.5		133.0	
	Automotive	403.7		500.4		544.0	
	Total	642.0		774.0		810.0	
Operating income (Operating margin)	Aftermarket	14.7	(13.1%)	22.3	(16.6%)	22.5	(16.9%)
	Industrial machinery	4.1	(3.2%)	7.3	(5.2%)	7.5	(5.7%)
	Automotive	-11.9	(-2.9%)	-12.4	(-2.5%)	0.0	(0.0%)
	Total	6.9	(1.1%)	17.1	(2.2%)	30.0	(3.7%)



Aftermarket applications

→P.33

In our aftermarket applications business, we provide bearings for repair for general machineries and automotive aftermarket parts, maintenance tools, and devices to detect abnormality in bearings through our distributors. In this way, we help improve productivity and ensure stable equipment operation.

We also provide a wide range of technical services to resolve issues related to bearings, such as how to handle them. Our remote technical support services share information about the customer's manufacturing site with NTN's technical experts by means of cameras and other equipment so that we can provide quick assistance in resolving issues.

We also provide a reporting service in which NTN's technical experts diagnose and analyze bearings based on the data measured by the "NTN Portable Vibroscope" that customers can use to easily diagnose bearing conditions simply by installing it on equipment. We provide full support for our customers, from supply to after services, such as "NTN Aftermarket Academy" online to enable customers to acquire bearing knowledge.

Mining machinery





ULTAGE
spherical roller bearings with high-strength cage EMA Type

Metal industry equipment





ULTAGE
sealed four-row tapered roller bearings CROU..LL

Paper-making machinery





ULTAGE
spherical roller bearings Type EA, Type EM

Food processing machinery





PolyLube sealed bearings for food processing machinery

Cement equipment





Plummer blocks

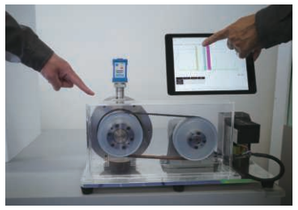
Remote technical support services





NTN Portable Vibroscope





Auto parts



Part kits with combinations of several bearings



Technical training / maintenance tools



Induction heater



Self-centering hydraulic puller with arms



Technical service units



Industrial machinery applications

➔P.35

NTN supplies a wide range of bearings for various industrial machinery such as construction machinery, agricultural machinery, robots, aircrafts, wind turbines, machine tools, railway rolling stocks, and electronic equipment to reduce the environmental impact. NTN contributes to the development of industry and the creation of a sustainable society by providing products and services that meet the needs for automation and labor saving at manufacturing sites including detection of abnormality in bearings through sensing.

Construction machinery





Applications for resource mining and civil engineering

Agricultural machinery





Helping ensure stable food production

Gearboxes





Helping ensure high robot productivity

Aerospace





Used for worldwide jet engine applications

Machine tools





Helping ensure high machining precision

Rolling stock





Helping ensure safety of worldwide high-speed railways

Office equipment





Helping ensure precision operation of copier/ multifunctional printer

Electronic devices

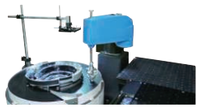


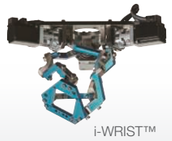


Used for hard disc drive and thin fan motor applications

Robots







i-WRIST™



TRINITTE™

Realizing high-speed, high-performance visual inspection and space saving

Realizing continuous and stable parts picking

Wind turbine





Support rotation of main shafts, gearboxes, generators, etc.



Wind Doctor™

Improve wind turbine utilization rate through condition monitoring

Green energy products



Can be transported to the required location and generate/supply electricity

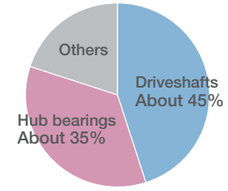


Contribute to disaster prevention and mitigation with the industry's No.1 quietness

Automotive applications

➔P.37

NTN provides a wide range of products for automobiles as a specialist in the power/drive train system, contributing to fuel efficiency and reducing CO_2 emissions. In addition to core products of hub bearings, driveshafts, and various bearings, NTN provides module products with high functions by combining our products with peripheral components and fusing our core technologies to contribute to the creation of safe, secure, and comfortable future automobiles.



Composition of automotive sales

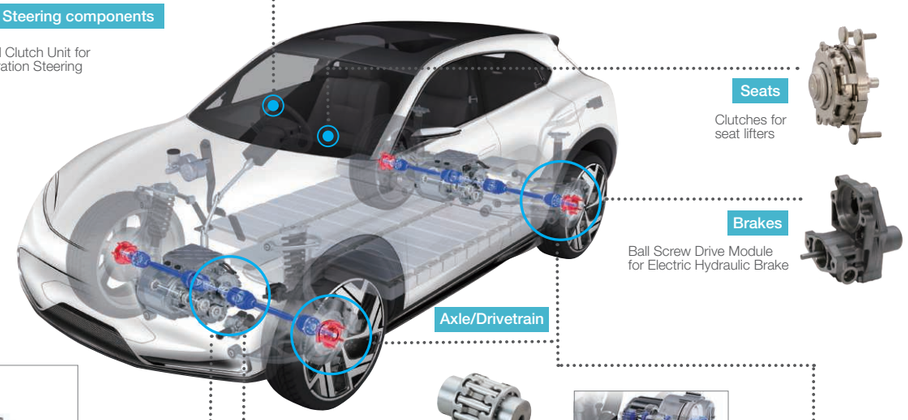


Steering components

Mechanical Clutch Unit for Next-generation Steering



Combined Controller Module Electric Oil Pump



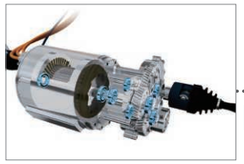
Seats

Clutches for seat lifters

Brakes

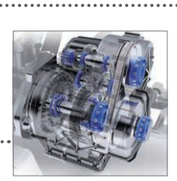
Ball Screw Drive Module for Electric Hydraulic Brake

Axle/Drivetrain



Motor

Needle Roller and Cage Assemblies for Planetary Gear





High Speed Deep Groove Ball Bearings for EVs and HEVs



Bearing with Insulating Coating



CreepLess Bearing





Hub bearings



Ra-sHUB

sHUB

eHUB

Hub Bearings with High Resolution Rotational Sensors

Low Friction Hub Bearing III

Driveshafts

Compact Lightweight Rear Driveshaft R Series

GEN4 Hub Joint

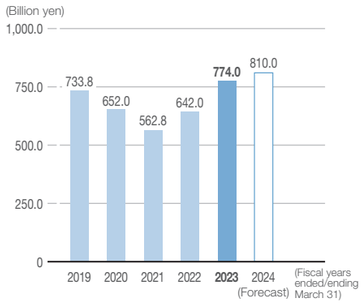
High Efficiency Fixed Type CVJ "CFJ"

Financial and Non-Financial Highlights

Financial Data

Net Sales

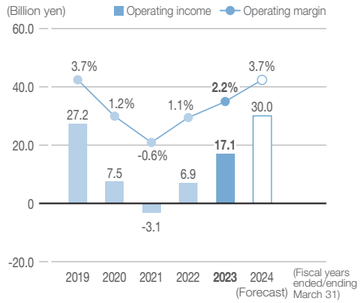
774.0 billion yen



Operating Income/Operating Margin

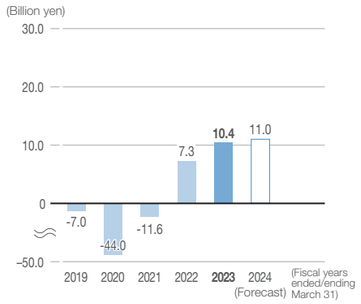
Operating income 17.1 billion yen

Operating Margin 2.2%



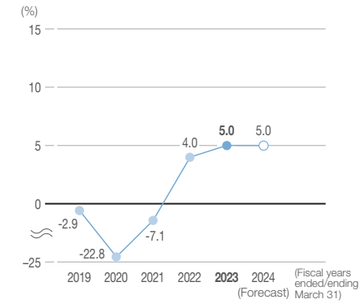
Profit (Loss) Attributed to Owners of Parent

10.4 billion yen



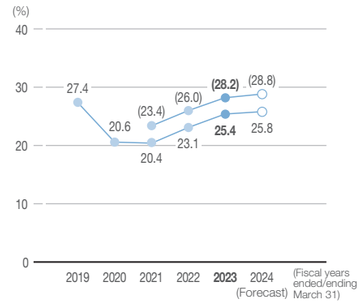
Net Income (Loss)/ Average Shareholders' Equity (ROE)

5.0%



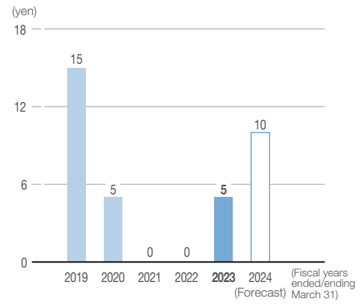
Equity to Capital Ratio*1

25.4(28.2)%



Cash Dividends

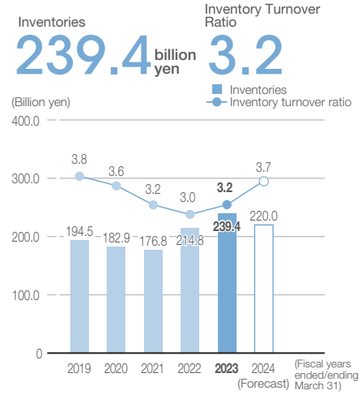
5 yen



Inventories / Inventory Turnover Ratio

Inventories 239.4 billion yen

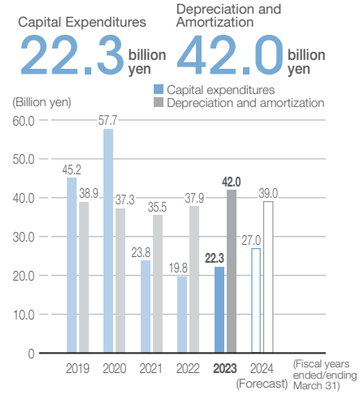
Inventory Turnover Ratio 3.2



Capital Expenditures / Depreciation and Amortization

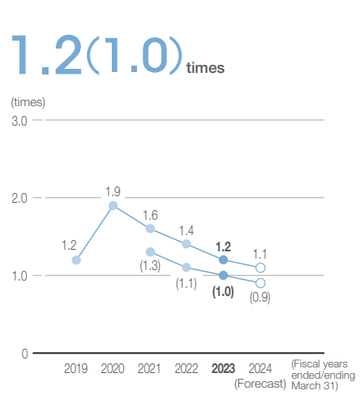
Capital Expenditures 22.3 billion yen

Depreciation and Amortization 42.0 billion yen



Net D/E Ratio*1

1.2(1.0) times



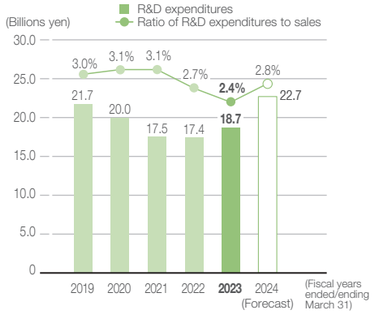
*1 The figures in ( ) take into account a part of the subordinated bonds through public offering that is recognized as equity (50%).

Non-financial Data

R&D Expenditures Ratio of R&D Expenditures to Sales

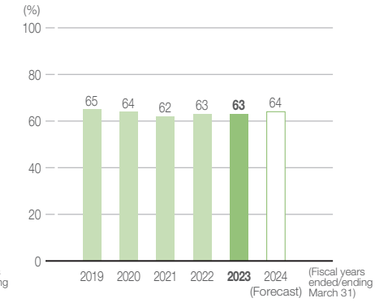
R&D expenditures 18.7 billion yen

Ratio of R&D expenditures to sales 2.4%



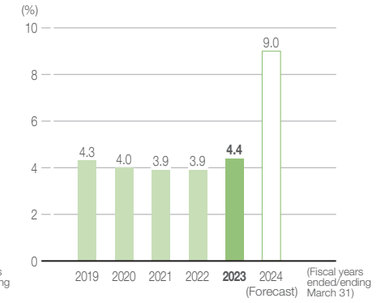
Ratio of Overseas Employees

63%



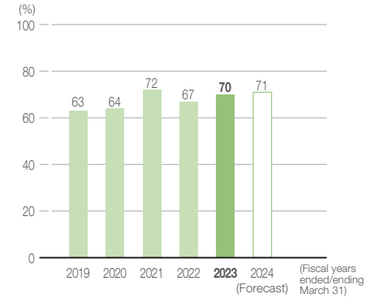
Ratio of Female Managers*2

4.4%



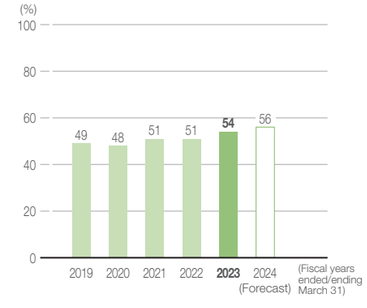
Ratio of Local Procurement*3

70%



Ratio of Overseas Production

54%



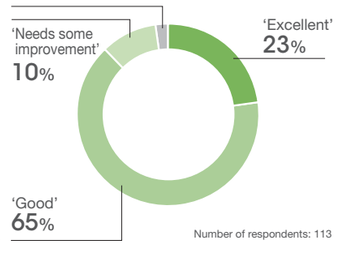
Customer Satisfaction Survey Responses*4

Either 'Excellent' or 'Good'

88%

'Needs much improvement'

2%

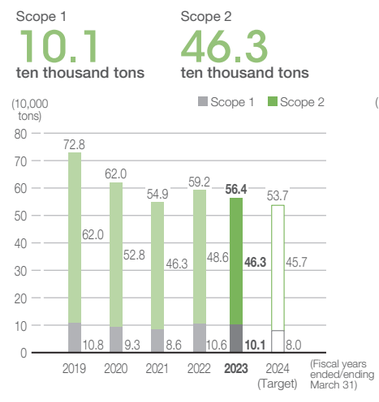


Number of respondents: 113

CO_2 Emissions [Scopes 1 and 2]

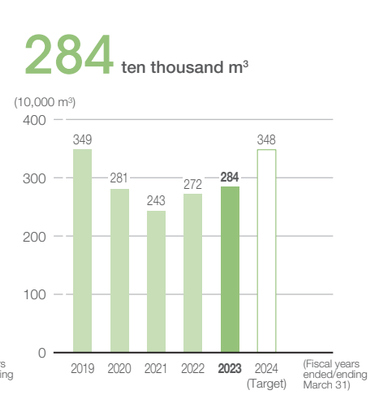
Scope 1 10.1 ten thousand tons

Scope 2 46.3 ten thousand tons



Water Consumption

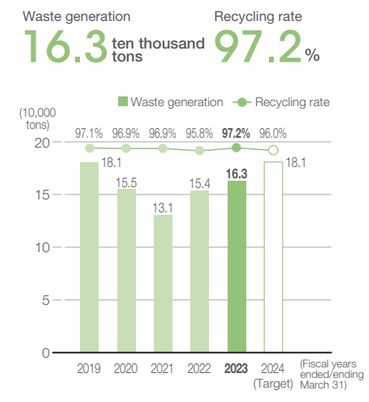
284 ten thousand m^3



Waste Generation/Recycling Rate

Waste generation 16.3 ten thousand tons

Recycling rate 97.2%



*2 Organization covered: NTN only
*3 From NTN Report 2021, the ratio of direct materials procurement in own country (region) is calculated and presented.
*4 Survey period: From October 2021 to September 2022



Director
Representative Executive Officer, President
CEO (Chief Executive Officer)

Eiichi Ukai

With the steady implementation of our Medium-term Management Plan "DRIVE NTN100" Phase 2, we are promoting the transformation of our business structure and accelerating initiatives designed to strengthen our financial framework and build a resilient corporate structure capable of responding to changes in the business environment. We recognize that we still face many challenges, but we also see positive signs. For example, our aftermarket and industrial machinery businesses are showing expansionary trends, and the Americas and Europe regions returned to profitability in the fourth quarter of the fiscal year ended March 31, 2023. In this, the final year of "DRIVE NTN100" Phase 2, we will focus even more intently on the key issues of the Medium-term Management Plan, and thereby transform ourselves into a company capable of securing profits. I therefore wish to take this opportunity to bring our stakeholders up to date on our current status and outlook.

Fiscal year ended March 31, 2023: Results and Issues

The NTN Group reported net sales of 774.0 billion yen and operating income of 17.1 billion yen in the fiscal year ended March 31, 2023. With increases in income and profit, we enjoyed solid improvements in performance compared to the previous fiscal year, which was heavily impacted by the COVID-19 pandemic. Moreover, our aftermarket and industrial machinery businesses marked record-high net sales and operating income. These businesses are benefitting from recovering demand and foreign exchange rates. Even before I became president, I was in charge of both businesses, and from the very beginning, we focused on earning power. We strove to reduce costs as much as possible within the company, and then engaged in repeated negotiations with customers and revised prices in unprofitable businesses. These efforts are now bearing fruit.

However, overall operating income fell far short of our announced figure of 26 billion yen. Consequently, we have not met the expectations of our investors and other stakeholders, a fact that I take very seriously.

Our operating income was lower than expected for changes in the external environment and other reasons. Chief among them were adjustments in production that we made in anticipation of a slow recovery in automotive market demand, higher-than-expected energy costs, additional price increases for various materials as a result of those costs, and our acceptance of suppliers' demands for higher prices. While changes in the external environment were also a factor, a challenge we must undertake is the revitalization of our automotive business, which accounts for more than 60% of our Group's net sales but which has been in the red for four fiscal years. A major point we must take to heart is that we were unable to generate adequate profits despite the fact that driveshafts and hub bearings—mainstay products that account for about 80% of our automotive business—have a significant impact on our business performance. We will endeavor to secure profits from driveshafts and hub bearings by strengthening our cost competitiveness and passing on rising costs to sales prices.

To strengthen our cost competitiveness, we will continue making unrelenting efforts to reduce costs through procurement reforms, production reforms, and other initiatives. One of the measures we will take is to promote new procurement of parts with cost competitiveness or cost advantages in terms of tariffs after quality evaluations. We will strive to reduce variable costs by using parts with higher cost competitiveness, which we will do after obtaining approval from automakers, our customers, to make process changes.

As for passing on rising costs to sales prices, some customers have had harsh words for us during price negotiations. Nonetheless, some other customers tell us that they want to continue doing business with NTN and urge us to notify them if we are struggling with a problem. I therefore get the sense that they appreciate the value of our company. We will use this as a springboard for strengthening trust with our customers. Negotiating with customers is never easy, but we are determined to press forward with price negotiations, including for businesses that we have not yet passed on higher costs to sales prices in fiscal year ended March 31, 2023.

Outlook for fiscal year ending March 31, 2024 and the Next Medium-term Management Plan

For the fiscal year ending March 31, 2024, we are forecasting net sales of 810 billion yen and operating income of 30 billion yen. The aftermarket and industrial machinery businesses are expected to reach record highs by continuing to pass on rising costs to sales prices and revising prices in unprofitable businesses. Meanwhile, in the automotive business, we will aim to achieve year-on-year increases in sales and profit and break free from operating losses as easing semiconductor shortages lead to a recovery in automobile production.

In comparison with the initial targets of the Medium-term Management Plan ending in the fiscal year ending March 31, 2024, we anticipate that net sales will expand but operating income will fall off the target of 42 billion yen or more by 12 billion yen. Likewise, although our operating margin is gradually rising, it will remain at 3.7% for the fiscal year ending March 31, 2024, compared to the target of 6% or more.

Thus, we will be unable to achieve the Medium-term Management Plan's initial targets. Nonetheless, I see it as management's responsibility to make achievement happen early in the new Medium-term Management Plan, which will start in the fiscal year ending March 31, 2025. We are making thorough preparations during the current fiscal year and will proceed with a concerted Group-wide effort under the new Medium-term Management Plan.

Specifically, we reworked the organizational structure of our head office in April 2023. The key component of this reorganization was the establishment of the Group Management Headquarters and the SCM Strategy Headquarters. In particular, the SCM Strategy Headquarters has a framework that consistently manages operations related to overall supply chain management, from procurement to production, supply and demand control (production control), logistics, and other areas. By consolidating functions to achieve efficiency and overall optimization, and by strengthening the Group's management functions, we will make steady progress in business reformation aimed at improving profits.

Promoting reform in production and all other operations

Although production reform is something we have been working on for years, our efforts have tended to remain at partial optimization. Consequently, some production facilities are seeing better productivity, but production line takt time (production time per single product) happened to stay unimproved. In contrast, the production reform we are currently undertaking aims for optimization in all areas, including the reduction of work-in-process inventories from the standpoint of cash flow management. Our goal is to change how we approach Monozukuri and also to change the mindset of the employees working on site. We are endeavoring to execute fundamental reforms with the advice of a company that has long tackled similar production issues and achieved positive results.

In addition, we revamped our IT core system in an undertaking aimed at comprehensively grasping all information pertaining to our domestic supply chain. We now have the ability to analyze product costs, sales prices, and profits in a timely manner.

We intend to move boldly in transforming our business portfolio through these changes to our organizational structure and IT core system. We already have a firm vision of what we want to achieve. I will share the details with you when we make a formal decision.

Increasing profitability by enhancing brand value

I believe brand value will be an important topic in our pursuit of more profitable business going forward. Especially in the aftermarket segment, it is attractive as a business since we have an ability to take the initiative in pricing. On the other hand, a brand power in the market is a key factor in determining prices.

When I was posted to Singapore, I encountered something that left a strong impression on me. When I compared our price of a particular product with those of our competitors, I discovered that our product sold at a lower market price than theirs, even though they were almost identical in performance and quality. The only thing that can account for this difference in price is brand value. Suppose a customer has a bearing break and needs a new one right away, and a supplier has the ability to deliver one quickly and also offer solutions to the problem. There are many customers who are willing to pay a higher price for that kind of ability. This experience—this concept—is what led me to strongly advocate the importance of “availability” to NTN employees every day.

Our goal is to be the price leader in the aftermarket segment. In such a business model, it is important that we have a large inventory of products on hand so that we can deliver them as quickly as possible when customers need them.

At the same time, if we are going to make it our business to propose solutions that promptly address the various issues our customers face, then we must have personnel with the experiences and skills to execute those solutions—in other words, field engineers. Strengthening capabilities in this area cannot be accomplished overnight, but I believe we must work toward this goal through education, training, and practical activities.

Medium- to-long-term business outlook

In our mainstay automotive business, we will focus on adjusting amid the shift to electric vehicles (EVs). Many people are concerned that the shift to EVs will reduce the number of parts that must be supplied. But as I have said in the past, for NTN Group—whose main products are driveshafts and hub bearings used in EV drive units—the shift will be rather advantageous.

In addition to our existing products, we have already developed a high-speed deep groove ball bearing that achieves the highest rotation speed in the industry, making it suitable for “e-Axle” drive systems for EVs and motors and transmissions for hybrid electric vehicles (HEVs). Moreover, because EVs have better acceleration and require higher vibration damping performance, we are also developing electric modules and other components that are adapted to the unique behavior of EVs. We will create high-added-value products through efforts like these.

Looking at scheduled mass production start-ups over the next three years, we anticipate that the ratio of products we make for HEVs and EVs, which have higher added value than those for internal combustion engines (ICE), will increase. We are currently working on a variety of projects, which I will share with you as soon as they can be announced to the public.

In terms of sustainability, I believe an important question for the coming age will be how to make products that remain usable for long periods of time. Moreover, even products that have long service lives will eventually reach a point when they can no longer be used as is. We will therefore need to detect product conditions quickly and perform maintenance to ensure even longer service life. In other words, I believe “maintain” leads to “sustain.”

Traditionally, the NTN Group’s business has focused mainly on manufacturing and marketing bearings and other forms of hardware. However, we are now stepping up efforts to attach sensors to hardware to collect data around them during operation and link it to monitoring services through software. I believe this will translate into new profit opportunities.

Specifically, we offer condition monitoring systems for various types of equipment, such as bearings in wind turbines and bearings in machine tool spindles (rotating shafts). We have also commercialized a diagnostic report business for bearings using NTN Portable Vibroscope.

We are also developing “Talking Bearing™” with built-in sensor functions without any changes in bearing volume or appearance. Fully exploring this concept will allow us to provide high-added-value solutions our competitors cannot match.

One possibility for the future is the application of big data on operating conditions that is gathered through sensors. This capability will allow us to notify customers of predicted equipment malfunctions before they occur and to offer new added-value services linked to planned preventative maintenance.

Furthermore, if we can accurately predict the service life of parts based on equipment operating hours and other factors using big data, we will be able to forecast demand. What bearings will be needed? When will they be needed? And how many will be needed? Being able to read demand will allow us to also read inventory levels, which will naturally lead to more precise planning of inventories, production, and procurement. In other words, we will be able to develop “pull”-type marketing strategies by obtaining accurate information from the market. This business model is the exact opposite of the “push”-type model, in which production plans are prepared by anticipating demand based on rule of thumb. This is the kind of digital transformation (DX)-led business structure reform that our Group aims to achieve.

Enhancing sustainability by practicing ESG management

In 2015, NTN signed the United Nations Global Compact. In line with this, we continue striving to realize ten principles in four areas—human rights, labour, environment, and anti-corruption—that we consider to be universal values. Aspiring to tackle environmental issues, we launched a Carbon Neutrality Promotion Project in July of last year. Then, in April of this year, executed a reorganization that involved establishing a Carbon Neutrality Strategy Promotion Department in the Group Management Headquarters to bring this project into closer alignment with management. We will continue to formulate and promote strategies to achieve carbon neutrality under this new structure.

Human capital management has become a hot topic in recent years. Based on our belief that “the company is its people,” we recognize that strengthening our human resource base is essential for sustainable growth and are therefore striving to develop diverse human resources, taking “prosperous human development” as one of the ESG issues. In addition, we started holding Executive Officer-led “town hall meetings” this year. I have communicated face-to-face with employees in Japan and overseas on numerous occasions, and now our Executive Officers are more proactively visiting their respective departments to listen to employees in the workplace. In this way, we are finding out what troubles all employees have. We are endeavoring to enhance communication by clearly identifying what we can do as



a company and providing feedback.

In the area of corporate governance, NTN transitioned from a Company with a Board of Company Auditors to a Company with a Nominating Committee, etc., in June 2019. Under this structure, we are striving to enhance our corporate value over the medium and long term. The Board of Directors is now chaired by a female Outside Director. In addition, the Nominating Committee, Compensation Committee, and Audit Committee are all chaired by Outside Directors. In this way, we are employing a structure designed to strengthen governance and increase corporate value.

NTN’s purpose and push to higher corporate value

While pushing forward with efforts to reform our business structure over the past year, I reflected upon NTN’s mission and purpose as a citizen of the world. Specifically, I thought about how, for over a century, we have been supplying the world with products that minimize energy consumption by reducing friction, and that this fact is linked to our contribution to the global environment and forms the foundation of our Group’s business.

Over the next 50 to 100 years, our mission with respect to climate change and other global issues will be to help solve those issues by providing products and services while limiting the environmental footprint of our business wherever possible. I am confident that the accumulation of such activities will bear fruit and ultimately enhance our Group’s corporate value.

Lastly, I know that our price book-value ratio (PBR) is below 1.0 and must be improved. This is a matter we are discussing internally. We want to continue being a company that produces things we can leave to future generations with pride. With this in mind, we will move forward, striving to become a company valued by society and capable of increasing its economic value while appropriately returning profits to all of its stakeholders, including investors, shareholders, customers, employees, business partners, and society at large. I respectfully request your continued support for NTN in this endeavor.

Our Group has identified materiality to address the SDGs in order to solve social issues, and is developing business activities based on its corporate philosophy throughout the value chain by leveraging the management capital it has accumulated over its more than 100-year history and the uniqueness of NTN it has fostered.

By providing products and technical services, including bearings and driveshafts, and by creating environmental and social value, we aim to realize a “NAMERAKA Society” where people can easily lead a secure and fulfilling life in harmony with nature. We will continue to promote ESG management to achieve sustainable growth and contribute to solving social issues.

Contribution to solving social issues

NTN Business Model

Risks and Opportunities Surrounding NTN
➔P.21

- Response to the paradigm shift
- Response to environmental issues
- Change in demographics
- Globalization of the business

Materiality
➔P.19

Contribution to solving social issues toward the future we aim for

- Respond to climate change
- Realize a sustainable society using natural energy
- Reduce energy loss
- Provide safety and comfort

Foundation to support ESG management

- Resource recycling and pollution prevention
- Improve the reliability of products and services (Quality assurance, stable supply)
- Procurement activities with an emphasis on environment and society
- Promote safety and health
- Respect for human rights
- Human resource development
- Promote diversity
- Thorough compliance
- Strengthen governance

Capitals

Financial capital
- Shareholders’ equity 220.7 billion yen
- Interest-bearing debt 371.3 billion yen
- Cash and cash equivalents 110.7 billion yen

Intellectual capital
- Number of patents held 6,192
- R&D sites 9 sites in 4 countries

Human capital
- Number of employees (consolidated) 23,027
- Ratio of overseas employees 63%

Social and relational capital
- Customer satisfaction survey 113 companies
- Excellent + good 88%

Manufacturing capital
- Production sites 70 sites in 14 countries
- Ratio of overseas production 54%

Natural capital
- Energy consumption 6,456 TJ/year
- Water consumption 2,841,000 m³

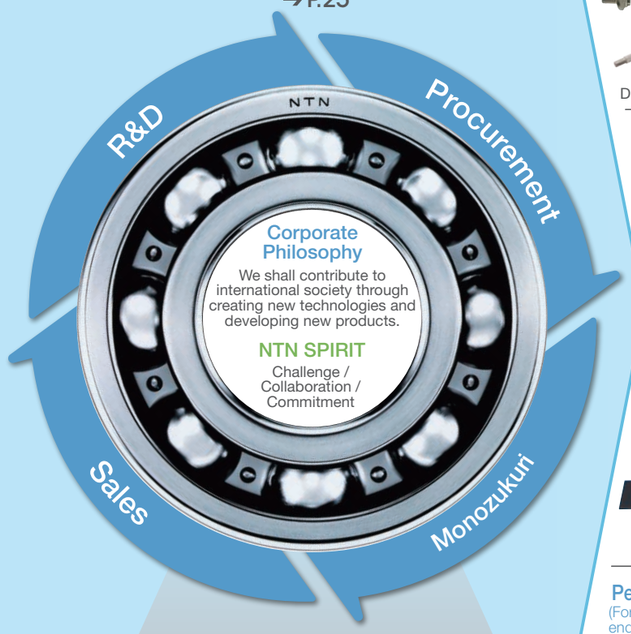
NTN’s Strengths
➔P.23

- Original Technologies
- Quality
- Services

Business Activities
➔P.33

Industrial Machinery Business / Automotive Business / Aftermarket Business / New Businesses

Value Chain
➔P.25



Corporate Governance
➔P.69

Output

Environment-contributing products
S to B-eco 52.6%



Hub bearings



Driveshafts

Highly functional products for EVs and electrification

No. 1 in Japan in the number of wind turbines monitored

New products utilizing proprietary technologies (i-WRIST™, microscopic coating device, green energy products)



Performance Target
(Forecast for fiscal year ending March 31, 2024)

Net sales 810 billion yen

Operating income 30.0 billion yen (3.7%)

FCF 29.0 billion yen

Outcome

Make the world NAMERAKA

Contribution to CO_2 reduction by environment-contributing products: 1,474,000 tons/year

Contribution to the expansion of next-generation mobility

Contribution to the popularization of wind turbines

Contribution to disaster prevention/mitigation, providing safety and security during disasters

Contribution to labor-saving progress and the development of regenerative medicine

Realization of a NAMERAKA Society

Strengthening of capitals

Materiality

In March 2015, we signed the United Nations Global Compact, which is a global framework for the international community to realize sustainable growth, and we are aiming to achieve the SDGs.

In December 2020, we identified 13 items of materiality that the Group should prioritize to address in response to the SDGs, and we are driving efforts to achieve the targets set for each materiality. Our initiatives toward materiality are outlined in a roadmap for realizing a “NAMERAKA Society,” and progress is regularly reviewed by the Sustainability Committee, which includes members from across the organization, and reported to the Board of Directors as appropriate.

The identified materialities are also linked to the NTN corporate philosophy of “We shall contribute to international society through creating new technologies and developing new products.” By promoting materiality initiatives, we aim to realize a “NAMERAKA Society” through the Group’s sustainable growth and the creation of environmental and social value.

Contribution to solving social issues toward the future we aim for

	Materiality	Related SDGs	Target FY
Environment	1 Respond to climate change		FY2030 FY2035 FY2050
Environment	2 Realize a sustainable society using natural energy		FY2022 FY2023 (★)
Environment	3 Reduce energy loss		FY2022 FY2023 (★)
Social	4 Provide safety and comfort		FY2022 FY2023 (★)

Foundation to support ESG management

	Materiality	Related SDGs	Target FY
Environment	5 Resource recycling and pollution prevention		FY2022 FY2023 (★)
Social	6 Improve the reliability of products and services (Quality assurance, stable supply)		Continue FY2023 FY2023 (★)
Social	7 Procurement activities with an emphasis on environment and society		Continue
Social	8 Promote safety and health		FY2022 Continue
Social	9 Respect for human rights		FY2022 Continue
Social	10 Human resource development		Continue
Social	11 Promote diversity		FY2023 December 2024
Governance	12 Thorough compliance		Continue
Governance	13 Strengthen governance		Continue

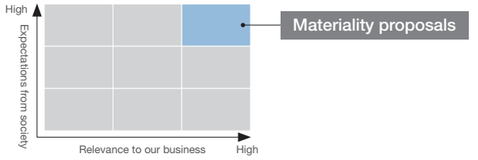
Identification process

STEP 1

Extraction of materiality candidates
- Extract social issues with reference to the GRI Standard, which is an international framework in the field of sustainability.
- Extract items that are candidates for materiality based on the direction of structural changes that have a major impact on the economy/environment/society and the company’s effort.

STEP 2

Evaluation and analysis of materiality candidates
- Evaluate the 99 items extracted in STEP 1 on a three-point scale from the perspectives of “expectations from society” and “relevance to our business.”
- Organize items with high evaluations as materiality proposals.



STEP 3

Dialog with academics and experts
- Collect suggestions and opinions from academics and experts in the field of CSR/sustainability, as well as Outside Directors regarding ideas about materiality identification and ESG strategies that should be focused on.

STEP 4

Validity assessment in overseas affiliated companies
- Conduct a questionnaire survey targeting the presidents of our overseas affiliated companies and confirm that all overseas affiliated companies agree with the materiality proposals.

STEP 5

Identify materiality
- The Board of Directors resolved 13 items of materiality.

Target	Actual results of FY2022	Detail page
● Reduce CO_2 emissions in business activities (Scope1, 2) ➡ 50% reduction (Compared to the FY2018) ● Reduce CO_2 emissions in business activities (Scope1, 2) ➡ Achieve carbon neutrality ● Reduce CO_2 emissions in business activities (Scope3) ➡ Achieve carbon neutrality	Scope1, 2 ● Reduction of 22.6% compared to the FY2018 Scope3 ● Develop and promote action plans	➔ P.53
● Development related to products and services that contribute to the stable operation of wind turbines ➡ FY2022 Completion of development themes	● Launch a one-stop service that provides everything from bearing supply to abnormality detection and maintenance for wind turbines, etc.	➔ P.52
● Development related to products and services that contribute to the stable operation of wind turbines ➡ FY2023 Completion of development themes	—	
● Development related to low friction, miniaturization and weight reduction of products for automobiles and industrial machinery ➡ FY2022 Completion of development themes	● Development of high speed deep groove ball bearings for EVs and HEVs, etc.	➔ P.50
● Development related to low friction, miniaturization and weight reduction of products for automobiles and industrial machinery ➡ FY2023 Completion of development themes	—	
● Development related to robot-related modules ➡ FY2022 Completion of development themes	● Development of Rotary Actuator Type Hand, etc.	➔ P.57
● Raise awareness of independent power supply units and implement proposal activities for disaster mitigation and disaster prevention	● N^3 N-CUBE was adopted by several municipalities (e.g., circulating flush eco-toilets, bus stop waiting areas, etc.)	
● Development related to robot-related modules ➡ FY2023 Completion of development themes	—	
● Raise awareness of independent power supply units and conduct sales activities for disaster mitigation and local revitalization	—	

Target	Actual results of FY2022	Detail page
● Water consumption intensity ➡ 4.30 m^3/million yen (Japan) 3.14 m^3/million yen (Overseas)	● 4.36 m^3/million yen (Japan) 2.83 m^3/million yen (Overseas)	➔ P.58
● Waste generation intensity ➡ 164 kg/million yen (Japan) 279.4 kg/million yen (Overseas)	● 159.7kg/million yen (Japan) 251.0 kg/million yen (Overseas)	
● Recycling rate ➡ 97.9% (Japan) 97.5% (Overseas)	● 98.7% (Japan) 96.2% (Overseas)	
● Water consumption intensity ➡ 3.98 m^3/million yen (Global)	—	
● Recycling rate ➡ 96.0% or more (Global)	—	
● Maintain high level of customer satisfaction ➡ More than 90% of responses for “Excellent” and “Good”	● “Excellent” + “Good”: 88%	➔ P.60
● Maintain 100% certification for quality management systems (ISO9001/IATF16949) *Applies to domestic and overseas consolidated manufacturing subsidiaries (excluding bases that have not started mass production).	● Maintain 100% certification	
● Number of participants in specialized quality education courses ➡ 100 or more	● 145	
● Progress in restructuring the domestic core systems Production area ➡ Competed the introduction to all sites (For sales and logistics, financial accounting, human resources and salaries, and technology areas, already introduced in FY2021)	● Introduction completed at 7 production sites ➡ On track to complete implementation during FY2023	
● Start of the information security emergency response system (NTN-CSIRT)	—	
● Conduct CSR questionnaires for suppliers continuously and maintain and improve achievement level of results	● Result Achievement 87%	➔ P.61
● Continue operation of occupational safety and health management system ➡ 6 domestic manufacturing affiliates have acquired GSC certification	● 2 companies have acquired certification ➡ 4 companies that have not yet acquired the certificate are continuing their efforts to complete the achievement during FY2023	➔ P.66
● Maintain “White 500” certification for Health and Productivity Management Organization (Large enterprise category)	● Accreditation maintained for three consecutive years	
● Achievement of the annual plan of the Risk Survey targeting manufacturing sites ➡ 100%	● Degree of achievement 100%	
● Analyze and evaluate the results of questionnaires of overseas affiliates	● Analysis and evaluation completed	➔ P.67
● Survey on the situation of foreign workers working in Japan (Monitoring)	● Started counting the number of foreign workers (monthly)	
● Number of participants in “NTN Next Leader Program” ➡ 50	● 59	➔ P.63,88
● Holding of “NTN PROUD AWARD” as ESG Corporate Award	● First Global Congress to be held in June 2023	
● Ratio of female managers ➡ 9% for NTN	● 4.4% for NTN	➔ P.65
● Ratio of male childcare leave acquisition ➡ 30%	● 37.2%	
● Annual number of Compliance Committee meetings held ➡ 2	● 2	➔ P.77
● Helpline recognition level in survey of compliance awareness ➡ 85% or more *Raise the target to 90% or more in FY2023, and promote initiatives	● 88.4%	
● Enhance Corporate Governance	● Enhance Corporate Governance	➔ P.71

*Targets marked with “continue” in the target FY are targets we will aim to achieve each year, and (★) are newly set targets.

Risks, Opportunities and Measures

NTN Group analyzes risks and opportunities for each business environment such as the global trend of carbon neutrality, the accelerating electrification to achieve the carbon neutral goal, labor shortages and human rights issues, and takes countermeasures in line with the materiality. In order to respond to drastic changes in the external environment, we are implementing regular reviews on anticipated risks and opportunities.

NTN's Business Environment		Risks for the Company	Opportunities for the Company	Main Measures	Materiality
Response to paradigm shift	Spread of next-generation mobility	● Decrease in the total number of bearings used per unit ● Demand for higher performance products such as lighter weight products ● Reorganization of the automotive industry	● Expansion of sales channels due to entry of new EV manufacturers ● Expanding sales opportunities for driveshafts and hub bearings that support not only gasoline-powered vehicles and HEVs but also axle/drivetrain of EVs ● Increase in ASP (average sales price) due to size-up of driveshafts corresponding to the motor's output characteristics ● Using driveshafts' patented technologies to propose products that are smaller and lighter ● Growing demand for high performance products for EVs ● A possibility of growth in demand for parts replacement as car sharing increases the operating rate of vehicles	● Provide lighter-weight, higher efficiency driveshafts and low friction hub bearings ● Provide next-generation mobility modules for EVs ● Concentrate production of high performance products for EVs (Wakayama Works) ● Develop hydrogen-related products ● Promote production reform and reorganization aimed at improving the productivity ● Strengthen the automotive aftermarket business	2 3 4 6
	Electrification of industrial machinery	● Reduced use of bearings due to electrification of internal combustion and hydraulic equipment	● Demand for high performance products such as higher efficiency products ● Increasing demand for high value-added products such as bearings with built-in sensors	● Strengthen development of products for electrification and high value-added products ● Provide next-generation mobility modules for industrial machinery	3
	Spread of AI and IoT	● Difficulty in securing digital talent, for which demand is increasing ● Rationalization of distributor network ● Securing of aftermarket demand using industrial IoT Platforms (PFs) (missed demand opportunities outside PFs)	● Advances in equipment-related manpower saving ● Rising demand for bearings with sensors ● Growing demand for analysis and analytical technologies ● Development of new fields ● Introduction of smart factories in the company	● Provide service solutions through CMS technology, etc. ● Develop service-oriented business that lead to product sales and transform into new business formats ● Strengthen CAE analysis technology ● Develop "Talking Bearings™" (= use of sensors for bearings) ● Provide robot-related modules such as i-WRIST in response to labor-saving issues ● E-commerce based on the new IT core system ● Realization of smart factories including Wakayama Works ● Strengthen external collaboration	2 4
	Spread of infectious diseases (COVID-19)	● Decrease in scale of sales due to economic stagnation ● Crisis of business continuity ● Damage to employees' health and safety ● Shutdown of business activities due to the spread of infectious diseases within the workplace ● Disconnection of supply chain	● Growing demand for manpower-saving technologies ● Utilizing microscopic coating technologies for drug discovery	● Life science-related R&D centered on microscopic coating technology ● Provide robot-related modules such as i-WRIST™ in response to labor-saving issues ● Promote the work style reform	4 8 10
Response to environmental issues	Reduction in CO_2 emissions	● Rising procurement and energy costs ● Decline in product needs due to the declining usage of general-purpose machinery ● Requirements for carbon neutrality in business activities ● Suspension of dealing with customers and deterioration of corporate image in the event of failure to respond to the demands of society	● Increasing demand for wind turbines, including offshore ones ● Increasing demand for railways ● Increasing demand for green energy products ● Increasing needs for improvement of fuel efficiency (electricity consumption efficiency) ● Expansion of next-generation mobility (EVs, hydrogen-related)	● Increase sales of large bearings and CMSs for wind turbines ● Increase sales for rolling stock ● Expand sales of green energy products ● Promote development of environment-contributing products ● Promote energy conservation in production facilities ● Introduction of renewable energy ● Develop lighter-weight, higher efficiency driveshafts and low friction hub bearings ● Provide next-generation mobility module ● Develop hydrogen-related products	1 2 3
	Requests for energysaving machinery	● Decrease in the number of parts where bearings are used due to changes in the energy transmission type and structure of machines ● Establishment of a new mechanical structure that does not require bearings	● Increasing demand for energy-saving products ● Responding to new needs	● Provide compact, lightweight and low-torque products ● Product development utilizing original technologies	3
	Reduction in environmental impact	● Decrease in corporate image/ESG rating when environmental impact cannot be reduced ● Cost increase due to incurrence of costs by suppliers and limitation on suppliers that can meet environmental standards	● Development of new customers through compliance with advanced environmental and customers' standards ● Increasing demand for high-quality, long operating life products ● Promotion of environment-friendly business activities ● Pursuit of circular economy	● Selection of business partners that can comply with green procurement and CSR procurement standards ● Reduce environmental impact in manufacturing processes (conserve water, increase the recycling rate, reduce the use of hazardous materials, etc.) ● Develop and provide long operating life products ● Strict control of environmentally hazardous substances contained in products ● Expand bearing refurbish business and MRO business	5 6 7
	Response to natural disasters	● Shutdown due to a disaster ● Spillage of oil, chemical substances, etc. caused by natural disasters ● Disconnection of supply chain	● Increasing demand for emergency power source ● Expansion of partnerships	● Formulation of BCPs and BCP drills at the NTN Group ● Provide independent power supply utilizing renewable energy-based power generation and storage technologies	2 4 8
Changes in demographics	Medium-to long-term labor shortage	● Impact of a human-dependent production system on stability of operations	● Accelerating labor saving and automation of production lines	● Provide robot-related modules such as i-WRIST™ in response to labor-saving issues ● Realization of smart factories including Wakayama Works ● Promote and maximize the diversity of employees ● Promote production reform and reorganization ● Promote the work style reform	4 6 8 10 11
	Growth of emerging countries	● Entry of emerging manufacturers ● Soaring procurement prices due to the entry of competitors ● Shortage of limited materials and resources	● Expansion of sales opportunities due to increasing demand ● Increasing demand for new driveshafts due to transition to front-wheel drive (FF) vehicles ● Increasing demand for high performance products that meet environmental regulations	● Stable supply of basic products ● Global production supporting optimal supply ● Realize the best mix of global and local procurement	6
	Issue of business succession	● Suppliers and sales distributor going out of business	● Start of business with new suppliers	● Support business continuity through dialog with suppliers ● Develop new business partners ● Reorganize suppliers and shorten supply chain	6 7
Globalization of the business	Trade friction and tariffs	● Sluggish global demand ● Disconnection of supply chain caused by dependence on one country (China risk, etc.) ● Downward pressure on profits due to higher tariff costs ● Rapid exchange-rate fluctuations	● Expanding opportunities to supply products and services utilizing global networks	● Realize the best mix of global and local procurement through procurement reform	6
	Prevention of child labor (human rights)	● Stopping the supply of parts ● Suspension of dealing with customers and deterioration of corporate image in the event of failure to respond to human rights issues	● Improvement of corporate image through active response to human rights issues	● Promote human rights due diligence ● Globalization of compliance ● Implement various training programs in compliance with laws and regulations in each region ● Start business with new suppliers ● Acquire new human resources	6 7 9 12
	Response to conflict minerals	● Deterioration of quality ● Suspension of dealing with customers and deterioration of corporate image in the event of failure to respond to conflict minerals issues	● Improvement of corporate image through active response	● Promote human rights due diligence ● Implement CSR questionnaire surveys of suppliers ● Respond to conflict minerals surveys conducted by customers ● Stable supply of adapted products	6 7 9
	Rise of low-cost products	● Intensified price competition due to aggressive sales by emerging manufacturers ● Loss of sales opportunities ● Loss of brand value due to lower prices	● Growing demand for high performance, highly functional products due to lower quality of products on the market ● Demonstrating competitive advantage through differentiation of products and services	● Expand product lineup and inventory ● Develop markets for the aftermarket business ● Promote development of service-oriented businesses ● Active outsourcing of general-purpose products ● Integrated sales strategy in aftermarket and industrial machinery businesses ● Differentiation by services	6

Materiality ➔ P.19

NTN's Capital and Strengths

NTN is committed to investing the management capital it has accumulated over our 100+ year history to strengthen its strengths in original technology, quality, and service for future growth. NTN also deploys these strengths in each of its businesses to conduct business activities that meet the needs of the world.

Invested Capital

Number of patents held: 6,192
Enhanced correspondence education and training system for technical personnel development

R&D sites: 9 sites in 4 countries
Global structure supporting high technological capabilities

R&D expenditures: 18.7 billion yen
Ratio of R&D expenditures to net sales: 2.4%
Invested in R&D for sustainable growth

Number of employees (consolidated): 23,027

Production sites: 70 sites in 14 countries
- Eight representative teams from around the world participated in the Global QC Circle Convention
- 69 teams from all over the world entered NTN PROUD AWARD

Energy consumption: 6,456 TJ/year
Promotion of CO_2 emissions reduction and renewable energy introduction

Capital investment: 22.3 billion yen
Manufacturing process to maintain and improve quality

Customer satisfaction survey: 113 companies, Excellent + Good: 88%
- The number of technical service car visits for the fiscal year ended March 31, 2023 was 235
- Held 335 aftermarket Webinars

Production sites: 70 sites in 14 countries
In addition to global production, "FIRST", a system for the immediate delivery of popular products, is in operation

SG&A expenses: 108.8 billion yen
SG&A expenses that support service with high levels of satisfaction

NTN's Three Strengths

Original technologies

Tribology technology

- We are strong in manufacturing technologies such as heat treatment, precision machining, and precision measurement, which are indispensable for bearing manufacturing, and we pursue tribology technology through bearing R&D.
- We develop and sell not only rolling bearings, but also sliding bearings, electrical and mechanical parts, and unit/module products combining them as composite material products, using a wide range of materials such as resin, sintered metals, magnetic materials, etc., and advanced technologies such as fluid dynamic pressure technology

Sensing technology

- Development and supply of products equipped with high-resolution rotation sensors and double-row magnetic rings, which are the extension of NTN Europe's ASB® (Active Sensor Bearing) technology, the world standard
- Developed monitoring services for large wind turbines using the Condition Monitoring System (CMS) and achieved the top market share in Japan with more than 200 units installed through extensive support

Quality

Product quality

- High reliability proven by a long track record of supplying products for applications that support human life, such as the Shinkansen and aerospace, by developing a quality control system that won the Deming Prize, the first of its kind in the Japanese machinery industry
- Achieving the world's top class share in axle/drivetrain products that support safe driving

Personnel and work quality

- Human resource development for passing on know-how through the Global QC Circle Convention, the NTN Technical Skills Competition, and the TQM Convention
- Encouraging ESG activities by employees with the NTN PROUD AWARD

Services

Global network

- Providing products and services to customers from approximately 200 locations in 34 countries around the world
- Responding to market needs in each region through a four-pole global R&D system

Problem-solving customer responsiveness

- No.1 aftermarket share in Japan with the largest distributor network in Japan
- Providing remote technical support services globally
- Contribution to solving all kinds of customer issues by providing detailed support (from products to solutions)

Future Direction

- Differentiation through evolution of cultivated technologies, including low friction and multifunctional hub bearings
- Development of products to achieve carbon neutrality, such as hydrogen-related products

- Responding to new CASE market needs such as autonomous driving and sharing
- Development and advancement of AI algorithms to predict remaining useful life
- Development of "Talking Bearings™," which incorporate a sensor in the bearing that transmits abnormalities

- Stable supply of high-performance products
- Expanding the sophistication of quality control using IoT and AI to the manufacturing sector, including suppliers

- Strengthening the development of human resources who can "think and act by themselves" to achieve workplace goals
- Our corporate philosophy is instilled in our employees around the world

- Sales expansion in the Middle East and Africa regions

- Providing advanced preventive maintenance services through the use of big data
- Expanding remote technical support services and online technical workshops for end-users

Deployment of Strengths in Each Business

Aftermarket business ➔P.33

Expansion of services through hardware + software

In the aftermarket for all types of machinery, the need for maintenance services and solution businesses for entire facilities rather than just bearings is expanding, driven by the spread of AI and IoT.

NTN has the No. 1 share of the domestic aftermarket with its leading distributor networks and services, and has also expanded its overseas network. In the future, we will expand our services by utilizing our sensing technology and other know-how and digital technologies to capture further demand.

Industrial machinery business ➔P.35

Addressing climate change

Renewable energy is increasingly being deployed to achieve a carbon-neutral and decarbonized society.

We are strong in large bearings for the main shafts of wind turbines, and we also have the largest market share in Japan for condition monitoring systems (CMS) for wind turbines. In addition, we also sell green energy products that utilize our proprietary blade technology, which we expect to grow as the market expands.

Robotization

At manufacturing sites, there is a growing demand for labor savings and further efficiency gains due to labor shortages.

We are contributing to manpower saving and automation through high value-added products such as sensor-integrated bearings and Multi Track Magnetic Rings in addition to the i-WRIST™ wrist joint module based on CVJ technology. With the increasing demand for robotization, we expect to expand sales of related products.

Automotive business ➔P.37

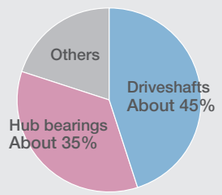
Adaptation to EVs

As the automotive market demands environmental responsiveness,fuel efficiency and CO_2 emission regulations for automobiles are being tightened in many countries, and the shift to EVs and electrification is accelerating at the initiative of governments.

We boast the world top class share of the market for hub bearings, which support tire rotation, and driveshafts, which transmit the rotation of engines and motors to tires, and our strength lies in our high technological capabilities and dominant market share in automotive axle/drivetrain products.

Driveshafts and hub bearings are our main products, accounting for approximately 80% of our automotive sales, and are essential not only for internal combustion engine vehicles (ICEVs) but also for electric vehicles such as HEVs and EVs, and demand is expected to continue growing. We will pursue further weight reduction, higher efficiency, and lower friction, and provide highly functional products to ensure our superiority in the market.

Composition of automotive sales



Financial Capital | Human Capital | Manufacturing Capital | Intellectual Capital | Social and Relationship Capital | Natural Capital

Strengths and Materiality Initiatives along the Value Chain

The Group is promoting initiatives in line with the materiality to respond to the SDGs by leveraging its strengths in R&D, procurement, Monozukuri (manufacturing), sales, and each of these processes. In developing business activities based on our corporate philosophy of “we shall contribute to the international society by creating new technologies and developing new products,” we create value in the value chain, leading to sustainable growth.

Materiality

Contribution to solving social issues toward the future we aim for

1. Respond to climate change
2. Realize a sustainable society using natural energy
3. Reduce energy loss
4. Provide safety and comfort

Foundation to support ESG management

5. Resource recycling and pollution prevention
6. Improve the reliability of products and services (Quality assurance, stable supply)
7. Procurement activities with an emphasis on environment and society
8. Promote safety and health
9. Respect for human rights
10. Human resource development
11. Promote diversity
12. Thorough compliance
13. Strengthen governance

Connecting to new R&D themes

Strengths that create value

R&D

We are building a technological foundation for sustainable growth by enhancing the value of existing products through deep plowing and deepening our core technologies and developing products in new areas that capture changes in the business environment.

In the automotive field, we are developing products that contribute to electrification, and have developed a bearing that achieves a dmn value* of 2.2 million as a further high-speed response to “High Speed Deep Groove Ball Bearings for EVs and HEVs,” which are designed for high-speed motor rotation due to the downsizing of electric drive unit products.

In the industrial machinery field, the use of robots at production sites is accelerating and work operations are becoming more diverse. We have developed a “Multi Track Magnetic Encoder Integrated Rolling Bearing” that can detect the rotation speed, direction, and absolute angle of robot joints, enabling improved joint motion accuracy and a reduction in the number of parts.

In the new area of business, we have developed a “Talking Bearing™” that incorporates a power generation unit and wireless device into an existing rolling bearing and wirelessly transmits information on temperature, vibration, and rotational speed to help realize advanced condition monitoring of equipment.

*dmn value: An index of bearing rotational performance; bearing pitch circle diameter (mm) x rotational speed (min^{-1})

Procurement

In Japan, procurement from overseas suppliers is progressing and global transactions are expanding.

In accordance with the Procurement Policy established in response to each of the SDGs, we will pursue international and open procurement by promoting local procurement and procurement in optimal locations from a global perspective, and aim for stable procurement that responds immediately to market fluctuations, while emphasizing quality and price advantages and delivery reliability. In addition, by complying with laws regulations and ethical standards and conducting fair and equitable transactions, we will not only ensure the trust of our customers and society, but also improve the competitiveness of our business partners and continue to achieve “sustainable growth” together with them.

We will contribute to the creation of a “sustainable society and environment” by promoting “green procurement,” in which we procure from suppliers that comply with environmental laws and regulations and are committed to environmental conservation, with consideration given to reducing their environmental impact. We will deepen mutual understanding with our business partners through business transactions and strive for coexistence and co-prosperity based on trust.

Monozukuri (Manufacturing)

As part of production reforms, we are promoting streamlining to optimize the entire process, including logistics, and are working to improve throughput by reducing inventories and lead times. Manufacturing sites are promoting DX to efficiently collect and analyze information, visualize problems, and quickly make improvements to increase productivity. We will also promote low-carbon manufacturing to achieve carbon neutrality, which will lead to increased corporate value, customer satisfaction, and profit generation.

In terms of quality, we are striving to ensure stable quality throughout the “process” from the development stage to the manufacturing process and delivery of products to customers. Specifically, we are “building in quality” throughout the company by conducting design reviews at each step, strengthening risk analysis when changes occur, and conducting quality audits at manufacturing sites. We promote the establishment of a global quality assurance system by incorporating remote audits, improving processes, and providing quality guidance to local employees when starting up production overseas.

Sales

In response to the rapid shift to EVs in the automotive market and the growing need for electrification in the industrial machinery market, we provide high value-added module products in line with customers’ new product development, and service solutions for wind turbines that utilize IoT technology to monitor the condition with bearings. We are developing consulting-based sales activities. In addition, for existing models currently in mass production, we are striving to take meticulous measures to ensure stable supply on a global basis amid the ever-changing global situation. For the aftermarket, we not only sell products, but also provide technical services such as demonstrations and workshops on how to handle bearings to increase customer satisfaction. In the fiscal year ended March 31, 2023, we held more than 300 technical seminars in remote format in Japan and abroad as the COVID-19 pandemic continued.

As customers’ needs are drastically changing due to the paradigm shift in the external environment, we will strive to improve our NTN brand and further enhance customer satisfaction by contributing to the realization of a sustainable society as characterized by carbon neutrality, as well as by increasing the functionality and added value of our products.

Results produced

R&D		Procurement		Monozukuri (Manufacturing)		Sales		
Number of patent publications:	Research and technology-related newspaper articles:	Ratio of local procurement:	Number of business partners conducting CSR questionnaires for suppliers:	Ratio of overseas production:	Acquisition rate of quality management system for consolidated subsidiaries:	Number of technical service car visits:	Number of online technical seminars:	Percentage of customer satisfaction (excellent/good):
440	15	70%	629	54%	100%	235	335	88%

Efforts in accordance with materiality

8 ● Promote health management ● Prevent occupational accidents ● Create a safe and secure workplace

10 ● Promote the work style reform ● Create a workplace to enhance employee engagement

11 ● Promote female advancement ● Promote senior employee advancement ● Promote employment of persons with disabilities

12 ● Thorough compliance

13 ● Strengthen governance

3 ● Save energy for EVs and electrification ● Increase efficiency of manufacturing equipment

2 ● Contribute to the spread of wind turbines use with hardware and software ● Contribute to the arrival of a hydrogen society

4 ● Contribute to automation and labor saving in the manufacturing industry by providing robot-related modules ● Contribute to disaster prevention and mitigation by providing independent power supply

1 ● Reduce CO_2 emissions from procured components and materials [Scope3]

6 ● Build the Quality Assurance System ● Create a foundation for stable supply ● Utilize digital technologies for stable supply

7 ● Promote green procurement ● Advance CSR procurement

9 ● Respond to human rights risks in the supply chain

1 ● Reducing CO_2 emissions in manufacturing [Scope1] [Scope2]

5 ● Use sustainable resources ● Manage and reduce environmentally hazardous substances

6 ● Build the Quality Assurance System ● Create a foundation for stable supply ● Utilize digital technologies for stable supply

9 ● Respond to human rights risks in employees

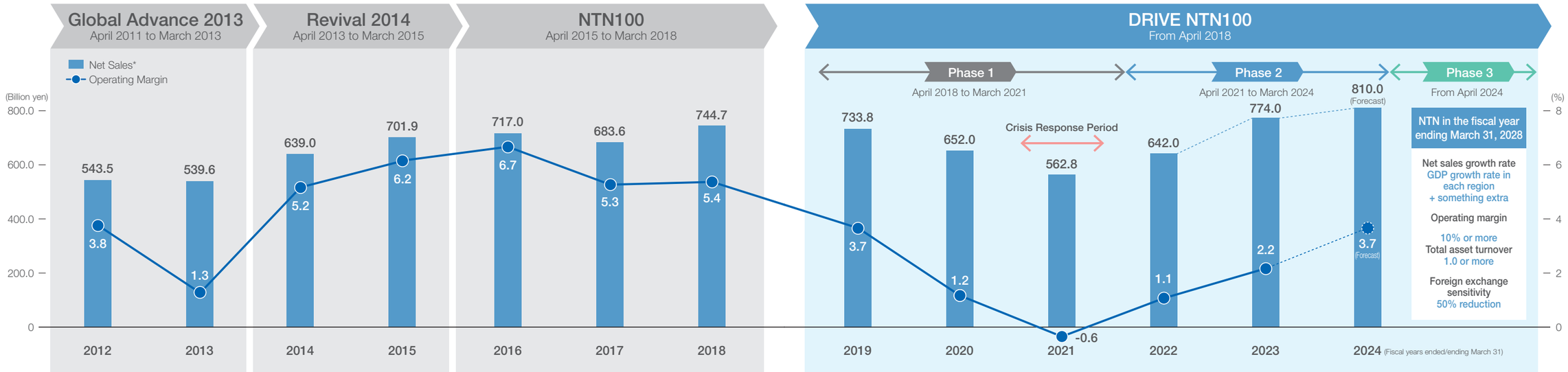
3 ● Expand the bearing refurbish business

1 ● Reduce CO_2 emissions in logistics activities [Scope3]

6 ● Build the Quality Assurance System ● Create a foundation for stable supply ● Utilize digital technologies for stable supply

Review of Management Plan

In 2018, when we celebrated our 100th anniversary, we launched the Medium-term Management Plan "DRIVE NTN100" to drive forward transformation of the business structure for the new 100 years. For the three years from the fiscal year ended March 2022 to the fiscal year ending March 2024, we are working on various measures as initiatives for the Medium-term Management Plan "DRIVE NTN100" Phase 2.



Global Advance 2013
April 2011 to March 2013

Basic policy

Acceleration of globalization by "On local sites with local materials by local personnel"

Priority measures

- Expand business globally with a focus on growth markets
- Establish world's No.1 business segments
- Establish new business segments such as EV systems
- Expand sales for Industrial machinery, Aftermarket & Distributor
- Expand sales in growth market
- Expand local production and procurement

Review

The Great East Japan Earthquake in March 2011 and Greece's fiscal collapse that came to light in 2010 led to the European financial crisis following the further downgrade of the Greek credit rating in July 2011. In addition, the impact of the flooding in Thailand on the automotive industry from the end of October 2011 led to a turnaround in business performance. As a result, we had no choice but to change direction.

Revival 2014
April 2013 to March 2015

Basic policy

Reform business structure to generate profit

Priority measures

Emergency measures

Short-term measure to generate profit

Centralization of management resources

Centralization of resources to priority fields

Structural reform

Mid-term business structural reform

Expansion of new product and new business

Toward future growth

Review

We were able to achieve numerical targets, exceeding the plan, but the benefits from exchange-rates were also substantial, and with regard to the basic policy of "Reform business structure to generate profit," issues remained unaddressed. We also recognized the need to create new businesses in order to sustainably grow into the next 100 years.

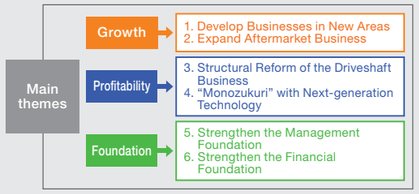
NTN100
April 2015 to March 2018

Basic policy

Foundation building for Our Vision

Implement main policies based on 3 Basic Policies to become a co-creative partner company for customers





Review

We took measures for transformation to cope with the major changes in the external environment, the strengthening of basic technologies and products, and the development of new business areas. Through these initiatives, we recognized that the next challenge is to "drive forward transformation of business structure for the new 100 years."

DRIVE NTN100
From April 2018

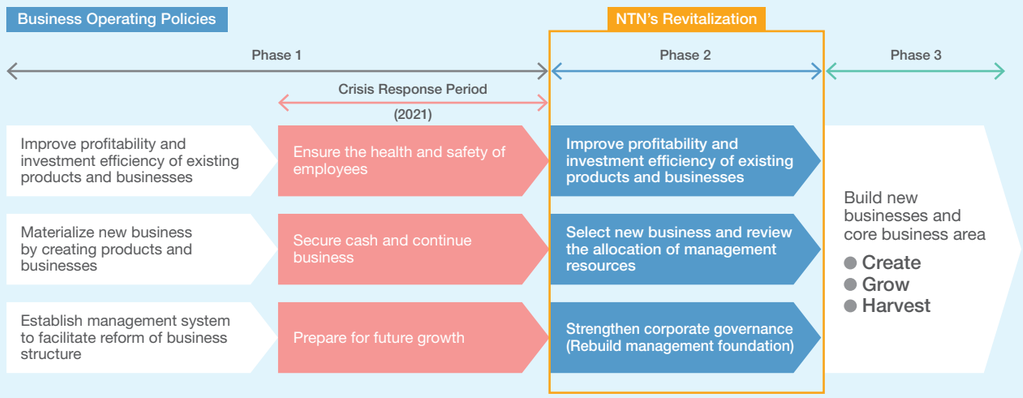
Basic policy

Drive Forward Transformation of Business Structure for the New 100 Years
～ DRIVE NTN Transformation for New 100 ～

Basic Strategy

Digitalization (latest digital technology) × **Resources** (Management resources that NTN has developed)
Innovation (development of innovative technologies, products and services)
Variable cost reformation (procurement reformation)
Efficiency improvement
(achievement of the world's No.1 productivity and quality/improvement of asset efficiency)

Business Operating Policies



* "Loyalty," which was previously included in "non-operating income," has been changed to be included in "net sales" from the fiscal year ended March 31, 2021. The period for retroactive adjustment is after the fiscal year ended March 31, 2017, which is subjected to audit by an audit firm.

NTN's Business Environment

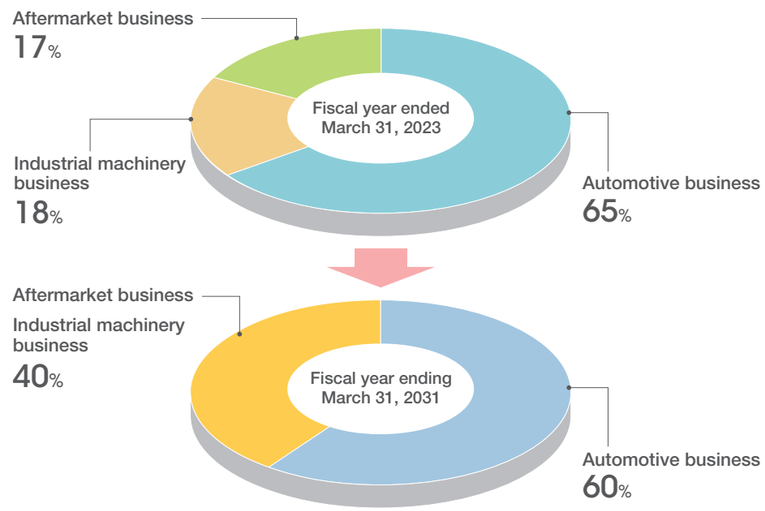
NTN's Business Environment			NTN's Main Strategies
Response to paradigm shift	• Spread of next-generation mobility • Electrification of industrial machinery • Spread of AI and IoT • Spread of infectious diseases (COVID-19)	Japan	• Market shrink due to the depopulation (decreasing birthrate and aging population) • Promoting response to climate change • Materialization of Society 5.0	• Save labor and reorganize production • Use external resources • R&D of electrification and new products
Response to environmental issues	• Reduction in CO_2 emissions • Requests for energy-saving machinery • Reduction in environmental impact • Response to natural disasters	Americas	• Moderate population and economic growth • Policy shift by the new president Economic policy shift to respond to climate change U.S. and China struggling for hegemony • Medium- to long-term decline in crude oil price	• Strengthen products for large vehicles • Expand aftermarket business • Promote local procurement
		Europe	• Trend of population declining • Economic policy for climate change (European Green Deal) • Significant strengthening of regulations for fuel efficiency and CO_2 • Uncertainty due to Brexit	• Focus on products for EV • Expand aftermarket business • Develop Middle East / Africa market
Changes in demographics	• Medium- to long-term labor shortage • Growth of emerging countries • Issue of business succession	China	• World's No.1 population (decreasing birthrate and aging population over the long-term) • Economic policy for climate change and next-generation technology (Made in China 2025) • Social infrastructure investment in inland areas • Significant strengthening of regulations for fuel efficiency and CO_2	• Expand volume • Focus on products for EV • Focus on wind turbines and rolling stocks • Strengthen CMS business
Globalization of the business	• Trade friction and tariffs • Prevention of child labor (human rights) • Response to conflict minerals • Rise of low-cost products	Asia	• Increase of population and middle-income group • Social infrastructure investment • Progress of digitization in emerging countries	• Expand volume • Utilize LCC products to strengthen cost competitiveness • Expand aftermarket business

Rebuild Business Portfolio and Product Portfolio

We categorize NTN's main businesses into a "Creation sector," "Growth sector," and "Harvest sector" and concentrate management resources on these sectors. As to business portfolio, we focus on expansion of aftermarket business.

	Industrial machinery business	Aftermarket business	Automotive business
Creation sector Establish new areas for future growth	• Life sciences (drug discovery and regenerative medicine) • Hydrogen energy market • Expand market for wrist joint robots • Condition Monitoring (CMS)	• Expand sales in the Middle East and Africa • Develop "Talking bearing" and "Thinking bearing"	• Products adapting to electrification eHUB, sHUB Electric brake
Growth sector Expand businesses Concentrate resources	• Green energy products • Robot / gearbox • Wind turbines (ultra-large size bearing) • Machine tools (European market) • Rolling stock (Chinese market)	• From product sales business to service-oriented business Strengthen MRO Bearing refurbish business Failure detection	• Products adapting to electrification Electric module products • Existing products fitting EV Low friction, higher efficiency
Harvest sector Secure stable profit	• Improve profitability by enhancing cost competitiveness Construction machinery (electrification and high-performance products) Agricultural machinery (sales expansion of CVJ for industrial machinery) Aerospace	• Secure saleable inventory Highly competitive products (BU, etc.) Use of overseas production and external procurement	• Focus on the vehicle segment where NTN's strengths can be utilized • Optimize customers portfolio • Secure volume in growth markets
	Reduce fixed cost and expand supply capacity by outsourcing manufacturing (breaking away from self-sufficiency) of standard products such as ball bearings		

Business composition ratio



R&D (Research & Development)

NTN's basic stance on R&D

With the goal of contributing to the realization of a carbon-neutral society, our group is promoting research and development based on two pillars: the evolution of our core products, such as rolling bearings, hub bearings, and driveshafts, and the application of our accumulated technologies to new areas, or exploration.

We will accelerate our contribution to the international society by promoting the following six areas set forth in the Mid-term Management Plan "DRIVE NTN100" Phase 2, while strengthening external collaboration with the NTN Next Generation Research Alliance Laboratory, Osaka University, which started its new structure in April 2023.



Executive Officer CTO (Chief Technology Officer) **Masaki Egami**

"DRIVE NTN100" Phase 2

Investing R&D resources
in six target areas

R&D Direction

- **Carbon neutrality (Reduction of environmental impact and decarbonization)**
- **Pursuit of safety, security, and comfort**

NTN's Intellectual Property Strategy

The Group's intellectual property is a source of creating new value, and we are promoting the appropriate protection and utilization of intellectual property rights globally in line with our business and R&D strategies.

In addition to intellectual property rights that will help maintain and strengthen the competitiveness of our core products, we will create intellectual property that will ensure pioneer profits by utilizing the IP landscape in new areas. In the field of energy supply including wind power generation in GX*, our group has obtained many patents among bearing manufacturers. Production technology and software are also important technologies that we will protect and utilize through our open/closed strategy to improve our competitive advantage.

*GX: Green Transformation

Six target areas to invest R&D resources

1 Service/solution

The need for predictive maintenance through equipment condition monitoring is increasing at manufacturing sites. While maintaining the standard size of a rolling bearing, we have developed a "Talking Bearing™" that incorporates a sensor, power generation unit, and wireless device to measure temperature, vibration, and rotational speed, and transmit the obtained data wirelessly. Talking Bearings™ are products that do not require special equipment design or wiring for installation and facilitate the introduction of equipment condition monitoring, contributing to improved production efficiency and stabilized quality at production sites. In addition, a bearing diagnostic application compatible with the industrial IoT platform "Edgecross" has been developed and a free trial version is now available. Industrial PCs and related equipment with the basic software installed are loaned free of charge for a certain period of time to users who are considering building an IoT system to experience the usefulness of this application.

In the future, we will work to expand our service business by integrating AI analysis technology with bearing technology to further enhance the functionality of condition monitoring.



Talking Bearing™

2 Robot-related module

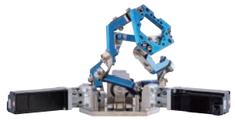
We have launched the TRINITTE™, our unique feeder for picking robots that supplies parts from a rotating disk and automatically resupplies parts even if they are missed, and it has been well received. We have developed a compact and lightweight "Rotary Actuator Type Hand" for picking robots to be used in combination with TRINITTE™. When attached to a SCARA robot, picking can be performed from the side or diagonally. This product can significantly reduce the number of parts missed, and it realizes stable and continuous picking of parts with an inexpensive equipment configuration.

In the i-WRIST™ wrist joint module for robots, the maximum weight capacity has been increased from 1 kg to 3 kg to accommodate a wider range of end-effectors than before, which has been well received.

We will continue to propose module products for robots that contribute to the promotion of efficiency and automation as a measure to reduce manpower at manufacturing sites.



TRINITTE™ cooperatively connected with a picking robot



i-WRIST™ IWS series

3 Next-generation mobility module

To achieve carbon neutrality, the electrification of automobiles and EVs is essential, and we are developing module products that will contribute to the further enhancement of rolling bearing functionality and performance, as well as to the electrification of automobiles.

We have developed and started providing samples of "Bearing with Insulating Coating" and "Creepless Bearing" to suppress electrical pitting of bearings and wear of aluminum housings, which are increasingly required as electric drive units become smaller and higher voltages are applied. In addition, we have developed a rolling bearing that achieves a dmn value* of 2.2 million as a further high-speed response to "High Speed Deep Groove Ball Bearings for EVs and HEVs," which support the miniaturization of motors.

We will continue to develop products that anticipate market needs and contribute to the shift to EVs, autonomous driving, and carbon neutrality by leveraging our core competencies and incorporating next-generation technologies.

* dmn value: An index of bearing rotational performance; bearing pitch circle diameter (mm) x rotational speed (min^{-1})

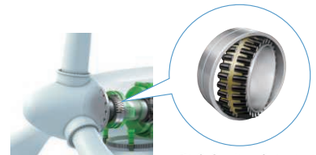


Applied areas in parallel axis e-Axle (red circle)

4 Renewable Eenergy-related

The main shaft bearings are becoming larger in diameter in line with the increasing size of power generation equipment, particularly for offshore wind turbines. We have developed a market for Asymmetrical Spherical Roller Bearings with a DLC (diamond-like carbon) coating on the roller surface for superior wear resistance, contributing to the stable operation of wind turbines.

Meanwhile, we are developing the N^3 N-CUBE, a mobile power supply using natural energy, for the market. For the purpose of disaster prevention and regional infrastructure development, the product is used in evacuation centers during disasters, emergency food and medical supplies storage warehouses, waiting rooms at bus stops in locations where it is difficult to install grid power, flush toilets with freestanding treatment tanks, and workation facilities. With increasing awareness of safety and security, it is expected to be applied to a wide range of applications. We continue to contribute to the creation of a safe and secure community for local residents.



DLC Coating Spherical Roller Bearing



Bus waiting area using "N^3 N-CUBE"

5 Hydrogen-related

Hydrogen is attracting attention as a next-generation energy source, and technological development is being actively pursued globally in all aspects of its utilization, including production, transport, storage, and use. We are developing the application of products used in high-pressure hydrogen compressors for hydrogen stations, which are indispensable for the widespread use of fuel cell vehicles (FCVs). Mechanical parts used in hydrogen-related equipment are used in special environments such as hydrogen exposure and high pressure, requiring higher reliability and durability.

We have started sample production and delivery of Hydrogen Embrittlement Resistant Bearings with longer service life achieved by special heat treatment technology to prevent premature failure of rolling bearings caused by hydrogen. In addition, resin products developed using our composite material technology have been adopted as sealing components for hydrogen environments, and we are working to further improve their performance through industry-academia collaboration.

We will continue to promote the development of technologies and products applicable to FCVs and equipment for various infrastructure facilities necessary for the social implementation of hydrogen.



Hydrogen Embrittlement Resistant Radial Bearing



Hydrogen Embrittlement Thrust Bearing

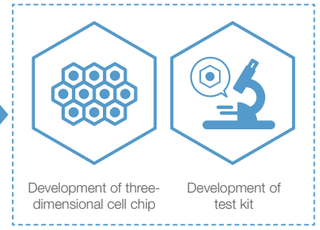
6 Life Sscience-related

As one of the applications of our proprietary microscopic coating applicator, which excels in the quantitative and fixed positional application of high-viscosity liquids, we are developing cell chips with human iPS-derived cells coated on a plate. Using this device, it is possible to form three-dimensional cellular tissue, and it has been shown that the response is more similar to that of the human body than conventional two-dimensional tissue. It is expected to replace animal experiments using mice and other animals for safety evaluation in the drug discovery process.

We will continue our manufacturing research for further functionalization and mass production of 3D cell chips to contribute to improving efficiency and speeding up the development of next-generation drug discovery.



Microscopic coating applicator



Aftermarket Business

Aiming at both share expansion and profit ratio improvement



Executive Officer **Etsu Harima**

In our aftermarket business results in the fiscal year ended March 2023, both sales and operating income marked a record high, with an operating margin of 16.6%. We understand these results as outcomes of our continued price increase activities, including price list revision, to enable us to reflect higher prices of raw materials, energies, etc. in selling prices, as we did in the previous fiscal year. However, we are still behind global competitors in terms of the market share in the global market, and I think there is room for us to increase the sales profit ratio further.

With regard to standard catalog products, expansion of fast-moving items inventory and development of a prompt delivery system will lead to a wider sales opportunity. Therefore, we will increase the number of sales companies accessible to FIRST, a system for the immediate delivery of popular products, while expanding inventories of popular products for the aftermarket. I think we can increase our sales further by improving inventories of popular products and developing an immediate delivery system for orders from all over the world.

As for MRO (Maintenance, Repair and Overhaul) projects, we put our focus on relatively large bearings such as those for steel manufacturing and paper manufacturing machines. In addition to standard products, which are facing harsher price competition under commoditization, we will strengthen sales activities for high value-added bearings by leveraging NTN's strengths. We will also focus on responding to new demands by enhancing our supply capacity for the aftermarket through production transfer to overseas, as well as expanding our production capacity at domestic plants. In response to demand for replacement of automotive-related bearings and constant-velocity joints, we are implementing activities appropriate for each locality, with a view to transferring our headquarters functions to Europe, a center place of our sales.

We are also promoting expansion from products to services, in other words, innovation to businesses that will make profit by adding various services to bearings. More specifically, we have started measurement of operating data of industrial machinery and facilities using "Talking Bearing™ " with built-in sensors and generators, and analytical and diagnostic report services for measurement data obtained by using NTN Portable Vibroscope. In remote technical support services, we have enabled engineers in Japan to provide advice on equipment for overseas users via monitors. Through steady implementation of a series of these initiatives, we will establish a business model for providing even better services, beyond simply selling bearings.

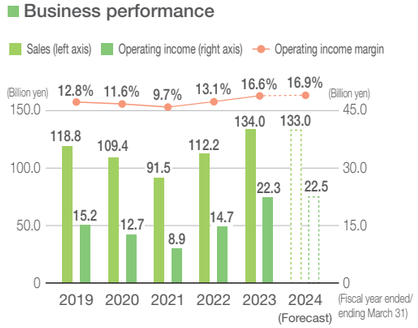
In our future aftermarket business, we will focus on providing high added-value by not only enhancing the "availability" of inventories through the FIRST immediate delivery system for general-purpose products but also improving "solutions" through combination of various services. In the aftermarket business, which is indispensable for higher productivity and stable operation of customer equipment, we are creating a system that is not significantly affected by fluctuations in market demand. With our eyes on capturing further global demand, etc., we will strive to achieve an even higher profit ratio.

Results for the fiscal year ended March 31, 2023 and forecast for the fiscal year ending March 31, 2024

Net sales for the fiscal year ended March 31, 2023 totaled 134.0 billion yen as a result of year-on-year growth in all regions, including overseas and Japan, due to a recovery in demand from the COVID-19 pandemic and strengthened supply capacity, despite the impact of the situation in Ukraine. Operating income was 22.3 billion yen, a record high for both net sales and operating income, as a result of efforts to absorb cost increases caused by external factors such as surging raw material and energy prices, which were passed on to selling prices.

For the fiscal year ending March 31, 2024, we are forecasting net sales of 133 billion yen, down 1 billion yen year on year, due to the still uncertain situation in Ukraine and the risk of a global economic recession, but excluding the impact of exchange rates, we are forecasting 103% year on year volume growth. In the current fiscal year, we will continue to strengthen our supply capacity for the aftermarket, as we did in the previous fiscal year, and at the same time, we will continue to raise prices by revising the price list and other means in order to pass on higher inflationary costs to selling prices, aiming to improve profit margins.

■ Business performance



"DRIVE NTN100" Phase 2 strategy

Initiatives to be focused on during the three-year period (From the fiscal year ended March 31, 2022 to the fiscal year ending March 31, 2024)

- By sharing sales strategies across different types of businesses, concentrate resources on important industries
- Strengthen organizational structure to improve supply capacity, service response, and profitability
- Strengthen e-commerce
- Promote business development in the service-oriented business

2020	2021-2023	2024-
	Rebuild revenue base	From products to services
	Increasing the brand value	

Strengthen product-and-service business
- Expand bearing refurbish business
- Use of NTN Portable Vibroscope (In addition to sales of devices, analysis report business)



- Commercialize the condition monitoring of customers' equipment by utilizing sensor technology and IoT and grasp the demand for bearing aftermarket

Strengthen service response
- Strengthen technical support functions in overseas sales companies (ASEAN and India regions)
- Technical service units activities and technical seminars for distributors
- Further strengthen measures against counterfeit bearings



- Develop and expand technical service through the use of remote support cameras



Strengthen the ability to supply
- Maintain available stock for aftermarket
- Prioritize production capacity for aftermarket (use of new IT core system)
- Expand use of overseas manufacturing sites and external procurement



- Accelerate "Made by NTN" by actively utilizing products manufactured overseas
- Strengthen the network system with distributors and expand e-commerce

Strengthen structure and organization
- Expand sales in growing industries through integrated response from OEM to aftermarket
- Improve profitability by short-term concentration through task force activities for key market
- Strengthen sales structure in the Middle East and Africa (A sales company established in UAE in January 2021)



- Relocate automotive aftermarket's headquarters functions to Europe
- Expand sales in potential markets such as China through the use of resources in Europe

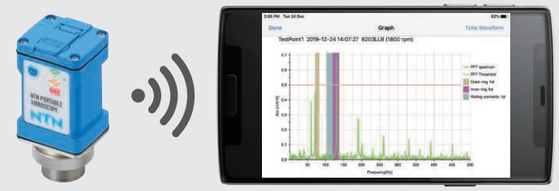
TOPICS

Initiatives to strengthen supply capacity

We are working to enhance our brand value to expand our aftermarket business. One of these measures is to strengthen supply capacity for the aftermarket. In order to ensure a stable supply of popular products to our global distributor network, which is one of NTN's strengths, we are expanding our "FIRST" system for immediate delivery of popular products for the aftermarket. FIRST is a system that keeps an inventory of popular products for aftermarket and automatically supplies bearings to NTN Group sales companies according to actual sales.

In terms of production, we are shifting to overseas production of standard small radial ball bearings in order to expand supply capacity. We promise to provide global quality by "Made by NTN", maintaining the same quality as products manufactured in Japan even if they are manufactured overseas. We are also expanding our production facilities in Japan for medium-sized radial ball bearings to supply for the aftermarket in a timelier manner.

In addition to product supply, we are also working to strengthen our aftermarket service. NTN Portable Vibroscope is easily portable and can be used to diagnose the condition of equipment and bearings periodically. For the purpose of preventive maintenance of operating facilities, we have started a business to provide customers with a "diagnostic report service" in Japan by analyzing the data measured by this device. We have received numerous inquiries since we launched promotional activities for this business on the web in March 2023. We plan to expand this business globally.



NTN Portable Vibroscope



Industrial Machinery Business

Enhancing the profitability through strategic expansion

Executive Officer **Etsu Harima**

In the industrial machinery business, both of our sales and operating income hit a record high in the fiscal year ended March 31, 2023. The operating margin was over 5%, partly due to our continuous cost reduction activities, price increases in unprofitable businesses, and influence of exchange rates. However, we are far from satisfied with these figures, and have already recognized issues for improvement in all fields of production, sales, and technologies. By addressing these issues properly, we think that the operating margin will improve further.

As specific measures, we will shift from the strategy of pursuing the scale of sales through low-margin, high-volume sales. In terms of bearings, we regard ourselves to be reaching a point of transition from offering a comprehensive collection of products, like department stores, to focusing on markets where we can demonstrate our value.

On the other hand, we are also required to respond to higher costs, such as raw materials, fuels, and labor. We need to take a two-way strategy of continuing activities for productivity improvement and cost reduction while reflecting higher costs in product prices. For unprofitable businesses, price increase and scale reduction are required, together with strategies for fighting out in focused growth markets. As for general bearings, we will concentrate on offering added value, by assuming growth of competitors in China and India.

Markets we think we should focus on in the future include construction machinery, agricultural machinery, and industrial robots, for which growing demand are expected, as well as infrastructure-related markets such as wind power generation and rolling stock.

With the current trend of decarbonization, big business opportunities will emerge if a shift from internal combustion engines to motors advances also in construction machinery and agricultural machinery. This is because many of motor manufacturers are already our customers in the industrial machinery industry, so we are promoting initiatives that will surely connect this competitive advantage to outcomes.

With regard to industrial robots, the demand has been growing for the purpose of labor-saving, and robot arm reducers, one of its indispensable components, are indeed a collection of bearings. We will respond to new demands by providing bearings necessary for realizing high-accuracy movement.

As for wind power generation, a long design life of 20 years or more is required, and thus extra-large sized bearings to be built into such equipment must ensure an extremely high quality and reliability. In this regard, we have strength of our competitive advantage recognized in the big Chinese market. We will differentiate ourselves and provide high added value by using CMSs (condition monitoring systems) that realize timely replacement of bearings through monitoring. We consider wind power generation to be a promising market, partly because Japan also seems to focus on offshore power generation in the future.

For rolling stock application, which requires high quality and reliability, China is likewise an important market for us. In the Chinese market, domestic production of main parts such as bearings has been promoted as a national policy, to which we need to pay attention regarding its future development. We will continue to focus on launching new products and services in growing markets to further improve our operating margin.

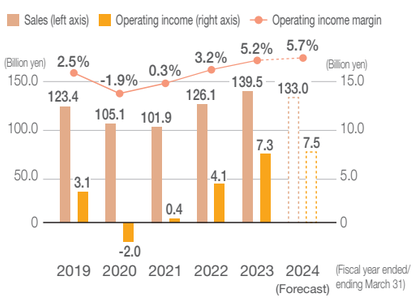
Results for the fiscal year ended March 31, 2023 and forecast for the fiscal year ending March 31, 2024

In the fiscal year ended March 31, 2023, sales reached a record high of 139.5 billion yen on the back of increased sales for construction machinery due to increased mining demand and for aircraft due to a recovery in passenger demand. Although there were increases in proportional costs such as steel and energy prices, record operating income of 7.3 billion yen was achieved due to activities to pass on selling prices and the impact of foreign exchange rates.

In the fiscal year ending March 31, 2024, the demands of aircraft and gearbox are expected to remain strong. On the other hand, for wind power generation, with the peak demand in 2020, the demand adjustment phase is expected to continue in the current fiscal year.

Under these assumptions, we will work to further improve profit margins. We will continue to pass on inflationary costs, raise prices and withdraw from unprofitable businesses, and engage in cost reduction activities such as procurement of low-cost parts, including those made in India, mainly for bearings for wind power generation and rolling stock.

Business performance



"DRIVE NTN100" Phase 2 strategy

Initiatives to be focused on during the three-year period (From the fiscal year ended March 31, 2022 to the fiscal year ending March 31, 2024)

- Select target areas
- Improve selling price and reduce or withdraw from unprofitable areas
- Reduce costs by procuring materials and parts from optimal locations (actively utilize materials from China and India)
- Expand sales of Wrist Joint Module "i-WRIST™"
- Expand service / solution business (CMS)
- Expand renewable energy-related products

2020		2021-2023			2024-
		Rebuild the revenue base		VS FY2020	Growth strategy to respond to market change
Creation sector	Robot-related business (i-WRIST™)		Gain large customers Promote acquisition of overseas certified standard	↑↑↑	Expand overseas business Develop new applications and derivatives
	Service / solution business (CMS)		Establish maintenance service for wind turbine bearings and overseas expansion	↑↑↑	Gain bearing demand by leveraging CMS technology
Growth sector	Gearbox		Develop RV gearbox bearing Expand sales of elastic bearings for wave motion gears	↑↑↑	Expand sales in China (Follow changes in the industry)
	Wind turbine		Focus on capturing demand in China Drive sales and profit increase	↑↑↑	Improve profitability by capturing aftermarket demand Expand production capacity
	Machine tools		Expand sales of machine tools in China and India Utilize products manufactured in a plant in Germany to sell them on the European market	↑↑	Expand CMS needs due to spread of IoT Expand sales of bearings with sensors
	Rolling stock		Promote drastic cost reduction measures including local production in China	↑↑	Capture demand for railway network expansion and subway in China
Harvest sector	Construction machinery		Utilize competitive materials and components Adapt to electrification, shift to high function products	↑	Follow changes in social structure and infrastructure Make sure to capture demand for electrification
	Agricultural machinery		Expand sales of high value-added products Expand sales of CVJ for industrial machinery	↑	
	Aerospace		Withdraw from or reduce unprofitable projects Improve profitability by concentrating production in NTN Europe	→	Earn profits in MRO market Expand sales for space industry

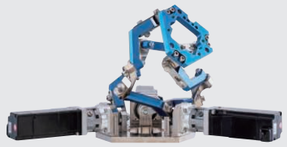
TOPICS

Wrist joint module "i-WRIST™" IWS series improved portability

A new grade "IWS-C01" with improved portability of the "IWS series" of i-WRIST™ wrist joint modules has been developed. The maximum payload has been increased from 1 kg to 3 kg, enabling a wider range of end-effectors to be mounted and products to be handled than in the past, and contributing to automation and streamlining of various manufacturing processes as well as labor savings at production sites.

Specifically, when controlling the posture of products with i-WRIST™ in visual inspection applications, it is possible to handle not only small and lightweight plastic parts, but also most products that are heavy enough to be handled by human hands, such as small aluminum die-cast parts. In addition, when "i-WRIST™" is controlled by an end-effector attached to it, it can be equipped with large lighting and a high-performance camera, enabling detection of finer scratches and dents. In addition to visual inspection, the system can also be utilized in processes where the load on the end-effector fluctuates greatly, such as deburring.

Through further performance improvement and application development of "i-WRIST™", NTN will contribute to automation, efficiency, and quality stabilization at manufacturing sites.



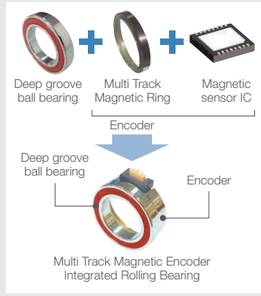
i-WRIST™ IWS series

Development of "Multi Track Magnetic Encoder Integrated Rolling Bearing"

As a product that supports the expansion and diversification of robot demand, we have developed a "Multi Track Magnetic Encoder Integrated Rolling Bearing" that has excellent environmental resistance and is capable of high-precision angle detection. A magnetic ring and sensor are attached to the deep groove ball bearing that supports the joint mechanism of the robot to provide detection of rotational speed, direction, and absolute angle, contributing to improved robot performance, smaller and lighter weight, and reduced man-hours for assembly and set-up. In addition, magnetic encoders have excellent environmental resistance, enabling high detection accuracy even in operating environments where dust and oil are present.

The developed product integrates a bearing and a magnetic encoder, eliminating the need for mounting and setup work for the rotary encoder and coupling, and facilitating robot assembly. The bearing dimensions and load capacity are the same as those of general bearings and can be applied to a wide range of robot types.

NTN will propose this new product to robot manufacturers, etc., and promote the expansion of the robot peripheral module field.



Business Strategies

Automotive Business



Provide unique suggestions to quickly resolve customer issues
Aiming to be a leading manufacturer in the power/drive train system

Executive Officer **Hideaki Miyazawa**

The automotive business has been in the red for four consecutive fiscal years since 2019. Two main reasons exist for this: the external environment and internal responses. External factors, which had a great impact, were the spread of the COVID-19 pandemic, subsequent semiconductor shortages, and unprecedented cost increases. First of all, due to the COVID-19 pandemic, the production of automobiles itself shrank from 95 million units to 75 million units per year, and demand for our products disappeared as a result.

Just as the COVID-19 pandemic subsided and automotive manufacturers were about to ramp up production, they were hit with a semiconductor shortage. The semiconductor shortage has become more of an issue as the shift from ICEs to EVs and electrification has increased the number of semiconductors needed per vehicle to about seven times the previous number.

In addition, the rising cost of steel and other materials, as well as rising energy costs, have rapidly increased our manufacturing costs.

The failure to respond adequately to these changes in the external environment was another major reason for the deficit. In other words, we were unable to pass on increased costs to customers during the period, and, on the production side, we were unable to respond flexibly to rapid changes in demand, which resulted in a build-up of work in progress. Although we have been affected by many external circumstances, we are still ashamed of the fact that we have been in the red for some time.

So how will NTN's automotive business withstand the revitalization in the future? The shortage of semiconductors is not yet over. However, automobile production is recovering, reaching 85 million units. We are determined to make a profit in the fiscal year ending March 31, 2024, and we are determined to promote our business.

Fortunately, the trend toward EVs and electrification is a positive factor for us. In EV and electrification, demand for hub bearings and driveshafts, which account for about 80% of sales in the automotive business, is expected to increase as the shift to all-wheel drive continues. Despite increased battery weight due to electrification, reasonable electric cost is required, so reducing parts weight is essential. Also, unlike ICEs, EVs increase output simultaneously and require each part to be rigid against larger torque. This allows us to leverage our technological strengths to meet the conflicting weight reduction demands and improved durability.

In parts supply, price competition with Low Cost Countries (LCCs), mainly from emerging countries, is intensifying. In this competitive environment, we will develop a differentiation strategy based on value, not price. Our unique value proposition lies in our ability to deliver proposals that directly solve customer problems with an amazing speed. The backbone of our problem-solving capabilities is the accumulation of technical expertise that we have gained over many years of handling global projects, a level of expertise that is unrivaled by LCCs. We will develop our business at an appropriate price by having our customers recognize the unique added value that we offer as value.

At the same time, by promoting procurement and production reforms within the company and working to shorten and appropriate the supply chain, we will strive to reduce the retention time of semi-finished products, quickly cash in merchandise, and reduce inventories. In particular, we will accelerate the use of low-cost materials and parts that we have not yet been able to penetrate deeply. On the production side, we will further strengthen productivity improvement activities to minimize total cost increases even as unit prices of procured goods and energy rise, thereby promoting a different design and production philosophy from the past.

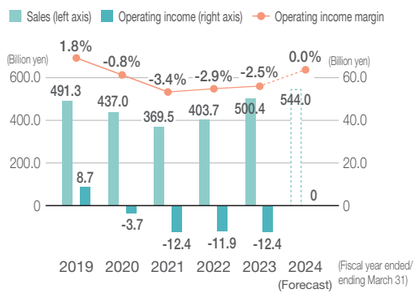
In order to promote a series of measures, negotiations with customers are essential. As I did before the COVID-19 pandemic, I will personally travel overseas to meet with customers to deepen my understanding of this issue. Return to profitability at all costs through continuously implementing a series of measures. I know it is my responsibility.

Results for the fiscal year ended March 31, 2023 and forecast for the fiscal year ending March 31, 2024

For the fiscal year ended March 31, 2023, net sales were 500.4 billion yen due to a gradual recovery in automobile production and the impact of passing on inflationary costs to selling prices, although semiconductor supply shortages continue. However, in addition to soaring energy and procurement material costs globally, sales in the China region fell more than 50% below expectations due to the disruption caused by the zero-COVID-19 policy and the termination of the passenger car purchase tax reduction program, resulting in a significant decline in operating income of -12.4 billion yen.

Although the outlook for sales in the fiscal year ending March 31, 2024 remains uncertain, we expect sales to increase as the supply shortage of semiconductors gradually eases and automobile production is expected to recover as in the previous fiscal year. To improve profits, we will continue to thoroughly implement price revisions, including withdrawal from unprofitable businesses, as well as 100% price shifting of inflationary costs, including those carried over from the previous fiscal year. Furthermore, we will accelerate procurement reforms and expand our procurement network, especially in emerging countries, while ensuring quality.

Business performance



"DRIVE NTN100" Phase 2 strategy

Initiatives to be focused on during the three-year period (From the fiscal year ended March 31, 2022 to the fiscal year ending March 31, 2024)

1 Strengthen the profit structure

- Promote variable cost reduction through procurement reformation
- Reduce manufacturing fixed cost by reforming Monozukuri and improving productivity
- Reduce fixed cost by utilizing RPAs and improving the organizational structure and systems
- Thorough selling price management, reduction and withdrawal from unprofitable areas (regions and products)

2 Optimize portfolio to support sustainable growth

- Develop high performance and high value-added products responding to the environment, EVs, and electrification
- Expand sales of electrification products
- Order winning activities aimed at portfolio optimization and concentrated investment in focus segments

	2020	2021-2023	2024-	Estimated effects of EV/ electrification
	Promote earning improvement NOT relying on the merit of scale		Strategy for sustainable growth	
Basic products	Driveshafts (CVJ) 	Deepen production reforms (streamlining) under way in Japan Horizontal expansion of production reforms to global manufacturing bases Concentrated investment in high-performance products and automation	Shift to large-sized SUV/PUP and EVs Secure volume in growth markets **Advantage** Small, lightweight, high efficiency, low vibration	No effects, stable growth
	Axle / hub bearings 	Carefully select capital investments that are directly linked to differentiation and competitiveness Devote energy into enhancing cost-competitiveness with a focus on variable cost Develop differentiated products complying with regulations for EVs, fuel efficiency and CO_2	Develop differentiated high value-added products Realign portfolio based on customers and vehicle segments **Advantage** Super low friction	No effects, stable growth
	Bearings 	Strengthen sales activities especially for high-performance applications Focus on enhancing production capacity and cost competitiveness especially in Japan and China Promote use of external partners on production of standard type products	Invest resources in high performance bearings through the selection **Advantage** Super high speed, ultra-low friction	Flat sales, Toward high performance products
New areas (Electrification)		Increase production of gearboxes for electric hydraulic brakes Promote cost reduction (Shorten assembly CT / Promote production in China / Use Chinese materials) Develop new products for integrated electrical modules	Expand sales of electric oil pumps Commercialize eHUB/ sHUB Commercialize electric brakes	Increase volume Grow together

TOPICS

We have been shifting our sales to BEVs and large SUVs, where we can take advantage of the technological superiority of our products, and our activities are beginning to bear fruit.

(1) Started mass production of highly efficient fixed type constant velocity joint "CFJ"

With stricter CO_2 regulations and the rapid shift to BEVs, we have begun mass production of high-efficiency fixed constant velocity joints (CFJs), which contribute significantly to reducing vehicle CO_2 emissions and improving electricity costs.



(2) Expand sales of compact and lightweight "R series" driveshafts for rear end

The "R Series" is the world's smallest and lightest rear CVJ product, with a 30% weight reduction and a 3 to 5% reduction in outer ring outer diameter compared to conventional products. Since the start of mass production in 2018, sales have steadily increased, and this year, the adoption of BEVs for European premium brands is expanding.



(3) Started mass production of "3rd Generation Tapered Roller Hub Bearings"

Mass production of the third generation tapered roller hub bearing with integrated hub shaft and inner ring for front wheels of commercial vehicles for Europe, which combines high rigidity and light weight.

(4) Started mass production of driveshafts and hub bearings for BEVs of Japanese automobile manufacturers

Mass production of driveshafts and hub bearings for flagship BEVs of several Japanese automakers has started in Japan and overseas.

(5) Development of various solution bearings for e-Axle

· High-speed rotating bearing dmn value*2.2 million achieved

Our high-speed deep groove ball bearings for e-Axle have achieved a high-speed rotation dmn value* of 2.2 million under oil lubrication.

*dmn value: An index of bearing rotational performance; bearing pitch circle diameter (mm) x rotational speed (min^{-1})

· CreepLess Bearing Development

For e-Axle, which is becoming smaller and lighter, we have developed a creep-less bearing that uses the industry's first method to stop progressive wave type creep generated by outer ring distortion.

· Development of bearings with insulating coatings

By applying an insulating coating to the outer ring outer diameter and width surface of the bearing, we have developed a bearing with an insulating coating that can withstand voltages of 100 V or more, thereby suppressing the occurrence of electrical corrosion and making it suitable for 800 V batteries.

Control Increase of Fixed Costs / Improve Asset Turnover

To revitalize our company, we urgently need to improve our cash flow through overall optimization of production. In production restructuring, we are concentrating management resources on products and processes in which we can demonstrate our strengths, and we are promoting the realization of streamlined production and increased throughput in production reform.

Reorganization of production

Concentrate management resources in products/ processes where NTN can leverage its strength

Reorganize domestic production bases of radial bearings

- Outsource production of standard type products to overseas bearing manufacturer (Break away from "self-efficiency")
- For special products, implement reorganization of production with a new Wakayama Works playing a central role

Basic policy on production reorganization

The market environment surrounding NTN is rapidly changing against the backdrop of the transition to a decarbonized society, including the shift to electrification and EVs in the automotive market and the expansion of the renewable energy business in the industrial machinery market. Based on the growth strategy of each business headquarters, we will reorganize the production system in Japan from the viewpoint of product axis and base axis to enhance profitability by optimizing the entire supply chain.

In the production reorganization, we will freeze investment in capacity expansion in principle, curb costs by utilizing management resources for withdrawn and downsized products, and shift to investment in natural disaster risk and safety measures, as well as in maintenance and renewal of facilities.

Production reorganization plan and progress

In "DRIVE NTN100" Phase 2, we are promoting the reorganization of production of radial bearings, one of our core products. Competition in the market for standard radial bearing products is expected to increase further due to the rise of LCC products and increasing commoditization. In October 2022, we began to expand production outsourcing (approx. 5 million pcs/month) to our affiliated company, TUNG PEI INDUSTRIAL CO., LTD. Utilizing the production capacity and high efficiency production of the company, we will strengthen the supply capacity of products for the aftermarket and reduce investment in maintenance and renewal of production facilities, thereby enhancing profitability. The expansion of outsourcing to TUNG PEI INDUSTRIAL CO., LTD. is planned to be completed by October 2024, and we will continue to strengthen cooperation with this company as one of our main manufacturing bases for radial bearings.

On the other hand, the market for high-performance products with high-speed rotation, low vibration, and insulation performance is expected to expand due to the ongoing shift to electrification and EVs in automobiles against the backdrop of the transition to a decarbonized society. We have positioned high-performance products such as "high-speed rotation and low torque" and "low noise and low vibration" as one of our priority products, and have started to consolidate high-performance products to Wakayama Works, Ball Bearing Plant of Iwata Works, and NTN Mie Corporation, which is the main manufacturing base for medium-sized radial bearings. We will differentiate ourselves from our competitors by introducing the latest production technology to ensure our competitive advantage in terms of technical responsiveness and price competitiveness.

The space and management resources created by the reorganization of radial bearing production will be used to establish a highly efficient production system by consolidating manufacturing bases for tapered roller bearings, needle roller bearings, and precision bearings, and to enhance profitability by redefining the product portfolio. In addition, we will establish a foundation for future manufacturing systems by locating bases in consideration of the risk of natural disasters such as earthquakes and tsunamis.



Wakayama Works to consolidate high-performance products



Delivering "speedy" "satisfaction" to customers through DX

Production reform

Realize streamlined production and increase throughput

Promote overall optimization (rationalization of the entire SCM) instead of partial optimization (rationalization by process)

- Led by a dedicated promotion organization
- Horizontal expansion of lean production system
- Develop human resources to promote reform

Results and progress in the fiscal year ended March 31, 2023

For about three years since the start of activities, we have promoted activities mainly at domestic business sites, expanding the number of locations to 24.

The model numbers and lines targeted at each location have reduced lead times, and some locations have seen an improvement in inventory turnover, a management indicator. At the Large Bearing Plant of Kuwana Works, throughput increased 12.5% and inventory turnover increased 5% (both compared to the previous year), and at the NTN Kamiina Corp., inventory reductions due to process streamlining and associated reductions in external warehouse costs resulted in improved profits.

However, on a company-wide basis, the company has not completely broken away from a structure that is susceptible to demand fluctuations and other external environmental influences, and its indicators have been sluggish. Therefore, we have been accelerating "surface" activities that fill the two axes of "expansion from model numbers to others" and "development of activities that connect the entire supply chain."

In particular, during the last fiscal year, we have been fully engaged in activities covering the entire supply chain from our manufacturing sites to each other and from suppliers to sales. In ball bearing supply chain optimization activities, we have launched initiatives to shorten lead times in cooperation with suppliers.

In addition, we have also started activities in the global supply chain, and for export semi-finished products at the Iwata CVJ Plant, we are working to establish a system for back-sailing based on actual demand in North America, leading to a reduction in work-in-process inventory at the plant in North America. In the case of bearings for rolling stock in China, the change of transportation routes and the use of a new warehouse have produced significant results: transportation lead time -39%, transportation cost -78%, and inventory at local sales companies -33%.



Ball bearing supply chain optimization activity kickoff

Strengthening tripartite activities

In order to accelerate the speed of production reform, which is "management reform," it is essential to have a tripartite system of management, promoters, and practitioners.

A video message from the President is posted on the company website to communicate throughout the company the roles played by each level and the president's strong desire for the activities.

The management level (general managers of each production site, presidents of affiliated companies etc.), having made progress in fostering a general mindset, is working to strengthen specific "behavioral" management for reform.

For promoters and practitioners, we provide group training sessions where they can interact with other promoters to obtain hints for solving problems and promoting activities, strengthen ties with their peers, and build a relationship of mutual learning.

We also hold study sessions for sales divisions to learn the importance of collaboration between production and sales. After the study session, there were cases where information was shared with the manufacturing division from a different angle, leading to activities to build the entire supply chain across related divisions.



Internal website: message from the President

Issues and priority measures for the fiscal year ending March 31, 2024

This fiscal year is a key year toward the new medium-term management plan, and we will promote reform activities focused on numerical values and the harvesting of results in order to improve the cash conversion cycle.

In Japan, we will create scenarios for KPI achievement at each production site and strengthen follow-up on the "surface" side in order to make reform activities at production sites more self-reliant (rules, system development, and human resource development).

We will also expand the aim from data analysis to multiple targets that maximize effectiveness, and accelerate the development of the entire supply chain activities from procurement to sales for popular products with long lead times across suppliers and production sites.

As for activities linking Japan and overseas, we will accelerate PSI (production, sales, and inventory) visualization targeting the reduction of overseas semi-finished product inventory, and develop a system that is resistant to demand fluctuations. Particularly, for small-lot aftermarket products, we will design and manage strategic inventories on a global basis to reduce lost sales opportunities and achieve high profit margins.

In anticipation of full-scale global reform activities starting in the next fiscal year, we have already started production reform activities in each region, starting with China and ASEAN countries. We will establish a promotion system for each region, utilizing local consultants.

Value Creation Story | "DRIVE NTN100" Phase 2

Reduce Variable Cost/Procurement Reformation

In the basic operations of "buying," "producing," and "selling" we will strengthen cost competitiveness in the process of "buying" materials and parts by reducing variable cost and procurement reform. In the second year of "DRIVE NTN100" Phase 2, we achieved results that were largely in line with our targets through procurement reforms, even as costs continued to rise more than expected.

In the fiscal year ending March 31, 2024, our focus will be placed on [1] Realize the best mix of global and local procurement, [2] Expand and accelerate centralized purchasing and [3] Strengthen management by category, whose global activities have been limited due to reasons such as the impact of COVID-19 pandemic, and we aim to ensure successful achievement within this fiscal year by clarifying policies and strategies under the leadership of Japan.

"DRIVE NTN100" Phase 2

- Realize the best mix of global and local procurement (optimal procurement)
- Expand and accelerate unification of contract operations (centralized purchasing)
- Strengthen management by category

Achievements of "DRIVE NTN100" and steady implementation of new measures

Achievements of reform 20.0 billion yen / 3rd year

(1) Realize the best mix of global and local procurement (optimal procurement)

In the past, we promoted activities based on the policies of "local procurement in each region" and "China as an export base for procurement," however, due to the soaring labor costs in Europe and the U.S. after COVID-19 pandemic, weakening of the yen, and the trading friction between China and the US, we believe that local procurement and China as an export base are no longer our optimal solutions. Therefore, in "DRIVE NTN100" Phase 2, in addition to Japan and China, we added South Korea, which has long been a major procurement source for European locations, and India, whose drastic growth in the future can be expected, and we have initiated our activities based on these countries as global procurement bases. Most recently, we have successfully exported bearing parts from India to Japan and North America, and have also started exports from South Korea to Japan and North America. In the fiscal year ending March 31, 2024, we will strengthen our collaborative systems with local suppliers and expand "optimal procurement," and at the same time, instead of placing too much importance on a single base, we will promote dual-sourcing and multi-sourcing to achieve cost reductions and stable procurement.

(2) Expand and accelerate unification of contract operations (centralized purchasing)

Previously, the production control section of each site was in charge of supplier selection and quotation, and in Japan, we have assigned these operations to the purchasing departments at our head office. By the fiscal year ended March 31, 2023, centralized purchasing of all axle products and about 50% of ball bearings and CVJs has also been completed. This centralized purchasing has facilitated cross-organizational selection of suppliers and the development of new suppliers, and in particular, for ball bearings, smooth transfer of small products to Tung Pei Industrial Co., Ltd. can be facilitated. In the fiscal year ending March 31, 2024, we will use AI and other technologies to strengthen price data analysis for products and parts that have been centrally purchased, and aim for digital transformation of quotation operations. Also in China and India, where local procurement is main purchasing means, we will visualize and standardize procedures so that similar measures can be implemented in these countries.

(3) Strengthen management by category

Mainly in Japan, we are planning and implementing a procurement strategy that considers the latest external environment by categorizing products and parts. In addition, as material prices and procurement availability change significantly due to the influence of the external environment, sharing information by category with procurement personnel of each region has become increasingly important. In the purchasing division at our head office, we increase the number of personnel engaged in procurement planning/strategy, and by improving the quality and quantity of information shared globally, we are making the best decisions and selections.

In fiscal year ending March 31, 2024, we will globally disseminate the strategies planned and drafted in Japan, and by sharing information more frequently globally, we aim to establish management by category and to achieve procurement that is not affected by the external environment as much as possible.

Value Creation Story | "DRIVE NTN100" Phase 2

Promotion of DX (Digital Transformation)

In the Medium-term Management Plan, "DRIVE NTN100" Phase 2, the NTN Group's basic strategy is to accelerate the transformation of its business structure by integrating digital technology with the Company's accumulated management resources. Based on this basic strategy, we are promoting the sophistication of business management through the renewal of our IT core system. We support the formulation of global sales strategies by building a system that enables an instant grasp of the profit and loss status of each region, business, and product type, and by visualizing the profit and loss status. In addition, we are optimizing inventory holdings to respond immediately to demand fluctuations by visualizing the supply chain, and in the manufacturing process, we are promoting a smart factory by introducing IoT and AI, overall optimization, and streamlining. For customers, we are working to create and expand new businesses by expanding the introduction of condition monitoring systems (CMS) that monitor operating conditions of the wind turbines, etc., and by providing advance prediction of failures by combining AI.

"DRIVE NTN100" Phase 2 (Increase efficiency / accumulate data) → **"DRIVE NTN100" Phase 3**

Digital technology

1 New IT core system
- Strengthen responsiveness to market changes by "visualization" of sales / production / procurement / logistics, and optimize inventory
- Promote utilization of inventory within NTN Group

P.60 Stabilize new core system

2 Business reform with digital technology
- RPA: optimize routine operations, and go paperless for reports, utilizing IT core system
- CAE: Streamline development / trial production / analysis
- Introduce communication tools in response to work style reforms

P.64 Promote RPA use

3 Promote smart factory
- Launch of Wakayama Works
  Optimize production by introducing IoT and AI into production process
- Realize streamlined production by "visualization" of process condition

P.39 Reorganization of production
P.40 Production reform

4 CMS (Condition Monitoring System)
- Monitor operating condition of wind turbines, rolling stocks, etc.
- Predict breakdowns in advance by using AI

P.52 Realize a sustainable society using natural energy

Integrate data

Integrate accumulated data such as sales / production / procurement / logistics/ finance / process / CMS

Upgrade business administration

Create new business

Environmental business (to adapt to "carbon neutrality"), etc.

Shorten development time and increase efficiency by promoting Digital Transformation of design work

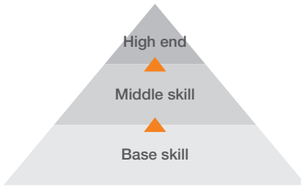
Aiming to shift from numerical analysis to explain experimental results to numerical analysis that can replace experiments, we are working to incorporate advanced analytical techniques and to develop and improve analytical systems that incorporate the know-how of dedicated engineers so that even ordinary design engineers can perform the same level of analysis as analytical engineers. In "DRIVE NTN100" Phase 2, the following technological developments have improved convenience and shortened product design lead times.

- **Automation of analysis processes required for design and introduction of optimal design technologies**
- **Reduce calculation time by designing a system that makes effective use of computing resources and by modeling appropriately**
- **Visualization of input/output, creation of support tools/templates for complicated input work**

In addition, we are also working to analyze design information and computational data using AI and visualization tools to create new value that contributes to design.

DX human resource development

We offer AI and data literacy courses to promote the use of data and digital technologies to solve business issues and to transform organizations, with 782 participants taking courses in the fiscal year ended March 31, 2023. By actively increasing the number of participants in each age group and workplace, we will expand the base of AI literacy, data analysis, and other digital literacy applications throughout the company. The program offers a variety of learning opportunities depending on the level of the participants, and by offering an advanced course, we aim to develop human resources who can make advanced use of data analysis and machine learning.





Toward establishing a business foundation for enabling sustainable growth as a global company

Executive Officer, CFO (Chief Executive Officer)
Masaaki Yamamoto

An urgent task for achieving the NTN Revitalization Scenario is to realign our automotive business. We have set a target of eliminating the operating loss in the fiscal year ending March 31, 2024, by thoroughly passing on inflationary costs to sales prices, reducing variable costs through procurement reforms, and continuing to control fixed costs.

Actual results for the fiscal year ended March 31, 2023, and forecast for the fiscal year ending March 31, 2024

Actual results for the fiscal year ended March 31, 2023

1 Key points

For the fiscal year ended March 31, 2023, net sales were 774.0 billion yen (up 20.6% year on year), operating income was 17.1 billion yen (up 149.2%), ordinary income was 12.0 billion yen (up 76.8%), and profit attributable to owners of parent was 10.4 billion yen (up 41.2%). However, compared with the forecasts announced in October 2022, operating income fell short by 34.2%, ordinary income was 47.6% lower, and profit attributable to owners of parent was 13.6% lower. The shortfall in profits compared with our forecasts was mainly due to production adjustments made in the fourth quarter with a focus on cash flow in anticipation of a delay in the recovery of demand from automotive customers; an additional rise in variable costs, including accepting price increases from suppliers; and also to insufficient progress on raising our sales prices. On the other hand, we controlled fixed costs amid fluctuating sales and improved both free cash flow and our net D/E ratio. By steadily carrying out various measures, we met our announced targets in these areas.

In terms of profit/loss by business segment, the automotive business suffered severe results, continuing to post an operating loss for the fourth consecutive fiscal year. This was mainly due to additional increases in variable costs, failure to raise sales prices, and lockdowns that affected the high-margin Chinese business. In contrast, the aftermarket business and industrial machinery business each posted record-high operating income, achieving the operating margin targets set in the Medium-term Management Plan “DRIVE NTN100” Phase 2 one year ahead of schedule. We have resumed dividend payments for the first time in three fiscal years, paying an annual dividend of 5 yen per share.

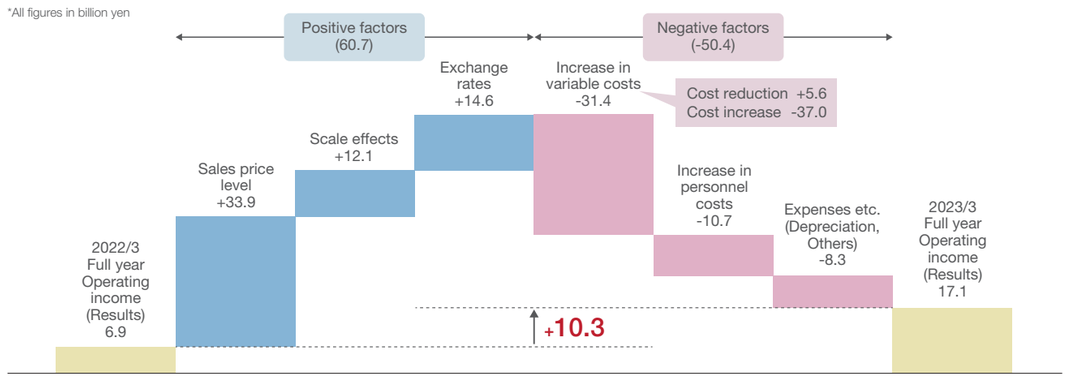
2 Profit Analysis (year on year)

Breakdown of positive factors (60.7 billion yen)
The largest positive factor is the sales price level, accounting for 33.9 billion yen. We worked to pass on to our customers the higher steel prices as well as other inflationary cost increases such as higher variable costs and higher ocean freight rates. However, we did not meet some of our targets, mainly for our automotive customers. The scale effects of 12.1 billion yen arose from the impact of higher sales and production (9.9 billion yen), inventory valuation, and other factors. Adding the impact of exchange rates of 14.6 billion yen to this total, the positive factors amounted to 60.7 billion yen.

Breakdown of negative factors (50.4 billion yen)
In variable costs, we carried out cost reductions of 5.6 billion yen, including procurement reforms, in response to the 37.0 billion yen in price hikes of various materials including energy prices, resulting in a negative factor of 31.4 billion yen. Recently, compared to the 37.0 billion yen of cost increases in the previous fiscal year, the pace of steel price increases in particular has calmed down, but inflationary costs continue to rise.

In fixed costs, personnel costs increased by 10.7 billion yen, and expenses etc. rose by 8.3 billion yen, amounting to a negative factor of 19.0 billion yen. The increase in personnel expenses was mainly due to a 6.0 billion yen increase in the Americas due to special factors such as higher labor costs and disruptions in production. In terms of expenses and other costs, there were special factors such as a 7.5 billion yen increase in transportation costs mainly due to soaring ocean freight rates and a 1.8 billion yen increase in depreciation costs associated with the full-scale operation of IT core systems in Japan. Excluding these special factors, the increase in fixed costs was 3.7 billion yen, less than 15% of the 26.8 billion yen increase in volume-based sales.

■ Analysis of Operating Income (2022/3 Results vs 2023/3 Results)

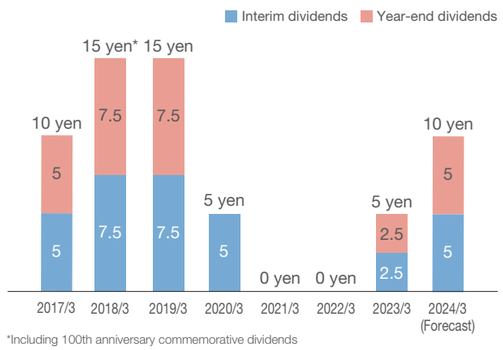


Forecast for the fiscal year ending March 31, 2024

1 Key points

Continuing on from the previous fiscal year, the key issues for the fiscal year ending March 31, 2024, will be to strongly drive the transfer of inflation costs to sales prices, and to steadily reduce variable costs, including procurement reforms and control fixed costs. Looking at the year ahead by business segment, it will be essential to maintain operating margins in the industrial machinery business, where sales volume is down from the previous year, and in the aftermarket business, where sales volume is flat. We must also eliminate operating losses in the automotive business, where we expect sales volume to grow as the semiconductor shortage eases, by both responding to increased production and implementing the above key issues. In addition, as a medium- to long-term initiative for enhancing the profitability of the automotive business, we plan to carry out a realignment of our organization and production, mainly in Europe and the Americas. For the fiscal year ending March 31, 2024, after factoring in some losses from restructuring and other factors, we project net sales of 810 billion yen, operating income of 30 billion yen, extraordinary losses of 4 billion yen, and profit attributable to owners of parent of 11 billion yen. The Company plans to pay an annual dividend of 10 yen per share.

■ Return to Shareholders



*Including 100th anniversary commemorative dividends

2 Profit Analysis (year on year)

Breakdown of positive factors (31.7 billion yen)
The largest positive factor, in keeping with the previous year, is sales price levels, amounting to 22.9 billion yen. Scale effects are expected to be limited to 5.2 billion yen as a result of a conservative estimate of the impact of inventory reductions and of a deteriorating product mix as a result of higher ratio of automotive business. Although we expect an increase in expenses due to the increase in scale effects, we anticipate total expenses to decrease by 3.0 billion yen as marine transportation costs, which rose sharply in the previous fiscal year, begin to decline. This, together with a 0.5 billion yen impact from exchange rates, is expected to result in positive factors of 31.7 billion yen.

Breakdown of negative factors (18.8 billion yen)
In variable costs, we plan to carry out cost reductions of 6.5 billion yen, including procurement reforms, in response to 21.3 billion yen in price hikes of various materials including energy prices, resulting in a negative factor of 14.8 billion yen. Although the pace of steel price increases in particular has eased compared to the 37.0 billion yen of cost increases in the previous year, inflationary costs continue to rise.

As for fixed costs, we expect personnel expenses to lead to a negative factor of 3.9 billion yen. Labor costs are likely to increase mainly in Japan (1.4 billion yen) and Europe (1.6 billion yen) due to rising prices and other factors. In the Americas, however, where labor costs rose in the previous fiscal year due to soaring labor costs and production disruptions, we expect these cost increases to ease. The increase in fixed costs, which includes a 3.9 billion yen increase in personnel expenses and a 1.9 billion yen increase in expenses and other items excluding transportation costs, is set at 5.8 billion yen. This is based on our existing standard of limiting the increase to within 15% (6 billion yen) of the 40.1 billion yen increase in sales volume.

3 Comparison with Medium-term Management Plan targets

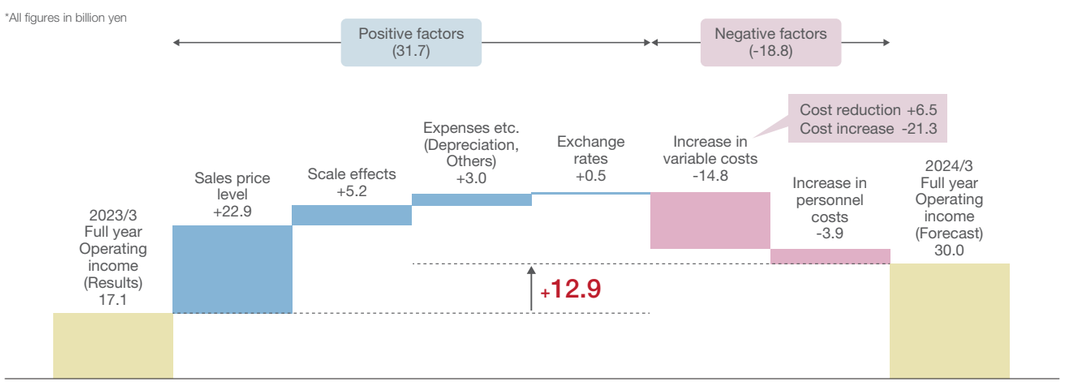
The fiscal year ending March 31, 2024, will be the final year our Medium-term Management Plan "DRIVE NTN100" Phase 2, aimed at strengthening our financial position. The business environment has changed drastically since we formulated the Medium-term Management Plan. This was mainly due to the situation in Ukraine as well as the economic slowdown in China stemming from lockdowns in response to the re-emergence of COVID-19. Prices of raw materials, energy, and other materials have soared. Prolonged semiconductor supply shortages have slowed the resumption of automotive production.

Despite these difficult conditions, we expect to meet the operating margin targets in the Medium-team Management Plan for the aftermarket business and for the industrial machinery business. However, we will not be able to achieve the operating margin target in the Medium-term Management Plan for the automotive business. This is due to the impact of soaring materials prices which continue to bring costs that we will have to pass on to sales prices.

Although we will not achieve our operating margin targets for the entire company due to the automotive business, whose sales volumes are large, we have been steadily improving our financial position through steady recovery of our performance each fiscal year, as well as the sale of idle assets, and robust financial management within the Group. As a result, we expect to achieve the Medium-term Management Plan targets for free cash flow, equity ratio, and net D/E ratio.

Although some of the goals set in the Medium-term Management Plan, such as ROIC of 5% and ROE of 8%, will be pushed back to the next fiscal year and beyond, we will continue our management to strive for corporate value creation.

■ Analysis of Operating Income (2023/3 Results vs 2024/3 Forecast)



■ Comparison with Medium-term Management Plan target

	FY2021/3 Results	DRIVE NTN100 Phase2 ①	FY2023/3 Results	FY2024/3 Forecast ②	② - ①
Net sales	562.8 billion	700.0 billion or more	774.0 billion	810.0 billion	110.0 billion
Operating income	-3.1 billion	42.0 billion or more	17.1 billion	30.0 billion	-12.0 billion
Operating margin	-0.6%	6% or more	2.2%	3.7%	-2.3pt
(Aftermarket)	9.7%	12.0%	16.6%	16.9%	+4.9pt
(Industrial machinery)	0.3%	4.0%	5.2%	5.6%	+1.6pt
(Automotive)	-3.4%	4.7%	-2.5%	0.0%	-4.7pt
FCF	18.5 billion	27.0 billion or more	20.4 billion	29.0 billion	2.0 billion
Inventory turnover ratio	3.2	4.1	3.2	3.7	-0.4
Equity to capital ratio	20.4%	20% or more	25.4%	25.8%	+5.8pt
Net D/E ratio	1.6	1.5 or less	1.2	1.1	-0.4
ROIC	-0.4%	5% or more	2.0%	3.6%	-1.4pt
ROE	-7.1%	8% or more	5.0%	5.0%	-3.0pt

Toward medium-to long-term growth

Our current Medium-term Management Plan ends in the fiscal year ending March 31, 2024, and the next three-year medium-term management plan will start from April 2024. Ahead of this, we carried out an organizational reform in April of this year with the aim of enhancing the strategic functions of the head office division. In the head office division, we will transform ourselves into an organization that can contribute to the business activities of the entire group. We will do this by enhancing our ability to formulate the head office and business divisions are in talks aimed at drawing up the next medium-term management plan. The next medium-term management plan will continue the measures set forth in the current Medium-term Management Plan. These include lowering the break-even point for sales (product/business portfolio reform, procurement reform, fixed cost control) and expanding cash flow (production and logistics reform). While we will not be able to achieve our medium-term management targets for ROIC of 5% and ROE of 8%, we will work to achieve these at the earliest possible date. In addition, we will steadily promote structural reforms such as realigning our production as we work to further strengthen our financial position.

In addition, we plan to set and disclose targets for non-financial indicators such as promoting carbon neutrality and investing in human resources (human capitalism). We aim to increase corporate value by steadily improving our financial strength and non-financial indicators, and to achieve a P/B ratio of greater than 1 by engaging with investors to gain the appreciation of the stock market. I would like to thank all of our stakeholders for their continued support, guidance and encouragement.

Toward Realization of a "NAMERAKA Society"

In December 2021, we formulated a roadmap for realizing a "NAMERAKA Society" as an overview of our management to ensure that our Group continues to grow as a company that contributes to society. The roadmap shows the Group's approach to materiality, envisioning the period from the 2020s to the 2050s.

■ Roadmap for realizing a "NAMERAKA Society"

Contribution to solving social issues toward the future we aim for

	ESG issues	Materiality	Initiatives	2020s	2030s	2040s	After 2050
Environment	Realize carbon neutrality	Respond to climate change	Reduce CO_2 emissions in business activities	Visualize and improve electric power at production plants Promote the introduction of natural energy generation and purchase of renewable electricity Introduce internal carbon pricing	Scope1 and 2 ★ FY2030 ▲50% (compared to FY2018) Scope1 and 2 ★ FY2035 Carbon neutrality		Scope3 ★ FY2050 Carbon neutrality
Environment	Contribute to carbon-free society	Realize a sustainable society using natural energy	Contribute to spread of wind turbine and hydrogen society	Contribute to the spread of wind turbine use with hardware and software Hardware Software	Contribute to hydrogen society Hydrogen embrittlement resistant bearing		
Environment	Contribute to carbon-free society	Reduce energy loss	Save energy for EVs and electrification (core products)	Propose CO_2 reduction by high efficiency and low friction of core products (CVJ, hub bearing, and bearing) Driveshaft that transmits driving force Hub bearing that supports the wheel	Product realization of further environment-contributing products CFJ 50% reduction in torque loss (compared to EBJ of conventional products) 62% reduction in friction (compared to 2009) Low friction hub bearing III		
Environment	Contribute to carbon-free society	Reduce energy loss	Save energy for EVs and electrification (new areas)	Propose CO_2 reduction by multi-functional module products utilizing core technology eHUB Contribute to fuel efficiency of HV such as drive assist and power regeneration during deceleration sHUB Contribute to stable vehicle driving and improved fuel efficiency Adaptation to avoidance behavior of self-driving cars Ra-sHUB Control steering angle at the left and right rear wheels separately Expected to contribute to autonomous driving Support electrification of brakes and auxiliary equipment such as pumps Electric motor actuator			
Environment	Contribute to carbon-free society	Reduce energy loss	Increase efficiency of manufacturing equipment	Contribute to reducing wasteful electricity consumption by increasing the operating rate of manufacturing facilities through IoT and sensing Talking bearing™ Wi-Fi NTN Portable Vibroscope Condition Monitoring System EDGECROSS Edge Application for Bearing Diagnostics			
Environment	Contribute to carbon-free society	Reduce energy loss	Bearing refurbish business	Contribute to reducing CO_2 emissions in the entire supply chain by reusing used bearing Extra-large bearing for paper mill application Spindle for machine tool Production Recycling Use Circular economy Establish bearing refurbish business			
Social	Contribute to prosperous lives	Provide safety and comfort	Robot-related	Establish robot-related modules to compensate for labor shortage due to the declining working-age population Wrist joint module i-WRIST™ Visual inspection	Propose solutions for automation, efficiency, and labor saving at production sites		
Social	Contribute to prosperous lives	Provide safety and comfort	Disaster mitigation and disaster prevention	Provide independent power supply equipment that contributes to the preparation for natural disasters Green Power Station N³ N-CUBE			

Foundation to support ESG management

ESG issues	Environment / Environmental protection	Social / Sustainable supply chain	Social / Prosperous human development		Governance
Materiality	Resource recycling and pollution prevention	Improve the reliability of products and services (Quality assurance and stable supply)	Promote safety and health	Human resource development	Thorough compliance
		Procurement activities with an emphasis on environment and society	Respect for human rights	Promote diversity	Strengthen governance

Realization of a "NAMERAKA Society"

Promotion of ESG management

The roadmap for realizing a “NAMERAKA Society” consists of “contribution to solving social issues toward the future we aim for” and “foundation to support ESG management,” which forms the base for its activities. The roadmap represents related materiality and specific measures based on the seven ESG issues of “realize carbon neutrality,” “contribute to carbon-free society,” “contribute to prosperous lives,” “environmental protection,” “sustainable supply chain,” “prosperous human development” and “governance.” We have defined the measures that must be taken by combining the perspective of forecast, which identifies the anticipated future as an extension of conventional business activities, with the perspective of backcast, which considers what needs to be done and at what point in time by working backward from the targeted future.

We will promote ESG management along the roadmap to achieve sustainable growth, creating environmental and social value. We aim to realize a “NAMERAKA Society.”

Contribution to solving social issues toward the future we aim for

Reduce CO_2 emissions in business activities

In “realize carbon neutrality,” we have set “Achieve carbon neutrality by the fiscal year 2035 (by the fiscal year 2050 for the entire supply chain)” as the target, and are working to reduce CO_2 emissions in our business activities. We are accelerating our efforts toward carbon neutrality by mainly implementing the following measures.

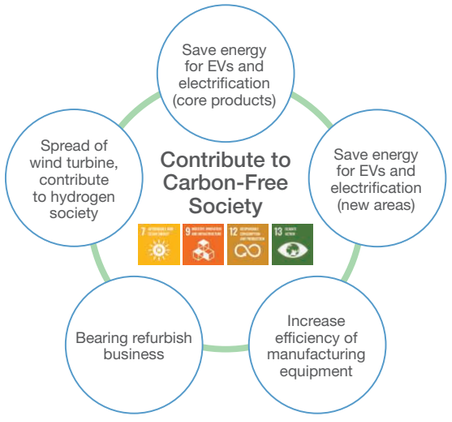
(1) Confirmation of power usage status and systematic reduction of CO_2 emissions by visualizing power consumption in the product manufacturing process
(2) Introduction of solar and wind power generation facilities at business sites and the promotion of purchasing renewable energy power
(3) Utilization of internal carbon pricing

Contribution to society by providing products and services

In “contribute to carbon-free society,” we will contribute to the spread and stable operation of wind power generation equipment by providing bearings that support the increase in size of wind power generation equipment and providing condition monitoring services that utilize IoT. In addition, as a response to the electrification and EVs shift in the automobile industry, we are promoting higher efficiency, smaller size and lighter weight of core products, and developing multifunctional module products that utilize core technologies.

In “contribute to prosperous lives,” we will propose solutions such as robot-related modules to meet the growing demand for labor saving due to the declining working population. In addition, to prepare for frequent natural disasters, we will contribute to disaster mitigation and disaster prevention by providing independent power supplies and others.

■ Five initiatives that NTN Group focusses on toward a carbon-free society



Foundation to support ESG management

Environment

We are striving for “environmental protection” by promoting efforts in resource recycling and pollution prevention as part of our business activities.

Social

We will strive to improve the reliability of our products and services, promote CSR procurement, and aim to realize a “sustainable supply chain.” In addition, we believe that it is important for business operations to protect the safety of employees who support the business and improve the quality of human resources. Based on this thought, we are working to achieve “prosperous human development” by promoting safety and health, and fostering a culture of learning and development in the workplace.

Governance

As a company that is trusted and needed by society, we engage in business activities with an emphasis on compliance. We also strive to increase corporate value over the medium to long term through management that emphasizes transparency and fairness.

Materiality
Reduce energy loss
Realize a sustainable society using natural energy

Materiality **Reduce energy loss**

Save Energy for EVs and electrification

The electrification of cars and electric vehicles are essential to achieving carbon neutrality, and the electric drive units needed to power vehicles are becoming more sophisticated and powerful at an accelerating rate. We will contribute to energy conservation for electric vehicles by developing automotive deep groove ball bearings compatible with the miniaturization of electric drive units and the high-speed rotation of motors, as well as modular products that add energy recovery and steering functions to hub bearings.

Providing high-performance bearings (core products)

The electric drive units used in EVs and HEVs are increasingly needed to be more efficient, compact and lightweight. The development of e-axles, in which the motor is integrated with an inverter and reduction gearbox, is gaining momentum. We have already marketed “High Speed Deep Groove Ball Bearing for EVs and HEVs” with a dmn value* 1.8 million, and highly evaluated by our customers. Rolling bearings used in motors and reduction gears, which are becoming smaller and faster, are required to rotate at higher speeds. We have developed a high speed deep groove ball bearing with a dmn* value of 2.2 million under oil lubrication by optimizing the internal dimensions of the bearing through the establishment of a calculation method for the amount of oil supplied to optimize the balance of heat generated by the bearing and its lubrication conditions, and by reviewing the cage shape to suppress deformation caused by centrifugal force.

Furthermore, the housing of the drive unit is thinner, reducing the overall weight of the drive unit. “Creep phenomenon,” in which the bearing gently rotates and shifts on the mating surface between the housing and bearing, may occur due to outer ring deformation caused by the rotational load. We have developed “Creepless bearings” with a relief portion on the outer diameter surface of the bearing outer ring to make the housing and bearing mating surfaces discontinuous, thereby stopping creep and preventing abnormal noise and vibration in the equipment and reducing bearing life.

In the future, the demand for bearings in the automotive market is expected to continue to grow in response to the progress of EVs and HEVs. We will continue to enhance and develop our product lineup that anticipates market needs and contribute to the carbon neutrality of automobiles by leveraging our core competencies and incorporating next-generation technologies.

(*dmn value: Index of the bearing rotational performance Rolling element pitch circle diameter mm x rotational speed min^{-1})



High Speed Deep Groove Ball Bearings for EVs and HEVs



Creepless Bearing

Providing high-performance module products (new areas)

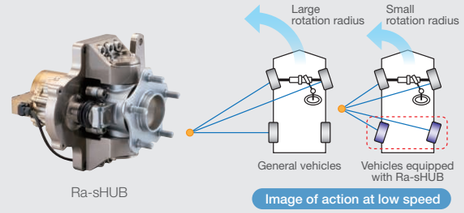
We are developing “Ra-sHUB” hub bearings with a steering function for rear wheels, which individually compensates for the steering angles on the right and left sides by making full use of the technologies we have accumulated in our hub bearings.

The rear-wheel steering systems on the market are limited to some suspension systems, such as multi-link system used in luxury vehicles, and it is difficult to achieve a large steering angle with the existing structure.

“Ra-sHUB” is a module product that adds a steering function to our hub bearings with using our proprietary technologies. They are as small as existing hub bearings, and can be mounted on any type of suspension system, to achieve rear wheel steering. By controlling the steering angle of the rear tires from the steering angle and driving information of the front wheels separately from the left and right sides, the cornering performance and high-speed straight driving stability of the vehicle can be improved. At low speeds, the minimum rotation radius can be reduced to improve the vehicle’s small turning performance and tire traveling resistance. In addition, as the level of automated driving increases, vehicle operation control must become even more sophisticated. “Ra-sHUB” also contributes to safe driving during crisis avoidance.

Characteristics of “Ra-sHUB”

- Module product with steering function for hub bearings
- Controls the rear wheel angle independently on the left and right sides
- Rotation angle +/-10 degree
- Improved cornering performance and high-speed straight driving stability of vehicles
- Reduce the minimum rotation radius of the vehicle



Development of environment-contributing product

We continue unwavering efforts to realize its corporate philosophy by developing and providing higher-grade products that contribute to the environment while quantifying the degree of environmental contribution of our main products, such as bearings and drive shafts, and green energy products.

Trend in achievements and forecasts

Driveshafts and hub bearings, which are our main products and account for about 50% of our net sales, and green energy products contributed 1,474 thousand tons of CO_2 reduction in the fiscal year ended March 31, 2023. Sales of S- to B-eco grade environment-contributing products, which are the result of our recent development efforts, comprised 52.6% of net sales in the fiscal year ended March 31, 2023.

*Products are classified according to environmental factor standards specified for different products in line with technology standards across the world.

Calculation methods for environmental factors and eco-efficiency

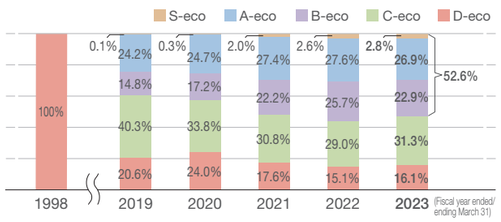
To quantify products' environmental friendliness, NTN adopted environmental factors and eco-efficiency that are defined in formula ❶ and ❷ as follows.

$$\text{Environmental factors} = \frac{\text{Eco-efficiency of developed products}}{\text{Eco-efficiency of benchmark products}^{*1}} \quad \cdots ❶$$

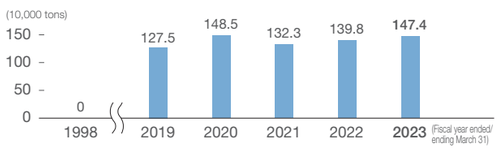
$$\text{Eco-efficiency} = \frac{\text{Product value}^{*2}}{\text{Environmental impact}^{*3}} \quad \cdots ❷$$

*1 D-eco product (Products that help to reduce energy loss of finished products at the same performance level as that of around 1997)
*2 Values are quantified by using the QFD method (including CO_2 reduction contribution of finished products)
*3 From the perspective of evaluating contribution toward measures against climate change, environmental impact is calculated as CO_2 emissions generated throughout the process of raw materials mining to production (using the LCI calculation tool by the Japan Auto Parts Industries Association)

Trend in composition of environment-contributing products by grade (driveshafts and hub bearings)



Contribution to CO_2 reduction*



Calculation standard
JAPIA LCI Calculation Guidelines by Japan Auto Parts Industries Association (Consumer Use-phase LCI calculation tool)
*Applicable to S to C-eco products

Increase efficiency of manufacturing equipment

To improve productivity at manufacturing sites, there is a desire to minimize equipment downtime by monitoring equipment operating conditions and accurately and systematically performing maintenance and parts replacement based on the data. Furthermore, in recent years, with the advancement of DX and IoT technologies, there is a growing need for remote and automatic monitoring of equipment that is not restricted by location or time, as well as the stabilization and improvement of manufacturing quality through the use of condition monitoring information obtained.

To meet these condition monitoring needs, we have developed "Talking bearing™," which incorporates a power generation unit and wireless communication device into a standard rolling bearing without changing the bearing dimensions or load capacity and wirelessly transmits sensing information on temperature, vibration and rotation speed. The energy generated by the rotation of the bearings is used to power sensors and wireless communication devices to transmit sensing information automatically. Because the sensor is built into the bearing, the bearing condition can be detected with greater sensitivity than when the sensor is mounted externally on the equipment housing, allowing earlier detection of abnormalities.

This newly developed product will enable advanced condition monitoring. It will help increase the efficiency and productivity of manufacturing facilities.



Talking bearing™

Bearing refurbish business

We are engaged in the business of refurbishing bearings used in various types of machinery and equipment, such as extra-large sized bearings for paper mill, large sized bearings for steel mill, and bearings for railway application. We provide optimal bearing refurbishing services based on our bearing technology know-how in response to these customer requirements. Furthermore, along with training on the proper use of bearings and condition monitoring services, we will expand our comprehensive approach to NTN Group's materiality, which includes "Provide safety and comfort," "Reduce energy loss," and "Resource recycling and pollution prevention."



Extra-large sized spherical roller bearing for paper mill application

Materiality

Realize a sustainable society using natural energy

Contribute to spread of wind turbine and hydrogen society

In order to realize a carbon neutral society, natural energy generated using wind and solar power to generate electricity and hydrogen energy that does not emit CO_2 at combustion, are attracting attention as next generation clean energy.

In the field of wind power generation, there is a growing demand for developing higher durability and reliability of components than ever before, especially in offshore wind power generation, due to the increasing size of power generation equipment and the lack of easy maintenance. In the hydrogen-related field, there is also a need to extend the service life of rolling bearings and plastic products used in hydrogen stations and other hydrogen-related infrastructure.

We will contribute to the realization of a sustainable society through product development and business initiatives.

Wind power

Wind power generation projects are expanding to achieve a carbon-neutral society. Especially in recent years, offshore wind turbines have been installed in sea areas with stable wind directions. Offshore wind turbines are larger than their onshore counterparts, and their components must be highly durable and reliable. In order to meet the needs, we are marketing "left-right rows asymmetrical spherical roller bearings" with a DLC (diamond-like carbon) film on the roller surface, which has excellent wear resistance, thereby enhancing the reliability of rolling bearings.

Furthermore, in order to improve the operation rate of wind power generation, we provide wind power generation operators with a service that distributes operational status using "Wind Doctor™," a Condition Monitoring System (CMS) for wind turbines. In 2022, we entered into a business alliance with Hokutaku Co., Ltd. (hereinafter referred to as "Hokutaku"), expanding the maintenance business for wind power generation equipment. If any abnormal trends are observed, we will distribute information to wind power generation operators that have installed our CMS and suggest the need for maintenance. After that, upon request, we will inspect the wind power generation equipment jointly with Hokutaku, identify any abnormal parts and arrange for repair bearings in a single operation. Power generation companies have received this well for our ability to provide a full range of services from abnormality detection, inspection and repair.

For offshore wind turbines, which are expected to be expanded in the future, improving the accuracy of condition monitoring and performing appropriate maintenance based on accurate data analysis will become even more critical. As a manufacturer that can provide products and services on a one-stop basis, we will contribute to expanding the wind power generation equipment market.



Wind Doctor™



Asymmetrical spherical roller bearing

Hydrogen

Hydrogen is attracting attention as a next-generation energy source, and technological development is being actively pursued globally in all aspects of its utilization, including production, transport, storage and use. We are developing the application of products used in high-pressure hydrogen compressors for hydrogen stations, which are indispensable for the widespread use of fuel cell vehicles (FCVs). Mechanical parts used in hydrogen-related equipment are used in special environments such as hydrogen exposure and high pressure, requiring higher reliability and durability.

We have developed new steel material with many hard, fine metal compounds dispersed on the bearing raceway, combining them with a newly developed special heat treatment technology to develop a hydrogen embrittlement-resistant bearing that has more than three times a longer life compared to our standard bearing against premature failure of bearings caused by hydrogen and started sample prototyping and delivery. In addition, resin products developed using our composite material technology have been adopted as sealing components for hydrogen environments. To further enhance the functionality of these products, we are also working on development in collaboration with industry and academia.



Hydrogen embrittlement resistant bearing

Please refer to our website for details on "Contribute to carbon-free society."
https://www.ntnglobal.com/en/csr/idea/carbon-free.html

Materiality Respond to climate change

The NTN Group Target Year for Carbon Neutrality

- Reduce CO_2 emissions in business activities (Scope 1 and 2) ➡ 50% reduction by the fiscal year 2030 (compared to the fiscal year 2018)
  Achieve carbon neutrality by the fiscal year 2035
- Reduce CO_2 emissions in business activities (Scope 3) ➡ Achieve carbon neutrality by the fiscal year 2050

Carbon Neutrality Strategy Promotion Dept. Launched

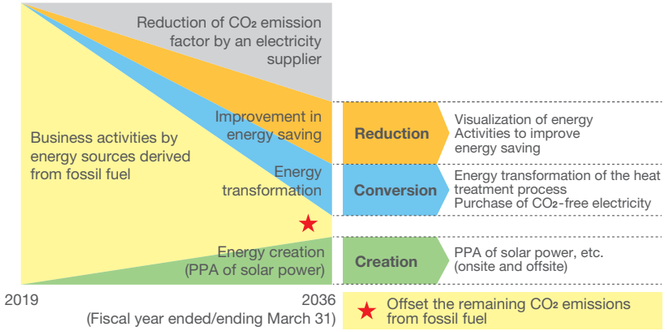
Based on the activity result of the carbon neutrality promotion project from July 2022 to March 2023, the “Carbon Neutrality Strategy Promotion Dept.” was launched in April 2023. It inherits the projects, establishes the global promotion system, and shifts to the execution phase, including the mid-to-long-term issues.

With the Goal of Target Year for Carbon Neutrality

The NTN Group is working on the following priority measures for the purpose of steadily promoting an action plan for achieving carbon neutral targets.

(1) Reduce CO_2 emissions generated by processing machines and heat treatment equipment by visualizing the energy used in the manufacturing process, and reduce CO_2 emissions by improving the efficiency of energy used in utilities such as air, air conditioning, and lighting. [Reduction]
(2) Reduction of CO_2 emissions by energy conversion of heat treatment equipment [Conversion]
(3) Reduction of CO_2 emissions derived from fossil fuels by purchasing CO_2-free electricity [Conversion]
(4) Reduction of CO_2 emissions derived from fossil fuels through renewable energy power generation such as solar power PPA [Creation]

■ Carbon neutrality realization image



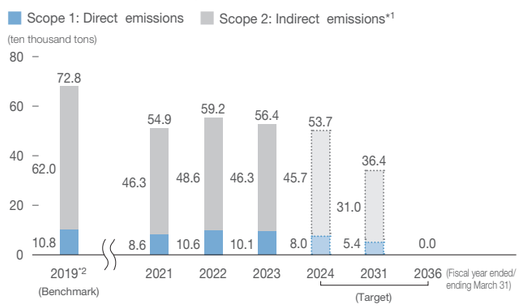
CO_2 emissions reduction results

The NTN Group is working on CO_2 reduction in the whole of the company’s business activities and aiming to reduce CO_2 by 50% compared to the fiscal year 2018 by fiscal year 2030 and achieve carbon neutrality by fiscal year 2035. We receive a third-party verification to ensure no problem in the calculation method of CO_2 emissions. For Scope 2, the calculation uses emission factors*1 of the market-based approach for domestic business sites and emission factors*2 of the location-based approach for overseas business sites. We are also considering emission factors of the market-based approach to calculate the emissions of overseas businesses.

*3 Please refer to the website for the CO_2 emissions verification opinion from.
https://www.ntnglobal.com/en/csr/idea/carbon-neutrality.html#anchor02

Please refer to the website for Environmental data of each site
Japan:https:// www.ntnglobal.com/en /csr/environment/sitereport-japan.html
Overseas:https:// www.ntnglobal.com/en /csr/environment/sitereport-overseas.html

■ CO_2 emissions (Scope 1,2)



*1 Calculated using emission factors sourced from “Electric Utility Emission Factors” (Ministry of the Environment and the Ministry of Economy, Trade and Industry) in Japanese sites and calculated using emission factors sourced from “Emissions Factors 2022” (IEA) in overseas sites.
*2 Set the carbon neutral benchmark as fiscal year ended March 31, 2019.

Reduction of CO_2 emissions from the burning of fuel and the use of electricity (Scope 1 and 2)

The NTN Group is working to reduce CO_2 emissions (Scope 1) from fuel combustion in heat treatment facilities and boilers, etc. For heat treatment facilities, which are a major source of CO_2 emissions, we have completed fuel conversion to LPG* and city gas at major facilities as the first phase of energy-saving measures. In the future, we will not only expand the use of high-efficiency high-frequency heating equipment and electric furnaces that use renewable energy, but also consider the use of green energy sources such as ammonia and hydrogen, which do not emit CO_2 during production and use, to promote carbon neutrality by utilizing a variety of energy sources.

In addition, The NTN Group is working to improve the efficiency of air, air conditioning, lighting, and other utilities as part of its efforts to reduce CO_2 emissions (Scope 2) associated with the use of electricity in its production activities. We are conducting steady activities to reduce energy use by installing high-efficiency compressors, air conditioning, lighting, and other equipment, regularly taking measures to prevent air leaks, and turning off non-operating equipment.

*Liquefied natural gas

Promotion of Introduction of Natural Energy Generation and Renewable Energy

The NTN Group is working on reducing CO_2 emissions (Scope 2) by introducing self-consumption type natural energy generation to business sites based on various schemes (PPA*1, lease, and self-investment). We are actively promoting the procurement of renewable energy and electricity offset with carbon credit. Reduced 477 tons of CO_2 in Japan and 11,409 tons in overseas in the fiscal year ended March 31, 2023.*2

■ Natural Energy Generation Results (Fiscal Year Ended March 31, 2023)

Region	Power generation*2 (kWh)	CO_2 emission reduction (tons-CO_2)
Japan	1,073,015	430
China	11,961,519	7,348
Total	13,034,534	7,778

■ Actual Procurement of Renewable Energy (Fiscal Year Ended March 31, 2023)

Site name	Energy type	Procurement (kWh)	CO_2 emission reduction (tons-CO_2)
Nagoya Sales Office	CO_2-free electricity	80,982	31
Hamamatsu Automotive Sales Office		13,077	5
Hiroshima Automotive Sales Office		20,059	11
NTN-AT		13,057,800	4,061
Total		13,171,918	4,108

An Example of the Introduction of Natural Energy Generation Equipment in Japan

NTN Mie Corp. (Japan) installed a total of 828 solar panels on the roof of a roller factory based on PPA*1. Its operation started in April 2023, and the amount of power produced and CO_2 reduction are expected to be 541,342 kWh/year and 205 tons-CO_2/year*2, respectively.



Roller Factory (NTN Mie)

An Example of the Introduction of Natural Energy Generation Equipment in Overseas

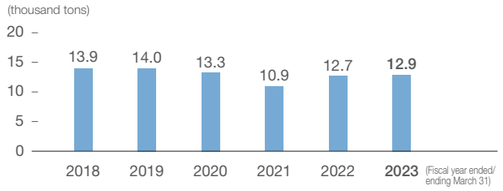
NTN MANUFACTURING DE MEXICO, S.A.DE C.V. (Mexico) installed a total of 1,180 solar panels on the roof of a factory based on PPA*1. Its operation started in August 2023, and the amount of power produced and CO_2 reduction are expected to be 1,012,000 kWh/year and 403 tons-CO_2/year*2, respectively.

*1 A contract to install solar power generation equipment owned by a third-party power producer on a roof or other location and purchase its electricity.
*2 Calculated using emission factors sourced from “Electric Utility Emission Factors” (Ministry of the Environment and the Ministry of Economy, Trade and Industry) in Japanese sites and calculated using emission factors sourced from “Emissions Factors 2022” (IEA) in overseas sites.

Reducing CO_2 Emissions in Logistics

The NTN Group is reducing CO_2 emissions (Scope 3 Category 9) during product transportation by improving logistics efficiency. Main measures include “shortening transportation distances by optimizing distribution routes,” “increasing the loading ratio by expanding the use of module outer boxes,” “reducing the number of containers by increasing the loading ratio of export containers” “promotion of reuse and recycling (repair) of wooden pallets,” and “having carries strictly adhere to non-idling requests”. CO_2 emissions from the transport of domestic products in the fiscal year ended March 31, 2023, was 12.9 thousand tons-CO_2/year (target: 12.8 thousand tons-CO_2/year), which is slightly below the target. We will continue to promote the measures, including optimizing a truck’s loading capacity to increase transportation efficiency.

■ CO_2 emissions in logistics* (Japan)



*Including CO_2 emissions during intra-company transportation

Initiatives for TCFD recommendations

In May 2021, we expressed our support of TCFD (Task Force on Climate-related Financial Disclosures) recommendations. We identify the risks and opportunities posed by climate change in our business and reflect them in our management strategies. We also disclose information based on TCFD recommendations. Through dialog with a wide range of stakeholders, the Group will further strengthen its efforts to address climate change and contribute to the sustainable development of society through its business activities.

Governance

The Group has established the Sustainability Committee as an organization to promote sustainability management, and has established a system to report its efforts to the Board of Directors as appropriate.

■ Structural diagram



Strategy

Responses to the risks and opportunities assumed from the scenario analysis results, in line with the TCFD recommendations, are applied to business activities as measures for related materialities such as “Reduce energy loss” and “Respond to climate change.” In addition, we concentrate our R&D resources on areas that lead to “carbon neutrality (environmental impact reduction and decarbonization)” and the “pursuit of safety and comfort” and are accelerating our R&D activities for future growth.

Risk management

Our financial condition, results of operations and cash flows could be impacted by extreme weather conditions (such as shutting down operations and businesses due to heavy rain, floods or storms) associated with climate change (temperature increases), and by stricter environmental regulations (such as increased procurement costs for raw materials and energy due to the introduction of carbon taxes) in the countries and regions in which we operate.

Regarding the effects of climate change (temperature increases), the risks and opportunities assumed based on the scenario in which the temperature rise during the 21st century is “4 °C” and “less than 1.5 °C” are as follows.

■ Outline of the future vision assumed in scenario analysis

	When the temperature rises by 4 °C (Physical)	When the temperature rises less than 1.5 °C (Transition)
Future image of society	● Environmental policies such as from the government are passive, and the move to low-carbon and decarbonization has not progressing. ● The scale and intensification of natural disasters due to climate change are progressing. ● The number of hot days increases even in seasons other than summer, increasing the risk of heat stroke.	● Due to the aggressive environmental policies of the government and other parties, carbon taxes have been introduced, fossil fuel-derived electricity is limited, and the industrial structure is centered on renewable energy (wind power, hydrogen, etc.). ● The industry as a whole is strengthening efforts such as energy saving to reduce CO_2 emissions. ● In the automobile industry, the electrification and EVs shift is progressing.

■ Risks and Opportunities

Classification		Anticipated risks and opportunities	Our countermeasures	Related materiality
Risks	Physical	Downtime at our plants and within the supply chain due to extreme weather conditions (heavy rain, floods, storms)	<Internal> ● Regular confirmation using a hazard map of domestic business sites <Business Partners> ● Encouragement to build BCP and BCM through Procurement Policy briefing sessions and CSR Procurement Guidelines ● Introduction of supplier crisis management system	● Promote safety and health ● Procurement activities with an emphasis on environment and society
		Risk of heat stroke among employees at plants and such	● Identification of working environments where air conditioning is not effective ● Systematic implementation of heat measures	● Promote safety and health
	Transition	Increase in procurement and operating costs due to carbon taxes, etc.	● Promotion of decarbonization in our business activities ● Considering the introduction of internal carbon pricing	● Respond to climate change
Opportunities	Physical	Increase in demand for solutions that are useful in preparing for natural disasters and in the event of disasters	● Securing a lifeline that prevents power shutdown due to natural disasters (providing stationary independent power supply units and transportable independent power supply units to the market)	● Provide safety and comfort
	Transition	Increase in demand for energy saving in mechanical devices	● Reduction of CO_2 emissions by core products	● Reduce energy loss
		Spread of wind power generation equipment	● Provision of large bearings and CMS services for wind turbines	● Realize a sustainable society using natural energy
		Spread of hydrogen energy	● Development of product technology and market provision of bearings for hydrogen energy-related equipment	● Realize a sustainable society using natural energy
		Spread of EVs and electrified vehicles	● Development of product technology and market provision of electric module products	● Reduce energy loss

Metrics and targets

Among 13 items of materiality, the target of “respond to climate change” is “Achieve carbon neutrality by the fiscal year 2035 (by the fiscal year 2050 for the entire supply chain).” Also, we have set a “50% reduction in CO_2 emissions in business activities in the fiscal year 2030 compared to the fiscal year 2018” as KPIs (management indicators) for the fiscal year ended March 2023 and beyond.

For the fiscal year ended March 31, 2023, CO_2 emissions were reduced by 22.6% compared to the fiscal year 2018, relative to the KPIs (management indicators). We recognize the need to strengthen further our efforts to achieve the plan. As of April 1, 2023, we have established the Carbon Neutrality Strategy Promotion Department, a dedicated organization for promoting carbon neutrality, to strengthen the promotion of various measures to achieve carbon neutrality.

Materiality Provide safety and comfort

Manufacturing facilities are responding urgently to the need for automation to sustain economic activity in a social environment with a declining birthrate and an aging population. We have developed a “Rotary Actuator Type Hand” and the feeder for a picking robot, “TRINITTE™,” that contribute to human replacement and efficiency at production sites. Meanwhile, as natural disasters due to abnormal weather and other factors increase, disaster prevention and mitigation efforts are being promoted to reduce the impact of disasters on people’s lives. We have also developed and marketed “N³ N-CUBE,” which houses small-sized wind generators, solar panels, and storage batteries in containers from the perspective of disaster prevention and disaster mitigation, which are used in a wide range of fields.

Through these products, we provide peace of mind and comfort to customers.

Robot-related

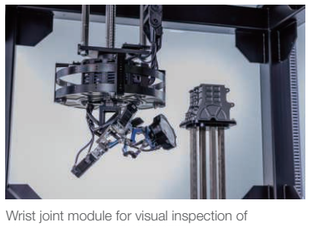
We have launched the “TRINITTE™,” our unique feeder for picking robots, which supplies parts from a rotating disk that automatically provides parts and has been well received. “TRINITTE™” is connected in conjunction with a camera and picking robot and provides continuous picking of moving workpieces by following the workpieces on a circular arc path. We have also developed a compact and lightweight “Rotary Actuator Type Hand” for picking robots to be used in combination with “TRINITTE™.” The position and posture can be adjusted within a range of 0 to 100° by rotating the mounting section with the chuck section gripping the workpiece around the rotary axis of the rotary actuator. When attached to a SCARA robot, picking can be performed from the side or diagonally. This system can significantly reduce the number of parts missed, and it realizes stable and continuous picking of parts with an inexpensive equipment configuration.

In addition, in response to numerous requests for improved portability of the “i-WRIST™” wrist joint module for robots, we have developed the “IWS-C01,” which increased the maximum payload capacity from 1 kg to 3 kg. The “IWS-C01” has been well received by the market as it has expanded the range of applications.

We will continue to propose modular products for robots that contribute to the promotion of efficiency and reduce manpower as a measure of automation at manufacturing sites.



Rotary Actuator Type Hand



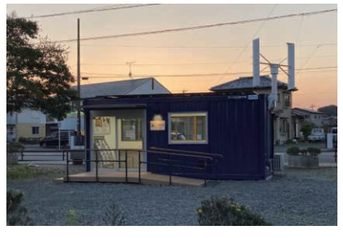
Wrist joint module for visual inspection of aluminum castings “i-WRIST™”

Disaster mitigation and disaster prevention

We have developed “N³ N-CUBE,” a transportable independent power source containing small-sized wind power generators, solar panels and storage batteries in containers. The initial purpose of the development was to create storage facilities in preparation for natural disasters and rescue facilities in the event of a disaster. However, as the market has evolved, many of these facilities have also been adopted as infrastructure equipment in places where commercial power has not been installed.

Disaster prevention centers are being built in various locations to serve as disaster relief operations bases and storage facilities for stockpiling emergency food and medical supplies. We propose to install “N³ N-CUBE” in the center to provide electric power for lighting and air conditioning in the center in normal times and to use it as a first-aid facility and emergency power source during a disaster.

We have also developed the “N³ N-CUBE” equipped with a circulation-type flush toilet and treatment tank to be installed at parks and facilities in mountainous regions etc. where commercial power has not been introduced. Water used in the toilet is filtered in the treatment tank and circulated as reclaimed water. Maintenance only requires a few changes of water a year, and no water supply or sewerage construction is required. Because water is recycled as reclaimed water, it is possible to use clean water without draining it outside. In addition, our products are widely used in various situations, such as in bus waiting areas and workcation facilities.



“N³ N-CUBE” installed as a waiting room at a bus stop in Yoshida Town, Shizuoka Prefecture, Japan

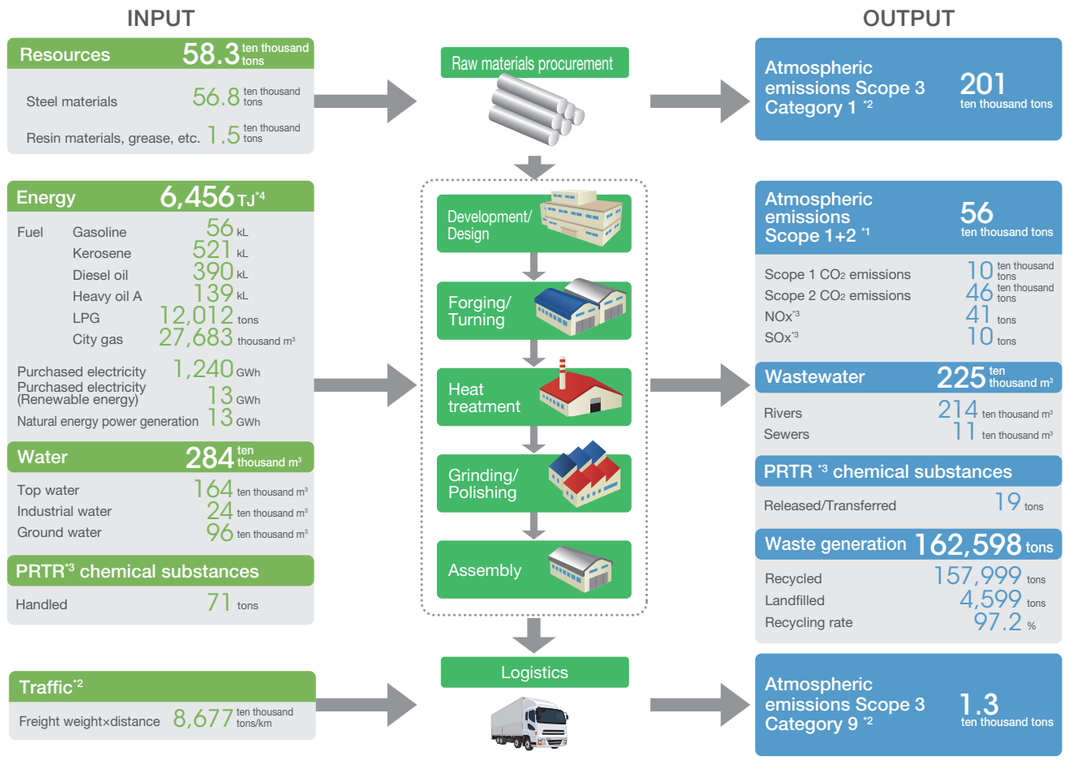
Materiality Resource recycling and pollution prevention

The NTN Group has established a system to comprehensively promote the 3Rs (Reduce, Reuse, Recycle), taking into consideration the sustainable use of resources, input resources such as raw materials and water, and waste reduction. In addition, we thoroughly manage chemical substances used in our products and manufacturing processes, and actively promote the conversion of procured products containing PRTR*-listed chemical substances to alternatives. We have set annual targets for the amount of waste generated, the recycling rate, and the amount of chemical substances subject to the PRTR Law handled, and are promoting efforts to achieve these targets.

*Act on Confirmation, etc. of Release Amounts of Specific Chemical Substances in the Environment and Promotion of Improvements to the Management Thereof

Material Balance

■ Material balance of business activities (Fiscal year ended March 31, 2023)



*1 Calculated using emission factors sourced from “Electric Utility Emission Factors” (Ministry of the Environment and the Ministry of Economy, Trade and Industry) in Japanese sites and calculated using emission factors sourced from “Emissions Factors 2022” (IEA) in overseas sites.
*2 Transport volume and Scope 3 CO_2 emissions are results in Japan only.
*3 NOx, SOx, PRTR chemical substances, and recycled amount are results in Japan only.
*4 The energy of electric power is calculated using physical quantity (3.6MJ/kWh),and the energy of fuel is calculated using the emission facter sourced from “Emission intensity database for calculation of greenhouse gas emissions of organizations through the supply chain (Ver.3.3)”(Ministry of the Environment).

Please refer to the website for details on “Resource Recycling and Pollution Prevention”
https://www.ntnglobal.com/en/csr/environment/chemical.html

Biodiversity Preservation

In cooperation with local residents and non-profit organizations (NPOs), The NTN Group is working to conserve forest ecosystems through sustainable forest management, such as appropriate thinning and afforestation, and to preserve biodiversity by protecting endangered species in the vicinity of each business site and by maintaining natural parks. Since the COVID-19 pandemic, we have been working to ensure that our activities do not become a mere formality by adjusting the number of participants and taking thorough measures to prevent infection.

Environmental Contribution to the Community

As part of its environmental contribution to the local community, The NTN Group promotes environmental protection activities in mutual cooperation with the local community through various activities such as cleanups, weeding, and tree planting along roads, rivers, beaches, and parks around its business sites. Through our activities, we will continue to make further efforts to strengthen cooperation and build good relationships with surrounding residents and other interested parties.

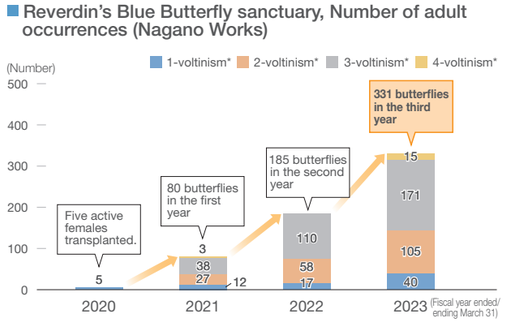


Tree-planting scene at Chubudai Sports Park (Mikumo Works)

Conservation Activities for the Endangered Reverdin's Blue (butterfly)

Nagano Works (Japan) signed a biodiversity partnership agreement with Nagano Prefecture in 2019 and has established a sanctuary for the endangered Reverdin's Blue (butterfly) within the works to continue conservation activities. Since the establishment of the sanctuary, we have faced various problems, such as a lack of indigo plants, on which the larvae feed, due to a large number of inchworms and aphids, and predation of the larvae by natural enemies such as paper wasps and praying mantis. However, the population has steadily increased as a result of replanting of indigo plant and implementation of measures such as extermination of natural enemies on a case-by-case basis. In August 2022, we accepted work experience students from a local high school and organized a special class to help students understand the importance of biodiversity and participate in the conservation of the Reverdin's Blue (butterfly). As for future activities, since the population has been steadily increasing due to protection activities, we will continue to accept outside visitors and increase the number of sanctuaries within the business site to further increase the population through more active protection activities.

Reverdin's Blue Butterfly sanctuary, Number of adult occurrences (Nagano Works)



*There are 1, 2, 3, and 4 voltinism, respectively, depending on the number of generations per year, and those that are 3 or more voltinism are called multi-voltinism.



Male 3-voltinism imago perched on a verbena flower.

Please refer to the website for details on "Environmental Protection."
https://www.ntnglobal.com/en/csr/environment/protection.html

Materiality
- Improve the reliability of products and services (Quality assurance, stable supply)
- Procurement activities with an emphasis on environment and society

Materiality

Improve the reliability of products and services (Quality assurance, stable supply)

Build the quality assurance system

Create the quality to improve customer satisfaction

We strive to maintain and improve product quality globally in accordance with our Quality Policy, which serves as the basic philosophy for all of our manufacturing activities, in order to create quality that satisfies our customers.

We also conduct customer satisfaction surveys as an opportunity to hear directly from our customers about their satisfaction level and requirements. In the survey for the fiscal year ended March 2023, a total of 113 customers responded and 88% of the overall evaluations were "Excellent" or "Good," as well as the results from the previous year. Going forward, we will continue to provide quality that is responsive to customer needs in order to further improve satisfaction.

Quality management system

In order to improve customer satisfaction and provide products/services in a consistent manner, the Group's domestic and overseas manufacturing sites have acquired ISO9001 certification, which is an international management system standard. We are steadily working to acquire certification for new businesses and newly launched plants. 100% of our domestic and overseas consolidated subsidiaries related to manufacturing have acquired certification for their quality management systems.

We have also acquired IATF16949 certification, a standard for the automotive industry, and JIS Q 9100 and Nadcap, standards for the aerospace industry, as well as CRCC (China) certification for the railway industry.

Develop quality awareness of human resources

In order to enhance knowledge and awareness of quality among employees, we provide specialized quality education such as basic and advanced QC courses. In the fiscal year 2022, 145 employees took part in these courses. In our training, we use examples of actual claim cases that have occurred in the past to show specifically how customers have been affected so that participants can be reminded of the importance of quality.

In March 2023, we issued the third edition of our "Quality Control Handbook: Quality Guidelines", which describes our approach to quality and the basic actions that are essential to maintain quality. In the future, we will translate it into English and other languages, and distribute it as a reference for suppliers, making it widely available on a global basis.

Stabilize new core system

As a company-wide project, we are rebuilding our mission-critical systems by standardizing business processes and systems using ERP* and other new packaged systems. This will serve as an IT foundation to support future DX promotions, and we are promoting business speed and service levels as well as more efficient operations. Following the start of operations of new systems in the areas of financial accounting, human resources and salaries, and technology, a new system for sales, logistics, supply and demand adjustment, inventory management, etc. of finished products in the SCM field began full-scale operations in August 2020. Thereafter, we are promoting activities to introduce new systems into the production, procurement, process, work-in-process, and cost domains at each plant.

The new systems have enabled us to improve the efficiency of drawing and prototype control through the digitization of sales activities and the introduction of a project management system, to speed up price and delivery deadline response, to strengthen inventory management, and to enhance cost management. Furthermore, we aim to ensure a stable supply for customers and respond flexibly to fluctuations in demand by linking future demand plans to plants, not only based on fresh demand information, inventory information, and sales results, but also using statistical prediction.

*ERP is an abbreviation of Enterprise Resource Planning, which is packaged software that oversees the company's core operations, including sales, logistics, production, accounting, and human resources.

Build the CSIRT system

In response to increasing risks of cyber attacks and information leakage, we newly established "The Basic Policy of Information Security" as one of the NTN Group's Basic Policy to be set forth under our Management Policy, in view of the importance of information security in recent years.

As cyber attacks are becoming more complicated and sophisticated every day, other companies have also suffered similar damage such as information leakage quite often. In case of an information security incident, a quick response against information security risks is required, from detection to reporting and handling. Therefore, we have been developing a cross-department emergency system for handling information security risks (NTN-CSIRT: NTN Computer Security Incident Response Team).

Purposes of developing the information security emergency response system (NTN-CSIRT)

(1) Detect information security risks and accelerate communication, reporting, handling, and recovery in case of risk occurrence
(2) Reduce risk of and prevent information security incidents
(3) Strengthen governance to enhance information security

Please refer to our website for other initiatives related to "Improve the reliability of products and services (Quality assurance, stable supply)."
https://www.ntnglobal.com/en/csr/sc/customer.html

Materiality

Procurement activities with an emphasis on environment and society

Basic approach to procurement activities

In April 2021, we formulated a Procurement Policy corresponding to each SDGs. Based on the perspectives of “Fairness/impartiality,” “Compliance with Laws and Regulations,” “Green Procurement,” and “Coexistence and Co-prosperity,” purchasing departments at our head office play a central role in building a relationship of trust with business partners and we are conducting purchasing activities. Based on the “NTN Group Green Procurement Standards,” we are promoting green procurement, which prioritizes environmental preservation efforts and procurement from business partners with superior environmental quality. We have also established “NTN CSR Procurement Guidelines” and are requesting active promotion of CSR activities. We are also working to achieve local procurement at all of our manufacturing sites, including those outside Japan, and to procure materials from optimal locations globally.

In 2022, we announced our “Declaration of Partnership Building” with the aim of building new partnerships by promoting collaboration, coexistence and co-prosperity with business partners in the supply chain and businesses seeking to create value.

Risk management for suppliers

From the viewpoint of risk management, we begin transactions with our business partners after checking their management structure, quality, and environmental management. Even after beginning transactions, we conduct annual survey to confirm our partners’ business conditions, and provide partner-specific follow-ups when deemed necessary. If we determine that a transaction involves a high risk, we strive to minimize our procurement risk and ensure stable procurement by implementing risk reduction measures commensurate with the magnitude of the impact, taking into consideration procurement parts, transaction amounts, etc.

With regard to risks such as natural disasters and infectious diseases, we have established a risk management system to immediately share information with each business site and our business partners, thereby ensuring a proper risk management that enables a stable supply of our products even in an emergency.

CSR questionnaires for suppliers

We conduct annual survey of business partners to further raise awareness of “NTN CSR Procurement Guidelines” and to confirm compliance.

By the fiscal year 2022 questionnaire, the achievement ratio of human rights and labor, quality and safety, and information security was more than 90% However, the ratio of social contribution and CSR procurement was less than 70%, and it meant that their awareness was not high at this stage.

In recent years, companies have been required to not only achieve corporate performance (economic value), but also to be an entity that is needed by society (social value). To help business partners understand that social value is important, we will continue to engage in awareness-raising activities.

Degree of achievement according to CSR questionnaires



CSR questionnaires for suppliers

Questionnaire items

1	Compliance
2	Human rights and labor
3	Environment
4	Quality and safety
5	Information security
6	Business Continuity Management (BCM)
7	Social contribution
8	CSR procurement

Please refer to our website for other initiatives related to “Procurement activities with an emphasis on environment and society.”
https://www.ntnglobal.com/en/csr/sc/client.html

Materiality

Human resource development | Promote diversity | Promote safety and health | Respect for human rights



Executive Officer
Deputy Corporate General Manager,
Group Management HQ.
Human Resources Strategy Dept.
Personnel Dept.
General Affairs Dept.

Yasuhiro Kawabata

Organization and human resource transformations are necessary to realize the basic policy of our Medium-Term Management Plan, namely, to “for the new 100 years, drive forward the transformation of our business structure, strengthen our financial and organizational structure, and build a corporate structure that can respond flexibly to changes in the business environment,” while adapting to rapid changes in the environment in recent years.

To this end, it is necessary to foster an organizational culture that works to solve various social issues and increase social value, environmental value, and economic value, and to develop diverse human resources that can work with job satisfaction. With this aim, the Group has set “prosperous human development” as one of its ESG issues. Furthermore, we will steadily work on concreate measures one by one, with “securing human resources who will lead the next generation to take on the challenge of transformation,” “creating a rewarding environment that respects the diversity of employees,” “fostering a culture of learning and development in the workplace,” “realizing a workplace where employees can work safely and healthily” and “respect for human rights” as five pillars of our human resources strategy.

Five pillars of human resources strategy

1 Securing human resources who will lead the next generation to take on the challenge of transformation

Amid a rapidly changing environment and the rapidly changing relationship between employees and companies, the Group is working to “secure human resources who will lead the next generation to take on the challenge of transformation” by creating an environment that encourages each employee to think and act independently, with passion and enthusiasm.

P.63 Human resource development

2 Creating a rewarding environment that respects the diversity of employees

The Group respects and recognizes diverse values regardless of nationality, race, culture, gender, age, disability, etc., and is committed to “create a rewarding environment that respects the diversity of employees” where people from all walks of life can freely contribute better ideas and maximize their abilities.

P.65 Promote diversity

3 Fostering a culture of learning and development in the workplace

The Group provides growth opportunities based on individual aptitudes and careers, from new hires to leaders. We also recognize that learning is essential to employees’ personal growth and that personal growth leads to company growth. We are committed to “foster a culture of learning and development in the workplace.”

P.63 Human resource development

4 Realizing a workplace where employees can work safely and healthily

Ensuring the safety and health of all people working in the Group is the essential value that takes precedence over all business activities as the foundation of management, and based on this fundamental stance, we aim to “realize a workplace where employees can work safely and healthily.”

P.66 Promote safety and health

5 Respect for human rights

The Group believes that fulfilling its corporate responsibility regarding “respect for human rights” is essential to contribute to a sustainable society and remain a necessary business for the community. Based on this belief, we are committed to not being complicit in any form of human rights abuses and providing a safe and comfortable work environment for all Group employees.

P.67 Respect for human rights

Materiality

Human resource development

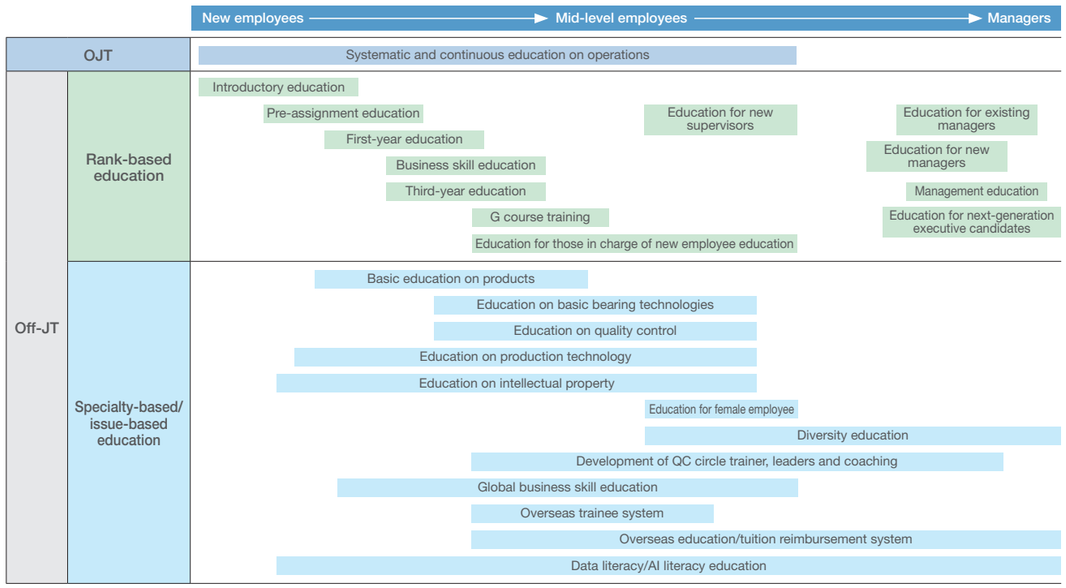
Basic approach to human resource development

We are working on specific initiatives to realize two out of the five pillars of our human resources strategy, namely, “securing human resources who will lead the next generation to take on the challenge of transformation” and “fostering a culture of learning and development in the workplace.” As our basic policy for human resource development to enable “prosperous human development” toward realizing a “NAMERAKA Society” stipulated in the Medium-term Management Plan, we aim to foster three types of human resources: (1) human resources who are competent in the international community, (2) human resources who are independent as individuals, and (3) human resource with creativity. Our human resource development is based on individual self-development and on-the-job training (OJT). In addition to providing opportunities and various support systems to promote this, we provide various types of rank-based, specialty-based, and issue-based training as Off-JT*, if necessary, with a long-term perspective in a systematic, planned and organized manner, with adaptation to meet the needs of the times.

*Off-JT is education and training outside the workplace.

NTN’s human resource development system

To foster a culture of learning and development in the workplace, we deploy programs to develop human resources who “can think and act by themselves” for all ranks. To expand our businesses for the next 100 years, it is indispensable for us to develop human resources who can work successfully not only in Japan but also overseas. As programs to enhance employees’ aspiration and develop internationally-minded persons, NTN provides English-only training (global business skill training) for young employees and put in place an overseas education and tuition reimbursement system as well. We also strive to increase the awareness, knowledge, and competence of all employees by enriching the content of corporate and technical knowledge seminars through in-house e-learning and have introduced programs for improving business skills in which younger employees can voluntarily take part. On the systemic side, we have implemented an in-house recruitment system to promote employees’ career ownership and been engaged in autonomous competence development according to the skills and career plan of each employee. Meanwhile, we offer AI and data literacy courses for promoting utilization of data and digital technologies, solving business issues, and leading to organizational innovation, in order to increase the number and level of users of digital literacy, such as AI literacy and data analysis. For managers, we provide training not only for new ones but also for those with certain years of experience (performance evaluator training for existing managers) to improve their ability of evaluating performance and providing guidance for subordinates. We also offer seminars (NTN Next Leader Program) to find and develop the new generation of management executives.



Manager personnel development

In addition to conventional training for managers, we offer an “NTN Next Leader Program (basic course/ intermediate course)” for young managers with the aim of developing the number of candidates for next-generation management, who can make decisions on management issues on long-term perspective.

The curriculum is designed to acquire viewpoints and knowledge required for management in a systematic way, with focuses on “reviewing from the managerial viewpoint and taking a larger view” selectively in the basic source and “developing the ability for strategic planning and organizational reform in the long term” in the intermediate course. We have also introduced a succession plan through selection of executive officer candidates. These measures enable us to find management candidates at an early stage and develop them in a planned manner.

Create a workplace to enhance employee engagement

Fair evaluation and treatment

NTN has introduced a personnel evaluation system to further vitalize our employees and improve the management efficiency by evaluating the achievement of business targets, the contribution in businesses, and the performance of jobs in a certain period, reflecting them properly in salary increase, bonus, promotion/ experience-based promotion, education, training, etc., implementing a fair personnel management, and raising the job performance of evaluatees to promote our businesses.

To ensure a proper operation of this system, we provide evaluator training every year. We also make sure that the system for reflecting the results of personnel evaluation in employees’ treatment is well known and that evaluation will lead to human resource development.

Realize a variety of work styles

We have maintained an environment in which diverse employees can work successfully by introducing a teleworking system and a flextime system and enhancing the flexibility of when and where to work. Also for managers, we provide job ranks to balance work and life so that they can fulfill both child or other family care and managerial jobs and apply for a reduced work schedule or a flextime system, which ensures that child or other family care would not hinder career advancement.

In addition to these programs for current employees, we have also introduced a job return system that enables former employees who have left the company due to marriage, child birth, fertility treatment, family care, career advancement, etc. to come back to the company, and have maintained an environment in which they can utilize their experience, knowledge, and know-how accumulated while working in the company or after leaving the company.

We will continue to develop a work environment where many employees can work sufficiently successfully to realize a variety of work styles.

Promote RPA use

In a Japanese society where the decreasing labor force is unavoidable due to the declining birthrate and aging population, enhancement of productivity per person is becoming a major issue.

To achieve a sustainable growth under such circumstances, we are required to further improve the productivity and promote work style reforms to generate higher business outcomes.

With the aims of responding to computerization being promoted inside and outside the company and improving the efficiency through automation of routine jobs, we have continuously utilized various digital tools such as RPA (Robotic Process Automation), while promoting business reforms, combined with standardization of work processes, for back-office jobs such as payroll calculation and slip processing.

In the future, we will develop an environment that will enable us to respond flexibly to changes in the environment surrounding us, which will lead to a higher competitiveness and realization of work style reforms, by promoting further paperless business information and automation of routine jobs and reviewing the business operation system at the company-wide level, in order to promote proposal and materialization of new work styles, based on the assumption of teleworking.

Implement employee engagement survey

To achieve sustainable enhancement of corporate competitiveness, we believe that it is important to create an open workplace in which each employee’s abilities are utilized and treated fairly, as well as a good relationship of trust and communication between supervisors, subordinates, and employees. We are working to improve employee engagement.

In order to enhance the effectiveness of our initiatives, we conduct an engagement survey to gauge the thoughts and feelings of our employees and their expectations for the company. Based on the survey result, we also conduct activities to improve workplace issues in department units, activate workplace communication through one-on-one meetings, and work to develop an environment in which each employee has a good reliable relationship with each other.

Through the development of personnel measures to improve employee engagement (such as revision of the managerial personnel system), implementation of workplace improvement activities, measures to reform working styles, and initiatives linked to the promotion of health and productivity management, we will realize the “good working environment” and “motivation” of each and every employee.

Please refer to our website for other initiatives related to “Human resource development.”
https://www.ntnglobal.com/en/csr/sc/employee.html

Materiality

Promote diversity

Basic approach to diversity and inclusion

Our group is working to "creating a rewarding environment that respects the diversity of employees" in which a variety of human resources, regardless of nationality, culture, gender, age, or disability, can freely contribute better ideas and maximize their abilities. More specifically, we are working to further secure human resources having various career backgrounds by increasing employment of midcareer workers and maintain environments and systems that enable us to actively promote diverse human resources to positions of responsibility at domestic and overseas business sites.

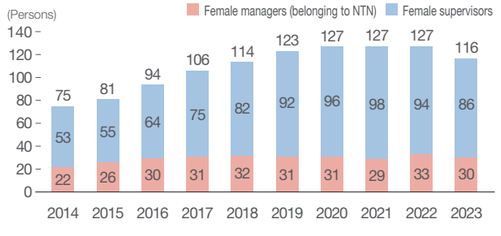
We will respect and recognize diverse values, and integrate them to create an organization that generates flexible ideas. While continuing to grow in a sustainable manner, we will realize our company's philosophy of "We shall contribute to international society through creating new technologies and developing new products."

Career advancement of women

One of the biggest challenges in achieving diversity is promoting women achievement in the workplace and closing the gender gap.

Currently, the percentage of female managers in our group is 14.7% globally, 4.0% in Japan, and 4.4% at NTN, revealing a lower level in Japan than overseas. In order for women to participate in important decision-making in positions of responsibility, and to create innovation based on diverse opinions and flexible ideas, we have introduced a leadership development program for female employees and systematically provide education to help them move up, thereby creating an environment in which women can aims to take managerial positions. In addition to fostering women awareness and developing their abilities, we will work to further promote women's activities with raising the awareness of the entire workplace.

Trend in the number of female managers and supervisors at NTN (employees belonging to NTN)/As of April 1



Balance childcare and work

Promote male employees to take childcare leave

Measures to promote the participation of male employees in childcare leave include awareness-raising activities by posting posters' promoting male employees' childcare leave throughout the company, and holding seminars to promote the development of the next generation (papa seminars), to help male employees learn about the importance of participating in childcare and to deepen their understanding of internal systems for childcare.

As a result of these efforts, the percentage of male employees taking childcare leave in fiscal 2022 increased to 37.2%, from 11.2% in fiscal 2021.

Received a "Platinum Kurumin" certification as a child-rearing support company

We were granted a "Platinum Kurumin" certification in October 2022 for our high level of supportive initiatives related to employees' child-rearing.

For employees in childcare, irrespective of their gender, we distribute a maternity/childcare leave handbook that summarizes laws and in-house systems related to childcare, from detection of pregnancy to maternity leave, childcare leave, and reinstatement, to make those systems known within the company. As a program for managers, we distribute a childcare support book designed for managers to deepen their understanding of childbirth and childcare and maintain an environment in which employees facing childbirth and childcare can demonstrate their maximum performance. In addition, we provide a childcare boss handbook designed for managers to develop an environment in which diverse human resources, such as those in child and other family care, can work sufficiently successfully and raise awareness for helping subordinates balance work and private life.

Promote employment of persons with disabilities

As part of developing an organization with diversity in which everyone can work successfully, we actively promote employment of persons with disabilities. Persons with disabilities "collaborate" successfully at various manufacturing sites and administrative departments with their respective characteristics. In addition, as workplaces in which persons with disabilities can work as leading members, we opened a dedicated workplace called "Yume Kobo (dream factory)" at each business site in Kuwana, Iwata, and Okayama, which contributes to local employment. We are also working to establish a work environment in which even persons with disabilities can work safely and easily, including barrier-free promotion. The rate of employment of persons with disabilities was 2.57% in the fiscal year ended March 2023 through active employment and retention programs.

Please refer to our website for other initiatives related to "Promote diversity."
https://www.ntnglobal.com/en/csr/sc/employee.html

Materiality

Promote safety and health

Safety and health efforts

Nurturing strong safety consciousness

We provide risk prediction (KY) training to improve the risk awareness of employees. By implementing risk awareness training (KYT) on a workplace-by-workplace basis, mainly led by trained employees, we aim to develop people who can be aware of unsafe conditions and do not act unsafely.

Similarly, we provide risk assessment (RA) training on facilities and operations. Through trained employees' participation in RA in their own workplaces, we intend to improve the level of risk assessment implementation. Also, through identification of hazards as part of the RA procedure and understanding of risk estimation by hazard, we aim to develop safety-conscious personnel who are able to imagine potential risks, acts resulting from personal carelessness, acts caused by impatience, omitted acts, etc.

Intrinsic safety of equipment

We continuously conduct risk assessment on facilities and work environments to reduce manifest and potential risks. In addition to taking engineering measures such as safety covers and interlocks, we also ensure the safety of facilities and operations through managerial measures such as procedures, rules, and protective equipment. Remaining risks are recorded in the residual risk management sheet in accordance with the unified company-wide residual risk management operation. Based on this, stickers indicating residual risk levels are put on the equipment for visualization. Furthermore, training on the residual risk of the equipment is provided for operators to make sure that they know where the hazardous risk lies.

Creating structures to support safety

We are promoting the introduction of an occupational health and safety management system to create a system that supports the safety of the Group. By continually implementing our management system and PDCA cycle, we will strive to comply with laws and regulations and improve the level of safety and health.

All of our manufacturing sites have completed ISO 45001*1 certification, an international standard.

In our 16 domestic manufacturing affiliates, two companies have acquired ISO 45001 certification, eight companies have acquired JISHA OSHMS certification*2, and two companies have acquired GSC certification*3. Currently, four affiliates are in the process of acquiring GSC certification. Five overseas affiliates have also acquired ISO 45001 certification.

If any occupational accident should have occurred, its information is shared on an occupational accident report across the entire company, including the occurrence conditions and countermeasures. If an accident requiring absence should have occurred, or multiple occupational accidents should have occurred at a same workplace (section) within a same fiscal year, a safety audit is conducted to prevent reoccurrence with members in charge of safety at other business sites.

In such cases, safety activities at the workplace are checked on site to ensure the effectiveness of its safety management system.

Regarding any occupational accident that has occurred, we identify why the victim had taken relevant actions, as well as the root cause, and provide guidance that will lead to countermeasures.

*1 ISO 45001: International standards for occupational health and safety management systems
*2 JISHA OSHMS: Japanese standard in compliance with the MHLW's "Guidelines on Occupational Safety and Health Management Systems" (OSHMS Guidelines)
*3 GSC: MHLW's project for assessing occupational safety and health of small and medium-sized business sites (Good Safety Company)

Approach to Kenko Keiei* (health and productivity management)

Certified as a "Health and Productivity Management Organization in the Large enterprise category (White 500)" for the third consecutive year

We were certified as a "Health and Productivity Management Organization 2023 (White 500)" in the large enterprise category, which is selected jointly by the Ministry of Economy, Trade, and Industry and the Japan Health Council. This is our third consecutive year of certification.

"The Health and Productivity Management Organization Recognition Program" is a system for recognizing companies that practice particularly excellent health and productivity management. This year, out of 2,676 applicant corporations, top 500, including NTN, were certified as "White 500" companies.

This survey evaluates corporations' initiatives to tackle health issues and promote health from the viewpoints such as "management principles/policies," "system/initiative implementation," and "organizational structure." This year, NTN received a top-class evaluation among corporations in the machinery industry in terms of "organizational structure," which evaluates the attitude of the management for health issues and corporations' promotion structures.

*Kenko Keiei is a registered trademark of the NPO Health Management Research Association.

2023
健康経営優良法人
Health and productivity
ホワイト500

Certification mark of "Health and Productivity Management Organization in the 2023 Large enterprise category (White 500)"

Please refer to our website for other initiatives related to "Promote safety and health."
https://www.ntnglobal.com/en/csr/sc/employee.html

Materiality

Respect for human rights

Basic approach to human rights

The Group believes that in order to contribute to a sustainable society and continue to be a "company needed by society," it is essential to fulfill our corporate responsibilities relating to respect for human rights and to earn the trust of society. Accordingly, we have included "respect for human rights" in our Management Policy. In addition, we have established a Human Rights Policy, which stipulates that we will not violate any form of human rights. We are also committed to awareness-raising activities related to respect for human rights and work environment development so that varied employees of the Group can all work safely and comfortably.

Human rights due diligence

Based on the two perspectives of "respect" and "remedy" set forth in the United Nations Guiding Principles on Business and Human Rights, our Group prioritizes "responding to human rights risks in employees," "responding to human rights risks in the supply chain," and "building a framework that ensures access to remedies." In order to ascertain the actual situation about negative human rights impacts in our business activities, we conducted a human rights questionnaire for our overseas affiliates. Analysis of the questionnaire results showed a low possibility of risk occurrence. We will continue to work for human rights due diligence by conducting a questionnaire regularly.

Human Rights Policy

In order to further promote human rights initiatives, we have formulated a Human Rights Policy in which all Group employees share common sense of values related to human rights and which serves as the basis for their day-to-day activities and business activities. In doing so, we are making efforts to ensure that human rights are respected.

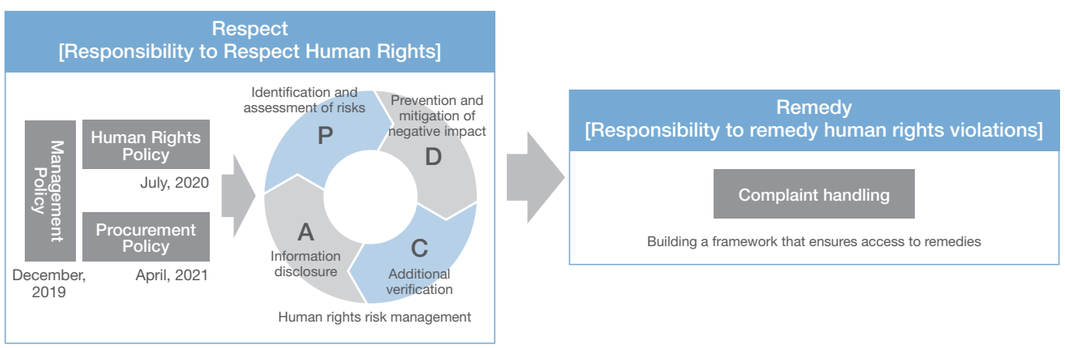
Based on the Human Rights Policy, we will address human rights issues which are gaining more and more global attention, as exemplified by the Sustainable Development Goals (SDGs) and the UK's Modern Slavery Act, and fulfill our corporate responsibility for respecting human rights.

Outline of the Human Rights Policy

1. NTN will respect internationally-recognized human rights.
2. NTN will not violate the human rights of others.
3. NTN will respond appropriately to any negative impacts its business activities may have on human rights.

■ Overview of human rights due diligence

United Nations Guiding Principles on Business and Human Rights



Respond to human rights risks in employees

Sound labor-management relations based on labor-management consultations

We strive to share the content of each measure between labor and management in a forum where labor and management can exchange information with each other. We hold quarterly "Labor-Management Roundtable Meetings," in which executive managers provide thorough explanations about the Business Management Policy, management environment, and other topics to the labor union and listen to the views of the labor union. In addition, we hold labor-management committee meetings as appropriate according to each measure that leads to improvement of "motivation to work" and "ease of work," with the aim of exchanging opinions to deepen mutual understanding and deciding on work styles that lead to improvement of attractiveness of a place to work.

Survey of foreign workers

We monitor the working condition of foreign workers in our group and have a system in place to enable quick response as necessary.

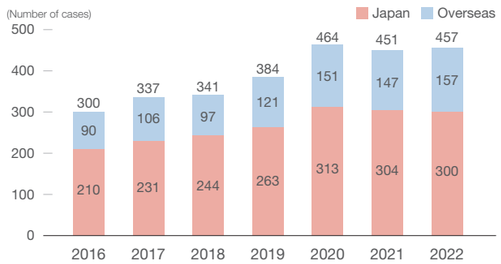
Respond to human rights risks in the supply chain

Correspond to forced labor and child labor (Conflict mineral surveys)

Incomes from the mining of tin, tantalum, tungsten and gold (3TG) in the conflict areas of the Democratic Republic of the Congo (DRC) and neighboring countries could be a source of capital for armed forces, which could lead to human rights infringement, illicit mining and smuggling. In April 2016, we established our CSR Procurement Guidelines, upholding the policy of "Responsible mineral procurement," to continuously monitor whether the mineral resources contained in materials and components used in our products are mined from conflict and high-risk areas. In the fiscal year ended March 2023, we traced back through our supply chain of 245 business partners to identify the material smelters, and more than 97% of such partners reported that they do not use any conflict minerals. We will continue to conduct this survey periodically.

Companies listed on U.S. Stock Exchanges are required to disclose any use of conflict minerals under the U.S. Dodd-Frank Act. Based on the results of the above survey, we respond to inquiries from our customers regarding conflict minerals. As human rights issues are gaining attention globally, corporate awareness of such issues is growing. Regardless of the U.S. Dodd-Frank Act, the number of companies voluntarily eliminating the use of conflict minerals is increasing as shown in the chart below.

■ Number of conflict mineral surveys (responding to requests from customers)



Excerpt from NTN CSR Procurement Guidelines

● **Responsible mineral procurement**
Mineral resources included in materials and components will be checked for any negative social impacts on human rights, the environment, etc. If a negative impact is suspected or verified to be present, we will substitute a method that does not use those conflict materials.

● **Prohibition of child labor**
We will not violate the obligation to protect children and will not employ children that do not meet the minimum working age of each country and region.

● **Prohibition of forced labor**
We will ensure that all labor is voluntary and that employees can leave their job freely. We will not use forced labor.

Materiality

Strengthen governance

Thorough compliance

Basic approach

Strengthening and enhancing our corporate governance is one of our top management priorities. We take steps to make management more efficient and robust while working to increase management transparency by disclosing information to shareholders and investors in a prompt and accurate manner.

We made a transition from a Company with a Board of Company Auditors to a Company with a Nominating Committee, etc. in June 2019 with the aim of establishing a prompt decision-making structure and operational execution organization, strengthening the supervision of management, and improving management transparency and fairness. Under this structure, we will work on further improvement of corporate value over the medium- and long-term.

Members composing Board of Directors, Nominating Committee, Compensation Committee, and Audit Committee

Fiscal year ending March 31, 2024 (As of June 27, 2023)

Board of Directors		Nominating Committee	Compensation Committee	Audit Committee
Eiichi Ukai		○	○	
Hideaki Miyazawa				
Masaki Egami				
Masaaki Yamamoto			○	
Shumpei Kinoshita				
Isao Ozako		○		○
Ryo Kawakami	★ (Non-standing)	○		○
Tomonori Nishimura	★ (Non-standing)		◎	○
Yuriya Komatsu Chairperson	★ (Non-standing)		○	
Akira Murakoshi	★ (Non-standing)	◎	○	
Yasuo Kitani	★	○		◎

*Please note that persons with ★ are Outside Directors, persons with ◎ are Chairpersons of committees, and persons with ○ are members of committees.

5 Management Meeting

The Management Meeting discusses important matters relating to operational execution, as a supporting body for decision making of President, Executive Officer. The meeting is composed of President, Executive Officer, and Executive Officers who are designated by him, and held twice a month in principle.

6 Executive Officers Meeting

The Executive Officers Meeting is held by President, Executive Officer under the attendance of all Executive Officers. Matters resolved at the Board of Directors are instructed, and each Executive Officer reports about the status of operational execution. This meeting is held once a month in principle, to make operational execution more efficient and effective by sharing information among Executive Officers.

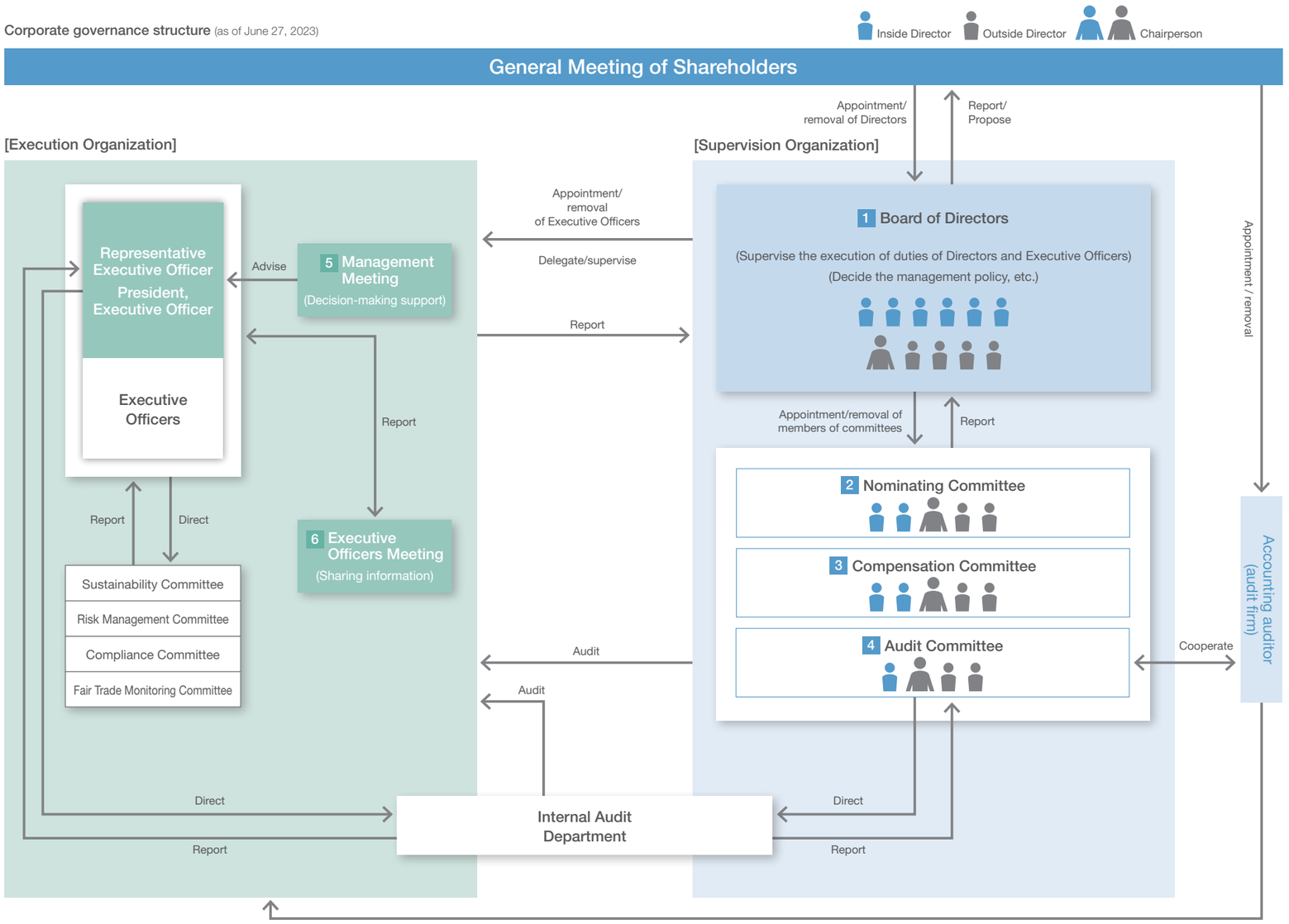
Executive Officers

Executive Officers are elected by the resolution of the Board of Directors, and are in charge of executional decision making and execution of operations delegated by the Board of Directors. Its term of office is specified as a year by the Articles of Incorporation. The number of Executive Officers is 11 as of June 27, 2023.

Basic information

Organizational design	Company with Nominating Committees, etc.
Directors	11
Of those, independent Outside Directors	5
Term of office of Directors	1 year
Executive Officers	11
Of those, Executive Officers who have the authority of representation	2
Executive Officers concurrently serving as Directors	5
Structure to support duties of Audit Committee	Available (Internal Audit Department)
Accounting auditor	Ernst & Young ShinNihon LLC

Corporate governance structure (as of June 27, 2023)



1 Board of Directors

The Board of Directors decides the basic management policies, and supervises the execution of duties of Directors and Executive Officers. Except matters stipulated by laws and regulations or the Articles of Incorporation to be resolved at the Board of Directors, the Board of Directors delegated substantial authority to Executive Officers with the aim to strengthen the supervision of management, and make decisions more promptly.

The Board of Directors is held once a month in principle, but it is also held flexibly as needed.

The Articles of Incorporation specify that the term of office of Directors shall be one year, and the number of Directors shall be within 15.

The number of Directors is 11 as of June 27, 2023, and five of them are Outside Directors. The Board of Directors is chaired by an Outside Director.

2 Nominating Committee

The Nominating Committee decides on the content of a proposal regarding appointment/removal of Directors, which is submitted to the General Meeting of Shareholders. The number of members is five as of June 27, 2023, and three of them are Outside Directors. The committee is chaired by an Outside Director.

3 Compensation Committee

The Compensation Committee decides on the policy for determining details of compensation for Directors and Executive Officers, and determines details of compensation for individual persons. The number of members is five as of June 27, 2023, and three of them are Outside Directors. The committee is chaired by an Outside Director.

4 Audit Committee

The Audit Committee audits the execution of duties of Directors and Executive Officers, and decides on the content of a proposal regarding appointment/removal of the accounting auditor, which is submitted to the General Meeting of Shareholders. The duties of the Audit Committee are supported by the Internal Audit Department, and the Secretariat of Audit Committee, etc. are staffed by persons holding different posts as well. These persons, who have proper capacity and experience for supporting the Audit Committee, are appointed by the manager of the Internal Audit Department, with the approval from the Internal Audit Committee. Regarding matters related to personal relocation, disciplinary punishment, evaluation, etc. of such persons, the approval from the Audit Committee shall be required for decision.

The number of members is four as of June 27, 2023, and three of them are Outside Directors. The committee is chaired by an Outside Director.

Materiality

Strengthen governance

Governance-strengthening transition

2004	● Start of Operating Officer System ● The Board of Managing Directors is reviewed and renamed as the Business Strategy Committee
2006	● CSR Committee is established
2008	● Risk Management Committee is established ● An Outside Director is appointed for the first time
2011	● The number of Outside Directors is increased (from 1 to 2)
2012	● Fair Trade Monitoring Committee is established
2015	● Compliance Committee is established ● The effectiveness of the Board of Directors is assessed
2016	● Compensation Advisory Committee is established
2018	● New corporate philosophy system is established
2019	● Transition to a Company with Nominating Committee, etc. ● The number of Outside Directors was increased (from 2 to 5) ● Sustainability Committee is established
2020	● Woman appointed as an Outside Director
2021	● Flattening Executive Officer System
2022	● ESG items set in the Executive Officer evaluation system ● Female Outside Director appointed as the chairperson of the Board of Directors

Board of Directors

Approach of Board of Directors

Directors other than Outside Directors are appointed from a wide range of fields, including manufacturing, marketing, technology, and administrative divisions. In addition, Outside Directors are appointed after considering diversity and balance, such as being a person with knowledge of finance, experienced management, and being a lawyer. We believe that the current number of Directors is an appropriate size for strengthening corporate governance and expanding our global businesses.

Diversity of Directors

Upon the approval of the General Meeting of Shareholders in the fiscal year ended March 2020, a female Director (Outside Director) was newly appointed for the first time at the Company. The female Director with experience in a different industry than ours supervises management. This will enable us to integrate diverse values and accelerate transformation aimed at achieving sustainable growth.

Assessment of effectiveness of the Board of Directors

We annually evaluate the effectiveness of the Board of Directors to improve the effectiveness. In the fiscal year ended March 31, 2023, we conducted a self-assessment of the Board of Directors by sending out questionnaires to Directors from the viewpoints such as role/structure/management of the Board of Directors and management of committees. Although this evaluation was generally positive, it was mentioned, regarding the performance evaluation of Executive Officers, that the target management system has been developed, but its operation is still in the developing stage. There was also another comment on reverification of matters resolved at the Board of Directors. On these matters, we have decided to continue discussion. We will continue to analyze and evaluate the effectiveness of the Board of Directors on a regular basis to make improvements.

Executive Officers

The appointment of Executive Officers

The appointment of Executive Officers shall be determined after careful deliberation by the Board of Directors, comprehensively considering whether they possess personalities, insights, capabilities, experience/performance, etc. that are appropriate for fulfilling their duties. In addition, if it becomes clear that an Executive Officer lacks the required qualifications, he/she will be promptly dismissed by the Board of Directors.

Flattening of the system and compensation

On June 25, 2021, the Company removed the Managing Executive Officers and eliminated hierarchical relationships among Executive Officers and made them one team. It enables all Executive Officers to activate discussions and respond to various issues quickly toward further enhancement of its corporate value.

In line with the flattening of the system, in April 2022 we abolished the conventional system of compensation by position and shifted to a system of compensation for Executive Officers based on the responsibilities of the division to which they are in charge.

Introduction of ESG evaluation

Since April 2022, ESG items have been set as key individual target measures for Executive Officers involved in the calculation of annual incentives (bonuses). The degree of achievement of these ESG items is one of the evaluation indicators. By introducing ESG items into the evaluation system, Executive Officers are promoting active ESG initiatives.

Nominating Committee (from April 1, 2022 to March 31, 2023)

■ Members, the number of meetings, and attendance

Name	Title	Attendance	Number of attendances
Noboru Tsuda	Chairperson Outside Director	100%	5 times/5 times
Kouji Kawahara	Outside Director	100%	5 times/5 times
Akira Murakoshi	Outside Director	100%	5 times/5 times
Eiichi Ukai	Director	100%	5 times/5 times
Isao Ozako	Director	100%	5 times/5 times

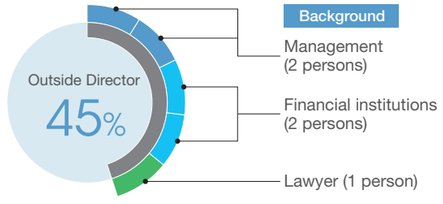
Discussions on Nominating Committee

The committee was held five times for the year ended March 31, 2023, with discussions mainly on the follow up on the business execution plans of Executive Officers, the structure of officers for the fiscal year ending March 31, 2024, and the selection of candidates for President, Executive Officer, Representative Executive Officers and Executive Officers and Directors.

About Outside Directors

As of June 27, 2023, the Board of Directors consists of 11 members, including six Inside Directors and five Outside Directors, and the ratio of Outside Directors is 45%. We will continue to strengthen the supervision of management and improve management transparency and fairness. In addition, in order to ensure appropriate corporate governance, we have established our own standards regarding the independence of Outside Directors, stipulating qualification and independence standards for them. These standards are used for appointing Outside Directors. Also, all of the Outside Directors are designated as Independent Officers as defined by the rules of the Tokyo Stock Exchange, Inc. (TSE), and are reported to TES as such.

For Outside Directors, we have established an environment where active discussions can be held at the Board of Directors through actions such as explaining the issues as necessary by secretariat and others prior to a relevant meeting of the Board of Directors. Moreover, we continuously provide information necessary to effectively fulfill the roles and responsibilities of an Outside Director by creating opportunities to deepen their understanding of our business through on-site inspection of business sites and other means.



Standards for Selection of Directors

Candidates for Directors will be selected from inside and outside the Company based on standards for selection of Directors as described below, considering the diversity and balance of the Board of Directors (including gender and internationality), after careful deliberation by the Nomination Committee.

- Must be in good condition both physically and mentally.
- Must have a high sense of ethics and a law-abiding spirit.
- Must be able to engage in constructive discussion from an objective viewpoint.
- Must be highly motivated to improve their abilities.
- Must have excellent decision-making skills from a company-wide and medium- to long-term perspective.
- Must have excellent insight and foresight concerning changes to the overall environment and to society.
- Must have sufficient record of performance and expertise in relevant fields. (Corporate manager or expertise)
- Outside Directors must (1) have sufficient time to accomplish their duties, (2) satisfy the standards regarding the independence of Outside Directors, (3) ensure diversity between the Outside Directors, and (4) have the requisite abilities to accomplish duties as a member of any of the three Committees.

Compensation Committee (from April 1, 2022 to March 31, 2023)

■ Members, the number of meetings, and attendance

Name	Title	Attendance	Number of attendances
Tomonori Nishimura*	Chairperson Outside Director	100%	6 times/6 times
Ryo Kawakami	Outside Director	100%	7 times/7 times
Yuriya Komatsu	Outside Director	100%	7 times/7 times
Eiichi Ukai	Director	100%	7 times/7 times
Masaaki Yamamoto*	Director	100%	6 times/6 times

*The number of attendances after becoming as a member of the Committee

Discussions at the Compensation Committee

The Compensation Committee was held seven times from April 2022 to March 2023.

The Compensation Committee aims to improve fairness, transparency, and objectivity of procedures regarding the decision making of compensation for Directors and Executive Officers and enhance corporate governance. Also, the committee passed resolutions regarding the details of compensation (such as compensation specified for each individual) of Officers.

■ Compensation Committee (from April 1, 2022 to March 31, 2023)

1st	·Points granted by BIP Trust for compensation of Officers ·Bonus for Executive Officers in 2022
	·Decision of the order of substitution for the chairperson in the event of an accident
2nd	·Basic policy for determination of compensation ·Director compensation ·Changes in compensation for Executive Officers due to organizational change ·Compensation Committee's annual activity plans
3rd	·Executive Officer's business execution plans
4th	·Review of compensation levels and compensation structure of Officers ·Winter bonus for Operating Officers
5th	·Punishment of Executive Officer
6th	·Executive Officer compensation
7th	·Basic compensation for Executive Officers ·Executive Officer compensation ·Revision of stock issuance regulations and internal regulations

Basic policy for determining compensation

The system and level of compensation for Officers, compensation specified for each individual, etc. are determined in the Compensation Committee chaired by an Outside Director using objective information including the level and trends of other companies as reference.

Compensation for Executive Officers and compensation for Directors are determined separately, and if a Director also serves as an Executive Officer, those compensations are added up.

Compensation for Directors

Compensation for a Director consists only of fixed compensation.

Fixed compensation shall be calculated by increasing basic compensation (which is determined based on his/her concurrent duties as an Executive Officer and whether he/she works full-time or part-time), taking into account a committee to which a Director belongs and his/her role at the committee.

Compensation for Executive Officers

Compensation for Executive Officers consists of fixed compensation and performance-linked compensation which fluctuates according to performance. The ratio of fixed compensation to performance-linked compensation is approximately 6:4 as a standard.



Fixed compensation

Fixed compensation consists of basic compensation, compensation by responsibility and compensation by representation.

Performance-linked compensation

■ Annual incentives

For Executive Officers, the Company determines whether or not to provide payment of monetary compensation that reflects the performance of a single fiscal year, based on consolidated financial results indicators, etc. of the previous fiscal year and, in the case of providing such payment, the total amount. The payment or non-payment of each Executive Officer, and in the case of payment, the amount, is determined within the total amount of provision by considering the Executive Officer's progress on priority target measures. Indicators related to the calculation of bonuses are based on consolidated financial results: net sales, operating income and net income from the perspective of emphasizing the achievement of earnings growth. The provision is made once a year in June after the determination of the Compensation Committee.

■ Medium- to long-term incentives

Company's shares shall be issued based on the achievement level of major target figures in the Medium-term Management Plan (money equivalent to the converted amount of shares shall be paid for a certain portion) as incentives to motivate them to achieve the targets in the Medium-term Management Plan and contribute to raising shareholder value, and in order to promote the holding of the Company's shares. Medium- to long-term performance targets include key performance indicators (consolidated operating margin, consolidated net sales, etc.) that take into account the Company's management policies.

Audit Committee (from April 1, 2022 to March 31, 2023)

■ Members, the number of meetings, and attendance

Name	Title	Attendance	Number of attendances
Kouji Kawahara	Chairperson Outside Director	100%	15 times/15 times
Ryo Kawakami	Outside Director	100%	15 times/15 times
Tomonori Nishimura	Outside Director	100%	15 times/15 times
Isao Ozako*	Director	100%	11 times/11 times

*The number of attendances after becoming as a member of the Committee

Discussions at the Audit Committee

Major items to be discussed at the Audit Committee include the formulation of the Audit Committee's auditing standards, the formulation of auditing policies and auditing plans, the evaluation of the content of auditing plans of independent auditors, and the assessment of the selection of independent auditors, and the assessment of the status of development and operation of internal control systems.

Audit Status

The Audit Committee members attend meetings of the Board of Directors and other major meetings in accordance with auditing standards, policies, and plans determined by the Audit Committee. The Audit Committee receives reports or hears from Directors, Executive Officers, employees, etc. on the status of the execution of their duties, and audits the execution of duties by Directors and Executive Officers. In addition to the Board of Directors and Executive Officers Meetings, members of the Audit Committee attend and monitor the Sustainability Committee, the Risk Management Committee, the Compliance Committee, and the Fair Trade Monitoring Committee, which operate internal control systems.

Internal Control/Internal Audit

Internal control system

We regard risk management and compliance as one of the most important management issues, and have established a basic approach to internal control system (Internal Control Policy). Based on this basic policy, we maintain and operate the Group's internal control system, and are working to improve the soundness and efficiency of our management by constantly reviewing our internal control system in response to changes in the business environment.

Internal audit activities

The Internal Audit Department reports directly to the President, Executive Officer and is in charge of internal audit operations independently from the divisions to be audited. The Internal Audit Department conducts internal audits of the execution status of execution organizations from the perspectives of compliance with laws and internal regulations, appropriateness, and the effectiveness and efficiency of business activities.

For internal audits, audits are conducted by each organization of the execution organization (operational audits) and cross-organizational audits by risk and business function (thematic audits). Based on the results of these audits, we provide advice and recommendations for improvement to divisions subjects to audits, as well as conducting follow-up audits to confirm the implementation status of improvement measures until their completion.

Overseas, we have established the Administration & Internal Control Department within the General Manager's Office of each region. The Internal Audit Department and the Administration & Internal Control Department work together to strengthen internal controls while taking into account the circumstances and characteristics of each region. In the fiscal year ended March 2023, we resumed operational audits by visiting overseas affiliates, which had been voluntarily restrained due to the COVID-19 pandemic.

The results of internal audits are reported to the President, Executive Officer and to the Audit Committee, and are shared also with all Executive Officers. In addition, the Audit Committee, the Internal Audit Department and the Accounting Auditor hold regular meetings to exchange information and opinions about the audit policies, audit plans, audit results, etc., and strive to improve efficiency and effectiveness of audits.

Overview of the Committees

Sustainability Committee

Under an ever changing environment surrounding our Group's businesses, we are promoting sustainability activities to solve environmental and social issues and enable our Group's sustainable growth, as well as to realize a "NAMERAKA Society."

As an advisory body on sustainability activities, we have established the Sustainability Committee, chaired by the Executive Officer (Chief Management Officer of sustainability activities), who is in charge of the ESG Promotion Department. The committee mainly consists of the General Managers of ESG-related departments and deliberates on risks, opportunities, and initiatives related to sustainability. The status of our initiatives is checked regularly as materiality measures associated with risks and opportunities. Risks, opportunities, and initiatives discussed at the Sustainability Committee are reported to the Board of Directors as necessary.

Risk Management Committee

To respond to various risks surrounding the business of the Group, we have established the Risk Management Committee, chaired by the Executive Officer (Chief Management Officer of risk management), who is in charge of the ESG Promotion Department, as an advisory body on risk management to prevent risks from occurring and to minimize damage in the event of a crisis. The committee mainly consists of the General Managers of the Promotion Departments of the risk management. The committee regularly checks activities including identification, analysis, evaluation, and treatment with regard to risks that have a major impact on the management of the NTN Group. The result of discussion at the Risk Management Committee is reported to the Board of Directors and instructions are fed back to the relevant departments.

Compliance Committee

The Compliance Committee, chaired by the Executive Officer in charge of Legal Department (Overall Control Administrator of Compliance Promotion Activities), handles global compliance risks, excluding violation risks of the antimonopoly law and the Subcontracting Act. The committee members are comprised primarily of the heads of related risk management divisions. The committee members formulate and implement risk mitigation measures in cooperation with the Compliance Promotion Activity Supervisors appointed at each business site in Japan and the Administration & Internal Control Department established at each Office of General Manager in five overseas regions, and report to the committee on action plans and the status of implementation. The committee deliberates on the contents of such reports and then reports the findings to the Board of Directors.

Fair Trade Monitoring Committee

The Fair Trade Monitoring Committee is chaired by the President and Executive Officer and consists of Executive Officers in charge of sales and procurement divisions, an Outside Director, external lawyer and so on. In principle, this meeting is held twice a year to discuss the implementation plans and the performance reports for compliance with the Antimonopoly Act and the Subcontracting Act, and to provide supervision and guidance on effective control for fair trade practices along with education and awareness-raising activities. In addition, we have established the Fair Trade Promoting Group in Legal Department as an overall supervisory department for compliance with antimonopoly law. Under the direction of the Fair Trade Monitoring Committee, the Group conducts various activities (such as education, instruction and audit) for relevant divisions in Japan. Additionally, overseas subsidiaries are monitored for the implementation status of compliance with antimonopoly law in cooperation with the Administration & Internal Control Department in each region.

Risk Management

Basic approach to risk management

We have developed a Risk Management Policy that outlines our basic approach to prevention and handling of risks that may hamper the execution of the Group's business, and the Risk Management Regulations that set forth risk management organizations and their roles. Through these measures, we promote group-wide risk and crisis-management and BCP/BCM (Business Continuity Planning/Business Continuity Management).

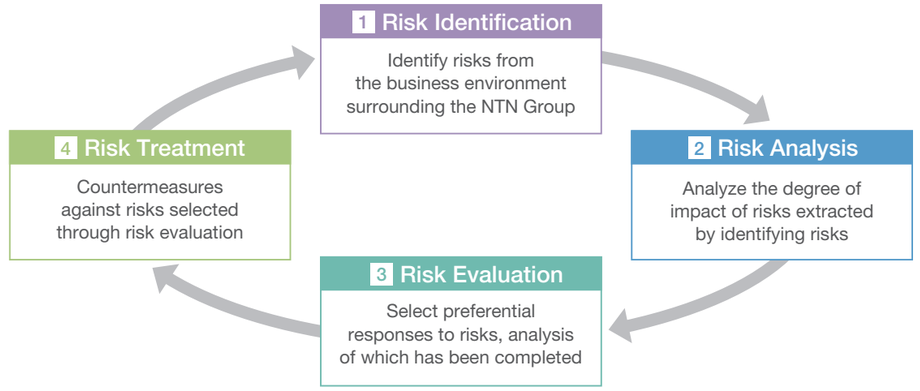
We convene the Risk Management Committee as an advisory body for risk management twice a year, in principle. The committee regularly checks risk management process including identification, analysis, evaluation, and treatment with regard to risks that have a major impact on the management of the NTN Group in light of changes in the internal and external environment and other factors. We have classified risks into the following 12 categories from the perspective of ensuring completeness. After that, an administrative manager and a promotion department have been determined for each specific risk that will have a significant impact on the management of the NTN Group. Through these measures, we endeavor to reduce risks. The results of the discussion at the Risk Management Committee are reported to the Board of Directors.

Promotion of BCP/BCM

We have been developing a BCP/BCM structure designed to respond to major earthquakes in Japan and are working to strengthen our disaster response systems, including those of our group companies.

We have completed the formulation of BCP to enable early disaster recovery at all domestic production sites. Now we have also implemented BCP training to assess the effectiveness of the formulated action plans and have taken necessary advance measures. In doing so, we are moving ahead with development of BCM.

■ Risk management process



■ Risk Category

1 Risks related to technology and R&D	5 Risks related to sales and marketing	9 Risks related to finance and accounting
2 Risks related to procurement and logistics	6 Risks related to personnel and labor	10 Risks related to legal affairs and compliance
3 Risks related to production and inventory	7 Risks related to the environment and health & safety	11 Risks related to fire and disaster prevention, etc.
4 Risks related to quality	8 Risks related to information systems	12 Others

■ Structure



Materiality

Thorough compliance

Basic approach to compliance

We believe that earning the trust of society is essential for us to contribute to the realization of a sustainable society and to continue to be a company needed by society. Accordingly, we are placing importance on compliance in our Management Policy. We formulated the Business Code of Conduct to specify the policy of actions which officers and employees should observe so that we can conduct business activities in accordance with laws and regulations and generally accepted standards and practices in each country, and our internal rules. We have also established and have been operating the compliance promotion structure that includes rules related to compliance, a whistle-blower system, the Compliance Committee, and the Fair Trade Monitoring Committee.

Promotion structure

We have established and have been operating the Compliance Committee and the Fair Trade Monitoring Committee to promote compliance through the activities of both committees. (See page 75 for Overview of the Committees.)

Aside from the efforts made by the two committees, the Legal Department conducts the rank-based training and the topic-specific training for officers and employees as part of compliance-related educational and awareness-raising activities. In addition, we hold a group training session for Compliance Promotion Activity Supervisors in Japan once a year. By sharing information and exchanging opinions on important issues, we are enhancing the promotion activities at each business site and providing support for the initiatives at each business site. Furthermore, with regard to activities for global compliance risks such as corruption prevention, we regularly exchange information and opinions with the Administration & Internal Control Department at each Office of General Manager in five overseas regions and legal/compliance departments of overseas subsidiaries, thereby confirming each other's ongoing activities and setting new agendas.

In addition, we have established the Fair Trade Promoting Group in Legal Department of an overall supervisory department for compliance with antimonopoly law. Under the direction of the Fair Trade Monitoring Committee, the Group conducts various activities (such as education, instruction and audit) for relevant divisions. Additionally, overseas subsidiaries are monitored for the implementation status of compliance with antimonopoly law in cooperation with the Administration & Internal Control Department at the Office of General Manager in each region.

Internal corporate culture survey

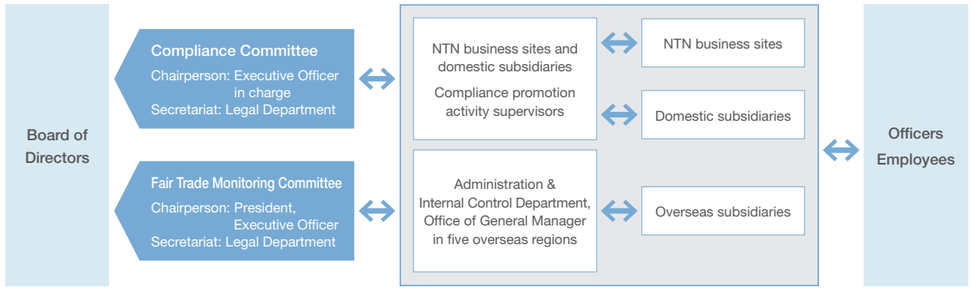
As part of its fraud prevention activities, the Group has investigated employee evaluations for the attitudes of the presidents of affiliated companies and their corporate culture related to compliance, since the fiscal year ended March 2018.

It is said that there is a high probability of occurrence of fraudulent acts in a company when motives/pressures, opportunities, and rationalization triangles are formed. While advancing the development of regulations, rules, and penalties, it is important to develop an internal corporate culture and environment. Therefore, we regularly confirm changes in the organizational culture of affiliated companies through employee evaluations.

By disclosing the results of this survey to the presidents of affiliated companies, we are making use of the results to create an internal corporate culture of not being motivated to conduct fraudulent acts, based on the awareness that fraudulent acts are constantly seen within the company and at the head office. Also, such results are used to create better relationships with employees.

In the fiscal year ended March 2023, we conducted a survey of approximately 680 employees of 12 affiliated companies (6 in Japan and overseas, respectively) where a change of the president or other event occurred.

■ Structure



Corruption prevention initiatives

Initiatives in Japan

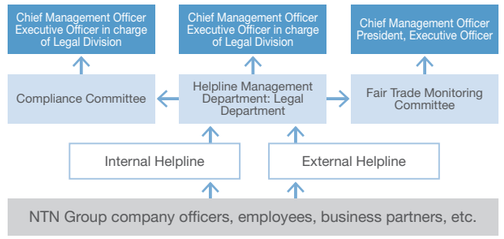
We have established and have been applying in-house rules and regulations based on domestic and overseas anti-corruption laws and social norms. Our in-house rules and regulations not only prohibit bribery from and to domestic and overseas public officials and business partners, but also specify the rules and procedures regarding provision of property or profit by our officers or employees, and rules and procedures to prevent bribery via our business partners. In addition, under the circumstance that some countries even impose restraints on the transfer of property or profit between private companies, we have established rules and procedures for the receipt of property or profit in order to prevent bribery by our officers and employees, to thoroughly ensure the conduct of fair trade, and to prevent our officers and employees from engaging in conflicts of interest. Furthermore, we have made it a policy to refuse to receive gifts and entertainment from our business partners in principle. We conduct in-house training and e-learning programs to raise awareness of the contents of our in-house rules and regulations, and conduct self-audits once a year to ensure thorough awareness of the anti-corruption rules and regulations. Domestic subsidiaries have also established and have been applying their own internal regulations that are consistent with the Company's policies.

Overseas initiatives

Our overseas subsidiaries have developed and have been operating in-house rules and regulations that are localized to reflect relevant laws, regulations, and generally accepted standards and practices in each country. They also conduct audit activities related to these rules and regulations as needed. The Legal Department is regularly sharing information and exchanging views with the Administration & Internal Control Department at the Office of General Manager in each region on related initiatives, and maintaining and managing a structure in whic h the Group unites as one to prevent bribery.

Helpline (whistle-blower system) and educational activities

In Japan, the whistle-blower system called Helpline has been established within and outside the Company and has been operated as a contact point for providing consultation regarding violations of laws, Business Code of Conduct, and in-house regulations. Helpline provides consultation for cases such as suspected violations of labor-related laws, including harassment, as well as violations of in-house regulations, and conducts investigation in accordance with Helpline Management Rules that stipulate ensuring the confidentiality and prohibition of detrimental treatment against the whistle-blower and collaborators of the investigation. Through provision of information in various compliance training sessions and in the Code of Conduct Guidebook, we have established a structure where all employees can utilize Helpline, not only as a tool to report misconduct, but also as a means of raising questions and expressing opinions and complaints regarding the Business Code of Conduct, and maintaining satisfactory relationships between the company, officers, employees, and business partners. In 2022, we revised our Helpline Management Rules in line with the implementation of the amended Whistleblower Protection Act. According to the purpose of the act, we are performing proper operations, such as increasing persons eligible for protection and strengthening protection. Whistle-blower systems are being progressively created and operated also in overseas regions, where they are tailored to local needs and circumstances.



Antimonopoly law compliance initiatives

We regard any antimonopoly violations represent a potential risk for the whole NTN Group. To ensure thorough antimonopoly compliance, the Legal Department and the Administration & Internal Control Department in each region conduct training and awareness-raising activities related to antimonopoly law compliance in accordance with local laws and circumstances in each region.

In addition, any officer or employee who might potentially contact competitors at an exhibition or meeting or any other event is obligated to apply for permission in advance and/or report it subsequently. This means we have in place a system with which we can identify the status of contact by officers and employees with competitors. Furthermore, we strengthen the compliance system by conducting annual self-audits and internal audits. Based on those results, each department proactively plans and implements improvement measures.

We work to put fair and free competition into practice by continuing to upgrade our educational activities and raising the awareness of officers and employees.

Please refer to our website for other initiatives related to "Thorough compliance."
https://www.ntnglobal.com/en/csr/governance/compliance.html

Officers (As of June 27, 2023)

Internal Directors

Members of Nominating Committee
Members of Audit Committee
Members of Compensation Committee
★ Chairperson of each committee



Eiichi Ukai

Number of years as Director **6 years**
Number of shares of the Company held **93,900 shares**



Hideaki Miyazawa

Number of years as Director **9 years**
Number of shares of the Company held **97,100 shares**



Masaki Egami

Number of years as Director **2 years and 11 months**
Number of shares of the Company held **30,700 shares**



Masaaki Yamamoto

Number of years as Director **1 year**
Number of shares of the Company held **38,700 shares**



Shumpei Kinoshita

Number of years as Director **New**
Number of shares of the Company held **33,800 shares**



Isao Ozako

Number of years as Director **1 year**
Number of shares of the Company held **37,100 shares**

Outside Directors



Ryo Kawakami

Number of years as Director **4 years**
Number of shares of the Company held **0 shares**

(Significant concurrent positions)
Attorney at law (Osaka Nishi Law Office, Legal Professional Corporation)



Tomonori Nishimura

Number of years as Director **2 years and 11 months**
Number of shares of the Company held **6,300 shares**

(Significant concurrent positions)
Business Owner, NT Consul Biz.



Yuriya Komatsu

Number of years as Director **2 years and 11 months**
Number of shares of the Company held **10,000 shares**

(Significant concurrent positions)
Outside Director, Dream Incubator Inc.
Outside Director, Daicel Corporation
Director, IA Partners Inc.
Advisor, Otsuka Chemical Co., Ltd.



Yasuo Kitani

Number of years as Director **New**
Number of shares of the Company held **0 shares**



Akira Murakoshi

Number of years as Director **1 year**
Number of shares of the Company held **1,200 shares**

Please see our website for past experience.
https://www.ntnglobal.com/en/csr/governance/structure.html

Skill matrix representing the main areas of experience of the Director candidates

Name	Main areas of experience required of Directors								
	Corporate management	Manufacturing	Technology, R&D	Sales	Corporate and business planning	Finance and administration	Legal affairs, internal controls, compliance	Global experience	Experience of other industries, diversity
Eiichi Ukai	●	●		●				●	
Hideaki Miyazawa	●	●		●	●			●	
Masaki Egami			●						
Masaaki Yamamoto					●	●	●	●	
Shumpei Kinoshita					●	●		●	
Isao Ozako	●	●						●	
Ryo Kawakami							●		●
Tomonori Nishimura	●		●	●					●
Yuriya Komatsu					●	●	●	●	●
Akira Murakoshi	●			●	●	●	●	●	●
Yasuo Kitani	●			●	●	●		●	●

	Directors	Number of Board of Directors and Committee attended		Reasons for selection
Internal Directors	Eiichi Ukai	100%	Board of Directors 15/15 Nominating Committee 5/5 Compensation Committee 7/7	Mr. Eiichi Ukai possesses operational experience in areas such as the Quality Assurance Division and Overseas Division, and broad knowledge of the management of the Company promoting business globally based on these achievements, among others, and has served as President, Executive Officer of the Company since April 2021. The Company selects him with an aim to continuously improve corporate value, utilizing his experience and knowledge, etc. for management.
	Hideaki Miyazawa	100%	Board of Directors 15/15	Mr. Hideaki Miyazawa possesses operational experience in areas such as the Business Division for the automotive market and Overseas Division, and broad knowledge based on these achievements, among others. The Company selects him with an aim to continuously improve corporate value, utilizing his experience and knowledge, etc. for management.
	Masaki Egami	100%	Board of Directors 15/15	Mr. Masaki Egami possesses operational experience in areas such as the Engineering Division and Research and Development Division, and broad knowledge based on these achievements, among others. The Company selects him with an aim to continuously improve corporate value, utilizing his experience and knowledge, etc. for management.
	Masaaki Yamamoto	100%	Board of Directors 11/11 Compensation Committee 6/6	Mr. Masaaki Yamamoto possesses operational experience in areas such as the Finance Division and Overseas Division, and broad knowledge based on these achievements, among others. The Company selects him with an aim to continuously improve corporate value, utilizing his experience and knowledge, etc. for management.
	Shumpei Kinoshita			Mr. Shumpei Kinoshita possesses operational experience in areas such as the Overseas Division and Finance Division, and broad knowledge based on these achievements, among others. The Company newly selects him with an aim to continuously improve corporate value, utilizing his experience and knowledge, etc., for management.
	Isao Ozako	100%	Board of Directors 11/11 Nominating Committee 5/5 Audit Committee 11/11	Mr. Isao Ozako possesses operational experience in areas such as the Manufacturing Division and Quality Assurance Division, and broad knowledge based on these achievements, among others. The Company selects him with an aim to continuously improve corporate value, utilizing his experience and knowledge, etc. for management.
Outside Directors	Ryo Kawakami	100%	Board of Directors 15/15 Audit Committee 15/15 Compensation Committee 7/7	Although Mr. Ryo Kawakami has not been directly involved in corporate management, he possesses broad knowledge, etc. based on extensive experience as a lawyer familiar with corporate legal affairs. The Company selects him with an expectation to continuously improve corporate value by conducting supervision from the viewpoint to increase transparency and fairness of management through his duties such as providing appropriate opinions on the independent standpoint from business executors.
	Tomonori Nishimura	100%	Board of Directors 15/15 Audit Committee 15/15 Compensation Committee 6/6	Mr. Tomonori Nishimura possesses broad knowledge, etc. based on extensive experience in the management of other companies. The Company selects him with an expectation to continuously improve corporate value by conducting supervision from the viewpoint to increase transparency and fairness of management through his duties such as providing appropriate opinions on the independent standpoint from business executors.
	Yuriya Komatsu	100%	Board of Directors 15/15 Compensation Committee 7/7	Ms. Yuriya Komatsu possesses broad knowledge, etc. based on extensive experience in the management of other companies. The Company selects him with an expectation to continuously improve corporate value by conducting supervision from the viewpoint to increase transparency and fairness of management through her duties such as providing appropriate opinions on the independent standpoint from business executors.
	Akira Murakoshi	100%	Board of Directors 11/11 Nominating Committee 5/5	Mr. Akira Murakoshi possesses broad knowledge, etc. based on extensive experience in the management of other companies. The Company selects him with an expectation to continuously improve corporate value by conducting supervision from the viewpoint to increase transparency and fairness of management through his duties such as providing appropriate opinions on the independent standpoint from business executors.
	Yasuo Kitani			Mr. Yasuo Kitani possesses extensive experience in banking over many years and broad knowledge including finance, among others. The Company newly selects him with an expectation to continuously improve corporate value by conducting supervision from the viewpoint to increase transparency and fairness of management through his duties such as providing appropriate opinions on the independent standpoint from business executors.

Responsibilities of Executive Officers (as of April 1, 2023)



Eiichi Ukai*
Representative Executive Officer, President, Executive Officer

CEO (Chief Executive Officer)
Corporate General Manager, Group Management HQ.



Hideaki Miyazawa*
Representative Executive Officer, Executive Officer

Corporate General Manager, Automotive Business HQ.



Hiroyuki Ichikawa
Executive Officer

Deputy Corporate General Manager, Automotive Business HQ.
Composite Material Product Division



Masaki Egami*
Executive Officer

CTO (Chief Technology Officer)
Research Division
New Product & Business Strategic Planning HQ.



Takanobu Ozawa
Executive Officer

Americas Region
Legal Dept.
Internal Control Dept.



Masayuki Kaimi
Executive Officer

Corporate General Manager, SCM Strategy HQ.
China Region
Production Engineering Development HQ.



Yasuhiro Kawabata
Executive Officer

Deputy Corporate General Manager, Group Management HQ.
Human Resources Strategy Dept.
Personnel Dept.
General Affairs Dept.



Shumpei Kinoshita*
Executive Officer

Deputy Corporate General Manager, Group Management HQ.
Corporate Strategy Dept.
ESG Promotion Dept.
Carbon Neutrality Strategy Promotion Dept.



Koji Takahashi
Executive Officer

Green Energy Products Division
ICT Strategy Dept.



Etsu Harima
Executive Officer

Aftermarket Business HQ.
Industrial Business HQ.
Quality Assurance HQ.
NTN KOREA CO., LTD.
ASEAN, Oceania, and West Asia Region
India Region



Masaaki Yamamoto*
Executive Officer

CFO (Chief Financial Officer)
Deputy Corporate General Manager, Group Management HQ.
Financial Strategy Dept.
Accounting Dept.
Europe & Africa Region

*Executive Officers concurrently serving as Directors

Outside Director Dialog



Outside Director
Yuriya Komatsu

Outside Director
Akira Murakoshi

Every year, the NTN Report provides an opportunity for Outside Directors to discuss NTN's management and sustainability issues. The contents of discussion is published as "Outside Director Dialog." This year, Director Komatsu and Director Murakoshi, who took office June last year, held a frank and honest talk.

Topic 1 Achievements of our efforts for revitalization of NTN over the past year

The second year of the Medium-term Management Plan "DRIVE NTN100" Phase 2 for revitalization of NTN has ended. Please look back over the year in which we tackled our revitalization with firm resolve.

Komatsu: Essentially, any Medium-term Management Plan should first draw a big picture of how to convert the business portfolio and then discuss which businesses to focus. However, under our current Medium-term Management Plan, we have proceeded with the reform from the beginning by positioning the three years as the period of "in-house arrangement" for the next leap forward, by getting out of the red, increasing the profit ratio, and improving our cash flow and financial structure.

In that regard, compared to the fiscal year ended March 31, 2021, our operating margin, cash flow, and financial structure have been improved. I think this can be highly evaluated as the results of efforts of all employees. On the other hand, I recognize that there are issues in the content and speed of improvements, including the operating margin and the cash conversion cycle. Rapid changes in the external environment such as soaring material and transportation costs may be one of the causes, but that also posed an opportunity for price increase negotiation, so I think the results may have been better if there had been a little clearer intention.

President Ukai has repeatedly delivered in-house messages saying that employees are allowed to negotiate, with a strong will, for any business not profitable enough, with possible discontinuation of the business in mind, and the entire company has been engaged in price increase and reduction of unprofitable businesses. As a result, the profit ratio has been improved smoothly in the industrial machinery business and the aftermarket business, while the automotive business was hit by an operating loss again in the previous year. By taking into account that the employees in the automotive business have made equivalent efforts to those in the other businesses, I assume that the management of the Automotive Business Headquarters failed to share the road map and KPIs for profitability improvement and communicate their clear intention. I am also concerned that employees unconsciously take orders that will lead to an operating loss to cover the fixed cost. First, it is necessary to stop bleeding by changing the criteria for judging businesses to a cash flow that will lead to the operating margin and better inventory level, not to sales and gross profit. At the same time, I expect that a plan for converting the business structure to enable a proper profit to be recorded in a sustainable manner will be finalized promptly and shared inside and outside the company.

Murakoshi: I was just appointed as an Outside Director last year, so I'll talk about what I have felt while watching NTN over the past year. As Director Komatsu said, any business has a certain lifecycle, and I think that we must consider how to change the business portfolio at each point of the cycle. With this viewpoint, I think our biggest challenge is how to do with the automotive business, our biggest business division. Most of our automotive business is for OEMs, but the business has not necessarily contributed to profits due to recent high raw material cost and unstable automotive production. Each business site has been dedicated to cost reduction and reflection of high raw material cost in product prices, but in reality, it is not always easy to reflect our added values such as products and technologies in product prices. Regarding whether this is a problem that can be solved in the short term or a structural problem, I feel it necessary to watch carefully as for how our management should be in the future.

President Ukai and other Executive Officers have a strong will to transform NTN. An agreement has also been reached on what our main axis should be. For example, when changing the direction of a large ship, even if you turn the steering wheel fully, the ship changes its direction only slightly. Before the direction is changed completely, it will take a while even if you keep full steering. Likewise, I think it requires determination and patience to transform a large company. Reform of a large organization also brings strain and pain to the organization. I think the President and other Executive Officers, who are in control of the steering, understand it, but I wonder if it has been known throughout the company. I feel that a challenge lies in whether people other than managers are able to commit themselves to the fact that we are in the middle of such a large reform.

Komatsu: In this dialog last year, I said that "we are motivated, the direction is not wrong, the only concern is speed." As for this "speed," I appreciate our success in raising sales prices faster than expected. Probably, that is partly due to the general trend for price increase and strong messages from President Ukai. On the other hand, progress has not been made as expected for what I have been saying for the three years after being appointed as an Outside Director, including inventory reduction and how to plan elimination and integration of plants. These are still issues, I think.

Murakoshi: With regard to plants, I have visited plants in Iwata and Kuwana after being appointed as a Director. These plants are old and have been extended again and again. I think these plants have issues in terms of the efficiency. At present, our capital expenditures are restricted, so the reality is that there are limitations on investments for efficiency improvement, manpower saving, and no-man operation. Nonetheless, it is still indispensable for us, as a company in the manufacturing industry, to refine manufacturing facilities and technologies and maintain our competitiveness in terms of high productivity and product quality. From now on, the trend of decreasing birthrate and aging population will continue, as well as labor shortage, I think. Under these circumstances, it is time for us to consider seriously what to do with plants and where to invest toward our new Medium-term Management Plan.

Komatsu: The current Medium-term Management Plan will end in one year. Discussion has started for the next Medium-term Management Plan, including organizational restructuring. Rather than setting numerical targets achievable in three years, I hope that the Medium-term Management Plan will present medium- to long-term numerical targets, for example, ROE and ROIC of 10% or higher, and serve to achieve those challenging targets. I also want each Executive Officer to show, regarding the action plans for each year, how much the ROE and ROIC will be improved if the plans are met, together with what backup plans have been prepared in case they are not met.

Topic 2 NTN's governance structure

NTN transitioned to a Company with a Nominating Committee, etc., which is chaired by an independent Outside Director. Could you share your impression about this major reform in our governance?

Murakoshi: As a result of becoming a Company with a Nominating Committee, etc., we are certainly on the forefront in terms of a "structure." But I have an impression that our substantive reform is still halfway. Personally, the design of a Company with a Nominating Committee, etc. will work well in a system in which there is a market of professional corporate managers with mobility and optimal managers are selected from the market, like those in Western countries. On the other

hand, in a social environment in which new graduates are employed en masse and move up the corporate ladder to become managers, as in Japan, I have an impression that we have a long way to go in terms of whether a Company with a Nominating Committee, etc. can really function.

I don't know how NTN had been like before the reform, so I cannot make a comparison, but I think Outside Directors actively express their opinions. However, that is because Executive Officers reach an agreement at the management meeting before the Board of Directors, which naturally leads to many opinions from Outside Directors, so I feel there is an asymmetry of information here. Anyway, I am very interested in NTN's initiatives, as a Japanese-style Company with a Nominating Committee, etc., and I feel it necessary for me, as a member of the company, to further search for the best solution.

Komatsu: As Director Murakoshi mentioned, I also feel the difficulty of a Company with a Nominating Committee, etc. I was appointed as the chairperson of the Board of Directors last year, and regarding whether the chairperson has overwhelming power or not, I don't feel being granted so much power.

But I think this is a "better" choice than before. The major reason why I think so is related, in the first place, to an increased number of Outside Directors. We, Outside Directors, are required to play a role of monitoring the company's execution so that the company can grow and improve its corporate value in a sustainable manner. As a result of an increased number of people who monitor corporate management with such recognition, we receive many critical opinions, unlike at the Board of Directors consisting of internal members only. Also, as a chairperson, I am able to ask revision of the business administration structure based on Outside Directors' opinions, and reporting to monitor the progress. In addition, there are many cases in which internal Directors and Executive Officers consider requests and opinions from Outside Directors, so I think this means the governance has improved.

Murakoshi: I have also served as a Director at a Company with a Board of Company Auditors, and I think what matters, irrespective of the organizational design, is the recognition and the amount of information each Director has. For example, at the company I previously worked for, people at the corporate general manager or manager class explain the details of relevant projects about three days before the Board of Directors, and enough discussion is held there. So the difference in the amount of information on the executive side is reduced to a certain degree also at the Board of Directors. I have attended NTN's Audit Committee as much as possible and was briefed about the contents of discussions at the Executive Officers Meeting and the Management Meeting from full-time Directors, but I feel an asymmetry of information, partly due to a time constraint. I think the key point for making the Board of Directors function is whether there is a system in place to enable external officers to obtain information sufficiently, rather than transitioning to a Company with a Nominating Committee, etc. as a "structure."

Komatsu: I have been talking about similar things for some time. I think this will be improved gradually in the future. Now, the recognition of Outside Directors is increasingly being enhanced. By keeping our current active encouragement, I expect NTN to function well as a Company with a Nominating Committee, etc.

Topic 3 Strengthening the management foundation

How do you evaluate NTN's initiatives for strengthening the management foundations, including establishment of the Carbon Neutrality Strategy Promotion Department and reform of the personnel system?

Komatsu: I highly evaluate the establishment of the Carbon Neutrality Strategy Promotion Department to succeed the Carbon Neutrality Promotion Project, which had been promoted across divisions until last year. For a project promoted across divisions, a problem may occur later because it is often less visible and overlooked which division is responsible for solution. This concern does not exist anymore. In this regard, however, again as with the Medium-term Management Plan, I want action plans to be prepared and the PDCA cycle to be implemented, rather than just responding to issues and tasks at hand. In doing so, it is necessary to make it known to business divisions, including deciding who will be in charge of each plan.

Murakoshi: In my understanding, strengthening the management foundation means strengthening the corporate functions. I feel that NTN has necessary divisions in place, but some of them are still weak as functions. This may be a characteristic of manufacturers, but I think a certain independence exists at each manufacturing site, or each plant, which inevitably causes a tendency to increase the centrifugal force as an organization. Conversely, the corporate division at the head office is not used to having a centripetal force. To ensure the total optimization, it is necessary for the President and Executive Officers to strengthen and utilize the divisions at the head office with a company-wide viewpoint. A challenge in management is to prevent a situation where the head office organization exists, but nobody listens to it. It is important for us, Outside Directors, to monitor this carefully.

Komatsu: In terms of strengthening the management foundation, reform of the personnel system is also required. Earlier, Director Murakoshi mentioned that employees may not understand that a large reform is being underway. Every company has a difference in a sense of crisis between top management and frontline staff. I think the shortcut is to make realistic KPIs, including personnel evaluation, known to frontline staff and change the company using a system, rather than to blindly share a sense of crisis. For example, we may even set the operating margin as a KPI for personnel evaluation and say that it will be reflected in evaluation of promotion and bonus. At first, everyone may first blame others, the head office or the production division for example, but eventually, they will start to think how to improve and take actions by themselves.

Murakoshi: As for the personnel system, I have heard that review of the personnel system for managers is in progress. I think a structure is in place but the system design alone does not suffice to make the personnel system function smoothly. The Personnel Department itself is required to actually know each site and evaluate whether personnel at each position work properly. For achievement-based evaluation, a harder part comes after a structure is established.

By the way, I think that employee awareness survey can be used as one of indicators. I have heard that the survey was conducted also at NTN, but only in the corporate divisions. I think expanding the scope to all employees would help the management understand the actual conditions of the company. Based on the result, we may be able to extract and solve issues for respective departments, or extract company-wide issues in some cases. As for the latter, it is one way for improving employee engagement to organize a task force across all generations and divisions and discuss how to interpret the results and what to change. The true significance of employee awareness survey is to have each department think for themselves, instead of merely checking the result.

Komatsu: Also in previous dialog, I expressed my opinion on the issue of diversity at NTN. After having opportunity to talk with female managers, I had an impression that not so many women are motivated so much for career advancement. Of course, it is natural that some women do not want to be promoted considering the balance between work and life. However, there should be women who want to get promoted, and I think a system should be in place that evaluates those women fairly. I think it is acceptable that there is a female manager working for reduced hours and all members in the department finish work early and go home. Including appointment of foreign employees, I want to speak up for these issues this year as the COVID-19 pandemic has calmed down.

Murakoshi: I am concerned that the age group of executive candidates at NTN is pretty high. NTN is implementing an initiative to foster candidates for next-generation management called NNLP (NTN Next Leader Program), but the age group of participating employees is also high. Unless starting selection and fostering at around mid-40s, we will face a crisis of insufficient management at a critical moment.

Komatsu: I completely agree with you. We have talked about variety of issues, and I strongly feel responsibility that we, Outside Directors, have to monitor management and continue encouragement for purposes such as revitalizing NTN.

Message from a new Director



Yasuo Kitani

As an Outside Director, I will do my best to contribute to the sustainable growth of NTN by making the most of the knowledge I have gained through my many years of business experience in Japan and overseas as a banker and my experience as an executive.

First of all, I will value communication with as many executives and employees as possible, and speedily learn about the Company as it is, along with its history. And then, I will appreciate what I see from a bystander's vantage point, and while correctly understanding the changes in the environment surrounding the Company, I will make proposals in line with my responsibilities to help the Company grow in a healthy manner.

Although I am an Outside Director, I am appointed to work on a full-time basis, so I will work hard together with executives and employees to earn the support of many stakeholders and contribute to the development of NTN.

Communication with Stakeholders

Stakeholders	Stance to Stakeholders	Main Activities
Employees	NTN Group respects diversity, individuality and a safe and healthy workplace environment where employees can work successfully.	■ **“NTN PROUD AWARD” as ESG Corporate Award** “NTN PROUD AWARD” is a system that encourages employees’ ESG activities and commends outstanding initiatives linked to 13 items of materiality responding to SDGs identified by the Group. The system aims to promote understanding and awareness of SDGs among employees and fosters their motivation and engagement. ■ **Employee engagement survey** Based on the survey result, we conduct activities to improve workplace issues, activate workplace communication and work to develop an environment in which each employee has a good reliable relationship with each other. ■ **Global QC Circle Convention** We strive to improve safety, quality, and productivity on a global basis, and with the convention as a forum for international exchange, we exchange information on a variety of activities.
Customers	NTN Group seeks to maximize customer satisfaction and trust by providing products and services of superior quality, safety and reliability.	■ **Nationwide Distributors’ Meeting** We invite distributors from across Japan to briefing sessions on account settlement overview and aftermarket business measures to strengthen our bond with distributors. ■ **Technical service units** We run completely-tailored, multi-functional technical service units worldwide, equipped with teaching materials and exhibits to introduce our products, and hold bearing technical seminars for our customers.
Business partners	NTN Group, in a fair and free environment, builds good partnership with its business partners and works together for mutual growth and development.	■ **Briefing for suppliers** We share information on our globalization initiatives and the business environment surrounding our company with our business partners and have external lecturers deliver lectures targeting the business partners. ■ **Promotion of CSR procurement** Through CSR questionnaires based on the CSR Procurement Guidelines, we promote activities with our business partners to help them understand the importance of CSR procurement.
Local communities	NTN Group respects cultures and customs in the local communities and builds long-term trust relationships by meeting their expectations through its business activities.	■ **Activities that contribute to the local community (family tours, summer festivals, etc.)** We hold family tours and summer festivals at each business site as an opportunity to interact with employees’ families and neighboring residents. ■ **NTN Rotating School** As an environmental education program for children who will lead the next generation, mobile-type schools have been opened in various places to deepen friendships with the local community. ■ **Conservation of biodiversity** In cooperation with local residents and NPOs, we are working to protect the environment of Satoyama (village forest) areas around our business sites and to protect endangered species.
Shareholders	NTN Group focuses on return for shareholders by sustainable profitable growth and builds long-term trust relationships with shareholders through active communications.	■ **Shareholders’ Meeting** The Shareholders’ Meeting is a forum for communication to build long-term relationships of trust with shareholders. ■ **ESG briefing** In addition to holding results briefings for investors, we also hold ESG briefings to promote understanding of our ESG initiatives. The opinions we receive at the briefings are used to strengthen our activities and information disclosure.
Environment	NTN Group harmonizes its business activities with nature and contributes to preserve the global environment by providing its technologies, products and services.	■ **Reducing environmental impact in business activities** We are working to minimize harmful environmental impacts by monitoring and reducing emissions of CO_2 and regulated chemicals in our business activities. ■ **Sustainable use of resources** We are striving for sustainable resource utilization by reducing the use of resources such as raw materials and water, and by thoroughly implementing the 3Rs (reduce, reuse, and recycle) of waste. ■ **Developing environment-contributing product** We are contributing to the realization of a carbon-free society by developing products that help reduce energy loss in finished products and natural energy-related products.

New NTN being created through NTN PROUD AWARD

To commemorate our 100th anniversary, we established “NTN PROUD AWARD” for all global employees in the Group to encourage practicing our corporate philosophy, but no convention has been held since 2019 due to COVID-19. This time, “NTN PROUD AWARD” has been newly started as an in-house award system to encourage and promote ESG activities for our sustainable growth in medium to long term and solution of social issues. Through this system, we aim to realize a “NAMERAKA Society” by improving the employees’ understanding and awareness of ESG and enhancing their motivation and engagement, which will lead to improvement of our social value and solution of social issues.

なめらかな社会を目指して

NTN PROUD AWARD

Basic approach to NTN PROUD AWARD

Basically, we aim to develop it into an award system that will lead to improved employee engagement, which in turn will lead to the further improvement of our organizational strength and corporate value, through ESG activities practiced by employees working in the Group in their daily jobs and awarding their activities. The Group’s materiality is closely linked to our corporate philosophy. We will aim to realize our vision with our employees doing daily jobs in connection with 13 items of materiality identified by the company.

Overview of the system

Teams of several members from any group companies can apply for the award. Activities that have connected daily jobs to the materiality, identified their own values, and produced certain outcomes are to be awarded, with the period from January to the end of December each year. Application is made directly by each team on the “NTN PROUD AWARD” page on our intranet. After the application period, the excellent awards, special awards, and materiality awards are selected first in each global region. Then, the top two teams selected for the excellent awards and special awards in each region make their presentations at a global convention. Out of them, the projects recognized as the most excellent activities are granted with the president awards in the three divisions of “E: Environment,” “S: Society,” and “G: Governance.”

Holding of a global convention



On June 14, 2023, the first global convention for the new system was held on the Web. This time, 69 teams made applications from Japan and abroad, and 12 teams awarded through local screening participated in the global convention. At the beginning of the convention, President Ukai greeted by saying ‘Please gain a new insight at this global convention. I hope that aggregation of your growing powers will enable us to address our big challenge of revitalizing NTN and realize a “NAMERAKA Society.”’ The convention was started with the president’s praise for the award winners from each region and expectation for this convention.

Each team presented their project activities and as a result of consideration, the president awards were granted to Xiangyang NTN-Yulon Drivetrain Co., Ltd. in the environment division and NTN BEARING CORP.OF CANADA LTD. in the society division. In addition, to express appreciation for a joint European team supporting Ukrainian refugees, a president special award was set up and presented to the team.

Teams winning the president awards	Environment division	“Environment improvement and promotion team” (Xiangyang NTN-Yulon Drivetrain Co., Ltd.)
	Society division	“Team CANADA” (NTN BEARING CORP. OF CANADA LTD.)
Team winning the president special award		“NTN Europe team” (NTN Europe S.A., NTN Wälzlager (Europa) G.m.b.H., NTN-SNR RULMENTI S.R.L.)



Environment improvement and promotion team



Team CANADA



NTN Europe team

9th Stakeholder Dialog

To reflect the opinions of our stakeholders in our corporate activities, we have annually held dialog with academics and experts in various fields of sustainability since 2015. For this fiscal year, the 9th dialog was held in May.

In last year's stakeholder dialog, while we listened to how sustainability has actually been promoted in companies, important viewpoints of "not making it a task for disclosure" and "making sure that employees can personalize sustainability" were proposed. It was also recommended that we should confirm individual purposes while promoting activities because the company's purpose is an aggregation of purposes of each employee.

By referring to these recommendations we had received, NTN started a "Carbon Neutrality Promotion Project" in last July to set targets and strategies toward achievement of carbon neutrality. In addition, to promote this project from a location closer to management, the organization was changed in April 2023 to the "Carbon Neutrality Strategy Promotion Department" and turned to a department in the Group Management Headquarters.

Also, "NTN PROUD AWARD," originally started in 2018, was revised into an ESG activity award system and newly restarted on a full scale last year. Through these activities, we are steadily getting closer to achievement of our materiality targets.

In this dialog, we exchanged opinions with experts about the status of our activities and how to proceed in the future. Based on the recommendations we received, we will promote company-wide initiatives for realization of a "NAMERAKA Society."

Topics of the dialog

Topic 1 How to proceed with ESG management

Topic 2 Carbon neutrality

Experts



Katsuhiko Kokubu
Professor, Kobe University Graduate School of Business Administration



Akira Yamada
Senior Consultant
JMA Consultants Inc.



Toshiya Chikada
Executive Officer
Chief Manager
Global Warming Prevention Promotion Office Environment Improving Department
Sekisui House, Ltd.



Michitaka Shimizu
Senior Director
ESG Management Promotion Headquarters
Sekisui House, Ltd.



Eriko Nashioka
(Facilitator)
Representative Director of Institute for Environmental Management Accounting, CPA.

NTN

Executive Officer
Deputy Corporate General Manager, Group Management Headquarters/Corporate Strategy Department/ESG Promotion Department/Carbon Neutrality Strategy Promotion Department
Shumpei Kinoshita

Executive Officer
Deputy Corporate General Manager, Group Management Headquarters/Human Resources Strategy Department/Personnel Department/ General Affairs Department
Yasuhiro Kawabata

Deputy Corporate General Manager, SCM Strategy Headquarters
Yasuaki Takahashi

Manager, Corporate Strategy Department, Group Management Headquarters
Takashi Nishigaito

Manager, Carbon Neutrality Strategy Promotion Department, Group Management Headquarters
Masayuki Yamazaki

Manager, ESG Promotion Department, Group Management Headquarters
Tetsuya Ishimoto

(*Assignment and title of participants are as of the dialog held.)

Topic 1

How to proceed with ESG management

NTN: Based on the various recommendations we received in last year's dialog, we are now promoting activities for ESG management through not only bottom-up but also top-down approaches to communicate messages on risks and opportunities specifically linked to management strategies with the timeline fixed in the medium to long term in an easy-to-understand manner. Establishment of the "Carbon Neutrality Strategy Promotion Department" was also part of it. Besides, we think "NTN PROUD AWARD" was successful as the first convention after system renewal, with participation of 69 teams from all over the world.

With regard to materiality, NTN is considering incorporating the current materiality for achieving SDGs into the next Medium-term Management Plan as the materiality for achieving the company's purpose, while proceeding with establishment of a system that enables each employee to "personalize" sustainability activities.

We hope to obtain tips on our ESG management promotion in the future in reference to initiatives promoted by Sekisui House, Ltd. (hereafter, Sekisui House), a company going ahead of us, though in an industry different from ours, and opinions from experts.

Kokubu: I see that NTN has set specific strategies and is going ahead along them. In your industry, the external pressure toward sustainability is strong, but I don't think there are any deficiencies or issues in your target setting for carbon neutrality, identification of materiality, disclosure of related information, and initiatives. In other words, I can say that there are no problems in the "foundation." However, as I also said last year, the foundation is easy to build because it is a "form." What is important is to link it to the creation of actual corporate value. It is necessary to focus on ESG activities because a framework for evaluating them has already been established and a low evaluation may affect investment, but too much alignment with evaluation may make it mere a formality. Therefore, it is necessary to figure out how not to make it mere a formality. In that point, I strongly hope that "NTN PROUD AWARD" will be successful as one of your systems for value creation. It would be a good idea to bring out and deploy new businesses from it. But it will not work out if you try to earn quick profit. Instead, you need to think it as investment for the future, even if certain time and cost are required. The difficulty in creating value through ESG management lies in not being able to set a goal soon because you cannot tell what you can do. However, even while you are uncertain, it is important to continue to think what you can do by utilizing your bearings and related technologies and know-how, and to establish a system that enables you to invest currently available resources for that purpose. Otherwise, ESG management will soon turn into a mere formality. In this regard, "personalization by managers," sited as one of your future issues, is an important aspect. It is recommended that managers will proceed with it as a task, with more specific targets.

Meanwhile, who will bear the cost is another very important issue. It is also related to the next topic, carbon neutrality, and I think there are two vectors for how to view the cost. One is to promote carbon neutrality strongly with advanced technologies, ask customers to understand the cost, and reflect the cost in product prices. The other is to pursue carbon neutrality at a level considered necessary and sufficient in the industry and control the cost within the scope. It depends on each company's level of technologies which strategy is reasonable, but it is necessary to refine strategies through validation. It is also unpredictable how fast and in which direction the external pressure will move on. The pressure also differs depending on the region, so it is necessary to set strategies by proactively considering where you are located in the move toward carbon neutrality.

Nashioka: The importance of strategies was just mentioned, so please share how ESG has been integrated into strategies at Sekisui House.

Shimizu: We announced our sixth Medium-term Management Plan in March this year. This project was started in June last year, and business divisions and corporate divisions have repeated discussions together for it. More specifically, regarding our global vision of "make home the happiest place in the world," we have considered our priority measures, or what we will achieve with the next Medium-term Management Plan.

With regard to ESG management, we have created the foundation through the fifth Medium-term Management Plan, and we think the key for it is to "personalize," as previously mentioned. "Participation of all employees" was one of the pillars of ESG management also in the fifth Medium-term Management Plan, but we determined to further enhance the initiative and promote the "ESG management through participation of all employees," unique to the Sekisui House Group. This was set as our ESG management strategy in the sixth Medium-term Management Plan. Besides, to "build an organizational culture that fosters innovation," we established an award system called "SHIP (Sekisui House Innovation & Performance Awards)" and have implemented initiatives to develop autonomous persons and organizations that will continue to produce innovations. We are also working to "set and implement ESG indicators" to utilize ESG indicators for ensuring the transparency and effectiveness, including setting ESG indicators easy to be understood by employees and establishing a system to link ESG indicators not only to compensation for directors but also to awarding for business sites. Our strategies also

include reduction of capital cost through further promotion of ESG management and improvement of our corporate value through the synergy of ROE improvement and ESG management promotion.

NTN: Thank you very much. “Cost” was mentioned earlier, and that is the very thing we are also concerned about. Our products reduce energetic load in themselves, which contributes to sustainability, but of course, their production process consumes water and electricity. It is difficult to reduce the environmental load to zero in production of all products, but we sometimes think that it would be easier to reflect cost increases in product prices by segmenting each product. For example, it may be effective to produce products using only natural energy such as wind and solar power and convince customers of the value. How do you regard the environmental cost at Sekisui House?

Shimizu: The cost is partly absorbed in-house, but basically, we ask the customer to understand the added value and reflect the cost in product prices.

Topic 2

Carbon neutrality

NTN: Through our Carbon Neutrality Promotion Project started in July last year, we have been considering how to materialize each initiative with the following three teams organized: “visualization of power consumption,” “planning and consideration of purchasing renewable energy power” and “consideration of internal carbon pricing (ICP).” The activity period ended on March 31 this year, and the initiatives were taken over to the Carbon Neutrality Strategy Promotion Department organized in April.

Through each initiative, a rough roadmap was prepared in Japan. In the future, we plan to establish a Carbon Neutrality Promotion Committee structure for global engagement in regional units. Could you give us advice on challenges such as setting intermediate annual targets and how to check a global CO_2 reduction roadmap once prepared.

Yamada: I feel that a structure has gradually been organized toward a challenging goal. In establishing a roadmap, it is better to estimate first how much energy consumption can be reduced. To do so, you need to accumulate expertise from in-house energy-saving specialists and set energy-saving control points and completeness evaluation standards for each equipment. This will roughly clarify how much more energy can be reduced at each plant. Once the potion of energy saving is made clear, you can see how much more reduction is required using renewable energy, which makes the related cost visible. With regard to energy saving, it can be said that the Energy Conservation Promotion Group organized in the Carbon Neutrality Strategy Promotion Department has a large role to play. “Visualization of energy consumption” is listed as one of your measures, but is it clear how and what to “visualize”? One possible first step is to visualize how effectively energy has been utilized in each process. This will quantify the total loss and visualize the limit. Even if it is impossible to eliminate all losses, I think the seriousness in engagement will differ between energy-saving activities conducted blindly with the limit unknown and those conducted, for example, with knowledge that 80% of energy consumption in the process is loss. It is also necessary to think about fixed energies. Energy-saving should always be discussed in connection with production activities. By thinking that energies not contributing to production are all losses, it is better to proceed with initiatives for thoroughly reducing fixed energies. In QCD activities, the lead time, man-hours, quality standard, etc. are documented and monitored for each product and process. Controlling energies also at the same level will probably show the route toward achieving your goal more concretely.

Kokubu: Achievement of carbon neutrality is unavoidable, but if you don’t understand what carbon neutrality is, you may still be able to set a plan, but unable to understand its meaning. For example, you have a plan to reduce most of the emission by utilizing renewable energy, but NTN seems to cover a higher ratio by purchasing CO_2-free electricity at present. If going to extremes, you can achieve carbon neutrality if all electricity you purchase is renewable energy. However, that means you practically make no efforts. Rather, it is important to try to generate the source of green electricity as much as possible. When thinking of electricity self-sufficiency, carbon neutrality will probably take on new meaning.

Yamada: The most important thing in renewable energies is “energy creation.” The first thing you should consider after reaching complete energy saving is where you can create electricity. You should first look for on-site locations, and then off-site locations. This initiative should be given a high priority. If this is not enough, purchase CO_2-free electricity. I recommend this sequence.

Nashioka: In summary, I think true carbon neutrality is to ask each company to create electricity on-site. Could you share a related business case at Sekisui House?

Chikada: For the past one year, we have focused on net zero energy houses (ZEHs) for rent. While ZEHs for sale are gradually gaining popularity, those for rent are still far from becoming popular.

There are two types of ZEHs for rent: building-wise ZEHs and house-wise ZEHs. For our rental houses, we promote the latter, in other words, the type of ZEHs that aim at zero energy balance at each house. The former has a high energy-saving performance as the whole



building, but you can’t tell whether each house is ZEH or not, so we cannot convince residents of the advantages of ZEHs, such as the comfort and lower utility costs. But advantages of the latter are convincing, so we can even raise the rent. Anticipating an increased number of ethical consumers decades later, we are now proposing would-be owners to build house-wise ZEHs, which will require higher initial cost but remain competitive in the longer term, and this proposal is being accepted. Also, according to our survey on former residents of ZEHs for rent, 80% answered that they want to live in ZEHs again. That means we are increasing ZEH fans. We are trying to create a trend toward ZEHs for both sale and rent.

Nashioka: I heard that something had motivated your employees to personalize carbon neutrality.

Chikada: That’s right. In 2009, we commercialized houses with a pretty high energy-saving performance at the time, the predecessor to ZEH. At the same time, we changed our sales policy from “price-based” to “value-based.” We started our journey in the direction of presenting high value-added products to customers, making them understand the value, and selling our products at adequate prices. At first, some sales representatives felt uncomfortable, but once successful experiences started to emerge, an increasing number of representatives followed suit. All of us studied quite hard because we needed to learn to talk about product value in order to convince customers. I think this led to personalization of carbon neutrality.

NTN: We understand it’s a good business model in the food, clothing and housing industries, in that added value is recognized by customers, which in turn creates a positive chain reaction. Then, what initiatives should we implement in our industry, which is far away from food, clothing and housing.

Chikada: We also have suppliers. And we communicate to suppliers our expectation for them to use carbon-free building materials. In the construction industry, a trend toward using such materials even with higher costs has also emerged. Likewise, demands for carbon-free products may emerge at various bearing user companies. Still, I think this should not be tackled by a single company, but requires movement across industries.

Yamada: Recently, we are increasingly asked for advice also from the supplier side. For example, one of our customers asked us to show the result of LCA (Life Cycle Assessment) of their products. If products are produced completely with renewable energy, that would be a big differentiator. If you can launch initiatives ahead of other companies, I think that will become your strength in the future society.

Nashioka: Could each of you summarize today’s dialog?

Chikada/Shimizu: We have been engaged in ESG management for three years, and realized that success will be brought only through steady and diligent effort. At the beginning, it was mentioned that “a form can be created,” but we, having no form, were hit by the wave of ESG after launching our products. We now feel the difficulty of creating a form. We hope to continue our engagement while sharing information each other.

Yamada: NTN has declared reduction of energy loss. Bearings reduce energy loss caused by friction of rotating objects, etc., but certain loss still remains. I think you can increase the importance of and interest in bearings by clearly explaining, for example, how much impact automotive hub bearings have in global scale, or your current effort to reduce the loss as much as possible. I also feel it important to increase the sales of environment-contributing products.

Kokubu: I have an impression that we had many talks that lead to management during today’s dialog. This reflects the fact that, although environmental initiatives surely lead to management, each company has been confused with the gap. Carbon neutrality is not an issue that can be addressed through conventional methods of production and sales. I think it is important to view it as something you need to tackle strategically in a top-down approach.

NTN: Thank you very much for your precious recommendations. This is an opportunity for us to gain insights. We’d like to reflect recommendations we received today in our future initiatives. We will move forward step by step while sharing the significance of our initiatives within the company. We would highly appreciate your continued advice. Thank you very much for today.

Consolidated Financial Indicators (Past 11 Years) (Fiscal years ended March 31)

		2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	**2023**
Financial Data *1												
Profit and Loss Statement												
Net Sales *2	(Millions of yen)	539,594	638,970	701,900	716,996	683,636	744,699	733,846	651,956	562,847	642,023	**773,960**
Operating Income	(Millions of yen)	7,278	33,003	43,850	47,770	35,929	39,935	27,222	7,517	(3,138)	6,880	**17,145**
Operating Margin	(%)	1.3	5.2	6.2	6.7	5.3	5.4	3.7	1.2	(0.6)	1.1	**2.2**
Income (loss) before Income Taxes	(Millions of yen)	(13,897)	(2,451)	37,062	26,942	14,889	26,905	2,938	(33,949)	(1,256)	17,619	**10,807**
Net Income (Loss) Attributable to Shareholders (parent company)	(Millions of yen)	(14,195)	(14,648)	23,352	15,037	2,830	20,373	(6,958)	(43,992)	(11,641)	7,341	**10,367**
Capital Expenditures	(Millions of yen)	48,979	33,162	31,266	36,300	35,398	37,589	45,172	57,675	23,817	19,809	**22,253**
Depreciation and Amortization	(Millions of yen)	34,841	39,315	40,391	38,277	36,629	37,505	38,926	37,306	35,478	37,898	**42,048**
R&D expenditures	(Millions of yen)	16,174	17,820	18,088	18,480	19,196	21,007	21,661	19,961	17,485	17,444	**18,678**
Balance Sheet												
Total Assets	(Millions of yen)	768,461	848,037	856,121	794,000	797,038	839,427	840,750	757,822	836,563	855,483	**869,827**
Net Assets	(Millions of yen)	211,742	213,368	262,559	248,504	245,050	269,759	246,404	168,378	183,751	216,425	**237,425**
Inventories	(Millions of yen)	163,287	166,484	184,128	178,220	171,481	179,738	194,505	182,923	176,847	214,843	**239,385**
Interest-bearing Debt	(Millions of yen)	360,801	381,767	359,105	325,173	320,169	320,833	350,344	362,416	422,803	394,031	**371,292**
Various Indicators												
Inventory Turnover Ratio	(Times)	3.3	3.8	3.8	4.0	4.0	4.1	3.8	3.6	3.2	3.0	**3.2**
Net D/E Ratio	(Times)	1.37	1.27	1.11	1.11	1.05	0.93	1.16	1.87	1.62	1.38	**1.2**
Net Income (loss)/Average Total Assets (ROA)	(%)	(1.9)	(1.8)	2.7	1.8	0.4	2.5	(0.8)	(5.5)	(1.5)	0.9	**1.2**
Net Income (loss)/ Average Shareholders' Equity (ROE)	(%)	(7.2)	(7.3)	10.5	6.3	1.2	8.4	(2.9)	(22.8)	(7.1)	4.0	**5.0**
Equity to Capital Ratio	(%)	26.0	23.5	28.6	29.3	28.8	30.2	27.4	20.6	20.4	23.1	**25.4**
Return on Invested Capital (ROIC)	(%)	1.0	4.0	5.2	5.8	4.5	5.0	3.3	1.0	(0.4)	0.8	**2.0**
Cash Flows												
Net cash provided by operating activities	(Millions of yen)	20,505	69,058	25,120	46,247	62,387	61,799	43,224	43,749	36,473	8,956	**34,219**
Net cash used in investing activities	(Millions of yen)	(56,604)	(34,132)	(31,293)	(33,770)	(41,218)	(48,358)	(65,614)	(61,807)	(17,938)	2,512	**(13,858)**
Net cash provided by financing activities	(Millions of yen)	69,586	6,595	(37,492)	(27,958)	(8,218)	(7,520)	20,745	7,413	54,671	(41,300)	**(33,258)**
Ner cashu flow	(Millions of yen)	(36,099)	34,926	(6,173)	12,477	21,169	13,441	(22,390)	(18,058)	18,535	11,468	**20,361**
Per-share Data												
Net Assets	(Yen)	375.84	374.68	461.21	436.97	431.66	477.17	433.32	294.00	321.04	372.70	**415.64**
Net Income (Loss)												
Net Income (Loss)	(Yen)	(26.69)	(27.54)	43.91	28.28	5.33	38.36	(13.10)	(82.83)	(21.92)	13.83	**19.53**
Diluted net income	(Yen)	–	–	–	–	–	–	–	–	–	–	**–**
Cash Dividends	(Yen)	0	2.00	6.00	10.00	10.00	15.00	15.00	5.00	0.00	0.00	**5.00**
Non-Financial Data												
Number of employees (consolidated)		21,398	22,156	23,360	24,109	24,665	25,493	24,988	24,199	23,292	23,383	**23,027**
Percentage of employees overseas	(%)	63	64	66	66	66	66	65	64	62	63	**63.4**
Percentage of female employees (non-consolidated)	(%)	9	9	9	10	10	10	10	10	10	11	**10**
Average years of continuous employment	(Years)	18.5	17.7	17.6	17.5	17.5	18.6	19.0	19.3	19.5	19.9	**20**
Number of Directors		12	11	11	14	14	14	14	11	11	12	**12**
Number of Independent Outside Directors		2	2	2	2	2	2	2	5	5	6	**5**
CO_2 emissions*3	(10,000 tons)	56.7	59.3	61.7	60.5	62.0	65.3	72.8	62.0	54.9	59.2	**56.4**
Energy consumption*4	TJ/year	6,134	6,331	6,463	6,336	6,493	6,849	6,978	6,326	5,783	6,623	**6,456**
Water consumption*5	(10,000 m^3)	210.9	201.8	197.3	319.7	323.0	326.4	349.3	281.1	243.0	271.5	**284.1**
Waste generation	(10,000 tons)	14.1	15.0	15.4	15.9	16.3	17.7	18.1	15.5	13.1	15.4	**16.3**
Exchange Rate Data												
USD Average		82.91	100.17	109.76	120.15	108.39	110.85	110.88	108.73	106.01	112.34	**135.45**
EUR Average		106.78	134.21	138.69	132.60	118.80	129.64	128.41	120.84	123.66	130.53	**140.91**
USD at fiscal year end		94.05	102.92	120.17	112.68	111.85	106.49	110.64	107.85	110.36	121.89	**132.68**
EUR at fiscal year end		109.80	120.73	141.65	130.32	127.70	119.48	131.00	124.21	129.32	136.01	**144.70**

*1 Effective from the fiscal year ended March 31, 2019, the Company has adopted the "Partial Revision of the Accounting Standard for Tax Effect Accounting", etc. The figures for the period from the fiscal year ended March 31, 2015 to the fiscal year ended March 31, 2018 have also been reclassified to reflect the above accounting standards. In addition, from NTN Rerpot 2022, we use the financial data listed in the Annual Securities Report.

*2 "Loyalty," which was previously included in "non-operating income," has been changed to be included in "net sales" from the fiscal year ended March 31, 2021. The figures for the period from the fiscal year ended March 31, 2017 to the fiscal year ended March 31, 2020 have also been reclassified.

*3 Scope 2 CO_2 emissions since the fiscal year ended March 31, 2019 (Carbon neutral benchmark year) are calculated using emission factors sourced from "Electric Utility Emission Factors" (Ministry of the Environment and the Ministry of Economy, Trade and Industry) in Japanese sites and calculated using emission factors sourced from "Emissions Factors 2022" (IEA) in overseas sites.

*4 The energy of electric power is calculated using physical quantity (3.6 MJ/kWh), and the energy of fuel is calculated using the emission factor sourced from "Emission intensity database for calculation of greenhouse gas emissions of organizations through the supply chain (Ver.3.3)" (Ministry of the Environment).

*5 Water consumption (10,000 m^3) is collected from Japanese sites until the fiscal year ended March 31, 2015, and from Japanese and overseas sites from the fiscal year ended March 31, 2016 onward.

Consolidated Balance Sheet

(In million yen)

	As of March 31, 2022	**As of March 31, 2023**
Assets		
Current assets		
Cash and bank deposits	128,644	**111,658**
Notes and accounts receivable-trade	125,507	**129,760**
Electronically-recorded monetary claims	6,491	**6,902**
Finished goods & purchased goods	105,514	**116,695**
Work in process	55,939	**62,256**
Raw materials and supplies	53,389	**60,434**
Short-term loans receivable	57	**21**
Other	37,533	**42,086**
Alowance for doubtful accounts	-1,045	**-790**
Total current assets	512,031	**529,024**
Fixed assets		
Property, plant and equipment		
Buildings and structures	237,099	**247,774**
Accumulated depreciation	-149,144	**-159,103**
Buildings and structures, net	87,955	**88,671**
Machinery, equipment and vehicles	753,597	**778,061**
Accumulated depreciation	-630,990	**-659,788**
Machinery, equipment and vehicles, net	122,607	**118,272**
Land	33,563	**33,452**
Construction in progress	15,557	**17,424**
Other	65,498	**67,107**
Accumulated depreciation	-59,385	**-60,815**
Other, net	6,113	**6,291**
Total property, plant and equipment	265,797	**264,113**
Intangible fixed assets		
Goodwill	1,983	**1,768**
Other	42,046	**38,121**
Total intagible fixed assets	44,029	**39,890**
Investments and other assets		
Investment securities	24,679	**25,434**
Deferred tax assets	3,495	**4,219**
Assets for retirement benefits	1,555	**3,312**
Other	4,094	**4,049**
Alowance for doubtful accounts	-200	**-217**
Total investments and other assets	33,624	**36,799**
Total fixed assets	343,451	**340,802**
Total assets	855,483	**869,827**

(In million yen)

	As of March 31, 2022	**As of March 31, 2023**
Liabilities		
Current liabilities		
Notes and accounts payable-trade	61,033	**67,283**
Electronically-recorded monetary claims	60,881	**68,340**
Short-term loans	134,229	**161,943**
Accrued income taxes	4,544	**4,307**
Accrued bonuses for directors and statutory auditors	29	**117**
Other	60,486	**67,083**
Total current liabilities	321,205	**369,074**
Long-term liabilities		
Bonds	80,000	**80,000**
Long-term loans	179,802	**129,349**
Reserve for product defect compensation	408	**251**
Liabilities for retirement benefits	36,852	**34,862**
Other	20,790	**18,863**
Total long-term liabilities	317,853	**263,327**
Total liabilities	639,058	**632,402**
Net assets		
Shareholders' equity		
Common stock	54,346	**54,346**
Additional paid-in capital	67,970	**67,970**
Retained earnings	60,127	**69,166**
Treasury stock	-866	**-856**
Total shareholders' equity	181,578	**190,626**
Accumulated other comprehensive income		
Net unrealized holding gain on other securities	1,044	**1,255**
Translation adjustments	16,025	**28,079**
Accured retirement benefits adjustments	-797	**697**
Total accumulated other comprehensive income	16,272	**30,032**
Non-controlling shareholders' equity	18,574	**16,765**
Total net assets	216,425	**237,425**
Total liabilities and net assets	855,483	**869,827**

* Please refer to our website for Management Performance and Financial Analysis, and Risk Factors.
https://www.ntnglobal.com/en/investors/finance.html
* Consolidated Financial Statements are available on our website from the fiscal year ended March 31, 2022.
https://www.ntnglobal.com/en/investors/finstatement.html

Consolidated Statement of Operation

(In million yen)

	Year ended March 31, 2022 (April 1, 2021 – March 31, 2022)	**Year ended March 31, 2023 (April 1, 2022– March 31, 2023)**
Net sales	642,023	**773,960**
Cost of sales	536,070	**648,047**
Gross profit	105,953	**125,912**
Selling, general and administrative expenses	99,072	**108,766**
Operating income	6,880	**17,145**
Non-operating income		
Interest income	866	**1,146**
Dividend income	605	**278**
Equity in earnings of unconsolidated subsidiaries	1,099	**1,459**
Derivative transaction gains	—	**2,035**
Foreign exchange gains	2,591	**—**
Gain on reversal of product defect compensation	1,213	**—**
Other	1,090	**2,499**
Total non-operating income	7,467	**7,419**
Non-operating expenses		
Interest expenses	4,277	**5,910**
Foreign exchange losses	—	**3,378**
Derivative transaction losses	812	**—**
Other	2,441	**3,228**
Total non-operating expenses	7,532	**12,517**
Ordinary income	6,815	**12,047**
Extraordinary income		
Gain on sale of tangible fixed assets	3,850	**1,716**
Gain on sales of investment securities	10,483	**—**
Total extraordinary income	14,333	**1,716**
Extraordinary losses		
Impairment loss	601	**1,609**
Business restructuring loss	—	**1,348**
Loss related to Anti-Monopoly Act	2,928	**—**
Total extraordinary losses	3,529	**2,957**
Net income before income taxes and equity in earnings of affiliated companies	17,619	**10,807**
Income and other taxes	5,071	**7,253**
Income and other taxes adjustment	3,451	**-8,307**
Total income and other taxes	8,522	**-1,054**
Net income	9,096	**11,861**
Profit attributable to non-controlling shareholders	1,755	**1,493**
Profit attributable to owners of parent	7,341	**10,367**

Consolidated Statement of Comprehensive Income

(In million yen)

	Year ended March 31, 2022 (April 1, 2021 – March 31, 2022)	**Year ended March 31, 2023 (April 1, 2022– March 31, 2023)**
Net income	9,096	**11,861**
Other comprehensive income		
Net unrealized holding gain on other securities	-7,615	**210**
Translation adjustments	22,947	**11,307**
Accrued retirement benefits adjustments	4,795	**1,417**
Equity in equity-method affiliates	1,759	**918**
Total other comprehensive income	21,886	**13,853**
Comprehensive income	30,983	**25,715**
(breakdown)		
Comprehensive income attributable to owners of parent company	27,407	**24,128**
Comprehensive income attributable to non-controlling shareholders	3,575	**1,587**

Statements of Changes in Shareholders' Equity

(In million yen)

2022

	Shareholders' equity					Accumulated other comprehensive income				Minority interest	Total net assets
	Common stock	Additional paid-in capital	Retained earnings	Treasury stock	Total shareholders' equity	Valuation and translation adjustment	Translation adjustments	Accumulated accrued retirement benefits adjustments	Total accumulated other comprehensive income		
Balance on April 1, 2021	54,346	67,970	52,786	-782	174,321	8,646	-6,865	-5,575	-3,794	13,224	183,751
Changes during the current period											
Distribution of retained earnings											
Profit attributable to owners of parent			7,341		7,341						7,341
Purchase of treasury stock				-92	-92						-92
Sales of treasury stock				8	8						8
Net changes in items other than shareholders' equity during the period						-7,601	22,890	4,777	20,066	5,350	25,416
Total changes during the period	—	—	7,341	-83	7,257	-7,601	22,890	4,777	20,066	5,350	32,674
Balance on March 31, 2022	54,346	67,970	60,127	-866	181,578	1,044	16,025	-797	16,272	18,574	216,425

(In million yen)

2023

	Shareholders' equity					Accumulated other comprehensive income				Minority interest	Total net assets
	Common stock	Additional paid-in capital	Retained earnings	Treasury stock	Total shareholders' equity	Valuation and translation adjustment	Translation adjustments	Accumulated accrued retirement benefits adjustments	Total accumulated other comprehensive income		
Balance on April 1, 2022	**54,346**	**67,970**	**60,127**	**-866**	**181,578**	**1,044**	**16,025**	**-797**	**16,272**	**18,574**	**216,425**
Changes during the current period											
Distribution of retained earnings			**-1,329**		**-1,329**						**-1,329**
Profit attributable to owners of parent			**10,367**		**10,367**						**10,367**
Purchase of treasury stock				**-0**	**-0**						**-0**
Sales of treasury stock				**9**	**9**						**9**
Net changes in items other than shareholders' equity during the period						**210**	**12,054**	**1,495**	**13,760**	**-1,808**	**11,951**
Total changes during the period	**—**	**—**	**9,038**	**9**	**9,048**	**210**	**12,054**	**1,495**	**13,760**	**-1,808**	**20,999**
Balance on March 31, 2023	**54,346**	**67,970**	**69,166**	**-856**	**190,626**	**1,255**	**28,079**	**697**	**30,032**	**16,765**	**237,425**

Statements of Cash Flows

(In million yen)

	Year ended March 31, 2022 (April 1, 2021 – March 31, 2022)	**Year ended March 31, 2023 (April 1, 2022– March 31, 2023)**
Net cash provided by operating activities		
Net income before income taxes and equity in earnings of affiliated companies	17,619	**10,807**
Depreciation and amortization	37,898	**42,048**
Impairment loss	601	**1,609**
Goodwill depreciation	160	**214**
Business restructuring loss	—	**1,348**
Loss related to Anti-Monopoly Act	2,928	**—**
Increase/decrease (-) in allowance for doubtful accounts	-53	**-308**
Increase/decrease (-) in accrued retirement benefits for Officers	-7	**88**
Increase/decrease (-) in reserve for product defect compensation	-684	**-157**
Increase/decrease (-) in liabilities in retirement benefits	1,605	**-1,228**
Decrease/increase (-) in assets for retirement benefits	-1,555	**-1,756**
Interest and dividend income	-1,472	**-1,424**
Interest expenses	4,277	**5,910**
Foreign currency translation adjustments / foreign exchange loses/gains (-)	-1,067	**-3,519**
Loss or gain (-) on derivative transactions	812	**-2,035**
Equity in earnings (-) /loss of non-consolidated subsidiaries	-1,099	**-1,459**
Gain (-) or loss on sale of tangible fixed assets	-3,850	**-1,716**
Gain (-) or loss on sales of investment securities	-10,483	**—**
Decrease/increase (-) in trade receivables	-2,165	**1,210**
Decrease/increase (-) in inventories	-25,300	**-15,044**
Increase/decrease (-) in trade payables	691	**11,443**
Other	-2,445	**-1,949**
Subtotal	16,410	**44,079**
Interest and dividend income received	1,717	**2,575**
Interest paid	-4,342	**-5,165**
Subsidies received	898	**—**
Loss related to Anti-Monopoly Act	-3,125	**—**
Income taxes paid	-2,601	**-7,271**
Net cash provided by operating activities	8,956	**34,219**
Net cash used in investing activities		
Increase in time deposits	-1,339	**-2,314**
Decrease in time deposits	2,780	**8,709**
Purchases of property, plant and equipment	-16,336	**-19,705**
Proceeds from sale of property, plant and equipment	4,740	**2,210**
Purchase of intangible fixed assets	-5,534	**-4,020**
Proceeds from sales of investment securities	17,052	**—**
Loss on purchase of stock of the consolidated subsidiary	—	**-26**
Proceeds from purchase of subsidiaries' stock resulting in change in scope of consolidation	1,200	**—**
Decrease/increase (-) in short-term loans receivable, net	15	**39**
Other	-66	**1,248**
Net cash used in investing activities	2,512	**-13,858**
Net cash provided by financing activities		
Increase/decrease (-) in short-term loans, net	2,588	**-377**
Proceeds from long-term loans	12,178	**22,541**
Repayment of long-term loans	-52,330	**-52,832**
Dividend payment	—	**-1,329**
Repayment of lease payable	-2,122	**-3,138**
Proceeds from sale and leaseback	—	**5,264**
Other	-1,614	**-3,386**
Net cash provided by financing activities	-41,300	**-33,258**
Effect of exchange rate changes on cash and cash equivalents	4,042	**2,112**
Increase/decrease (-) in cash and cash equivalents	-25,788	**-10,785**
Cash and cash equivalents at beginning of the year	147,249	**121,460**
Cash and cash equivalents at end of the year	121,460	**110,675**

Japan



	Company name	Paid-in capital	Holdings as percentage (%)	
I	NTN Corporation (parent company)			
II	Industrial Business Headquarters, Kuwana Works			
III	Industrial Business Headquarters, Nagano Works			
IV	Industrial Business Headquarters, Kongo Works			
V	Automotive Business Headquarters, Iwata Works			
VI	Automotive Business Headquarters, Okayama Works			
VII	Automotive Business Headquarters Mikumo Works			
VIII	Composite Material Product Division, Engineering Plastics Works			
1	NTN SALES JAPAN CORP	JPY 480,000,000	100	
2	NTN MIE CORP.	JPY 3,000,000,000	100	
3	NTN HOUDATSU SHIMIZU CORP.	JPY 1,250,000,000	100	
4	NTN NOTO CORP.	JPY 1,000,000,000	100	
5	NTN FUKUROI CORP.	JPY 1,500,000,000	100	
6	NTN AKAIWA CORP.	JPY 1,250,000,000	100	
7	NTN OMAEZAKI CORP.	JPY 266,000,000	97.4	
8	NTN Advanced Materials Corp.	JPY 400,000,000	99.34	
9	NTN CASTING CORP.	JPY 450,000,000	100	
10	NTN KINAN CORP.	JPY 450,000,000	100	
11	NTN KAMIINA CORP.	JPY 725,000,000	80	
12	Taira Forging Co.,Ltd.	JPY 30,000,000	56.67	
13	NTN TECHNICAL SERVICE CORP.	JPY 200,000,000	100	
14	NTN LOGISTICS CO., LTD.	JPY 10,000,000	100	(100)
A	New Product Development R&D Center			
B	Production Engineering R&D Center			
C	CAE R&D Center			
D	Advanced Technology R&D Center			
E	NTN Next Generation Research Alliance Laboratory			

Americas



	Company name	Paid-in capital	Holdings as percentage (%)	
15	NTN USA CORP.	USD 675,475,028	100	
16	NTN BEARING CORP. OF AMERICA	USD 24,700,000	100	(100)
17	NBCA Asset Finance LLC.	USD 1	100	(100)
18	NTN DRIVESHAFT, INC.	USD 128,800,000	100	(100)
19	NTN DRIVESHAFT ANDERSON, INC.	USD 119,000,000	100	(100)
20	AMERICAN NTN BEARING MFG. CORP.	USD 54,300,000	100	(100)
21	NTN-BOWER CORP.	USD 167,000,000	100	(100)
22	NTK PRECISION AXLE CORP.	USD 30,000,000	60	(60)
23	NTA PRECISION AXLE CORP.	USD 40,000,000	62.5	(62.5)
24	NTN BEARING CORP. OF CANADA LTD.	CAD 20,100,000	100	(100)
25	NTN-SUDAMERICANA, S.A.	USD 700,000	100	(100)
26	NTN MANUFACTURING DE MEXICO, S.A.DE C.V.	MXN 594,205,718	100	(99)
27	NTN do Brasil Producão de Semi-Eixos Ltda.	BRL 390,739,432	100	(2.72)
28	ASAHI FORGE OF AMERICA CORP.	USD 10,100,000	19.8	(19.8)
29	Seohan-NTN Driveshaft USA CORP.	USD 6,000,000	49	
F	NTN Automotive Center			

One consolidated subsidiary in addition to the Group companies above

Europe



	Company name	Paid-in capital	Holdings as percentage (%)	
30	NTN Europe Holdings SAS	EUR 1,000,000	100	
31	NTN Europe S.A.	EUR 322,639,919	100	
32	NTN TRANSMISSIONS EUROPE	EUR 124,988,315	100	
33	NTN TRANSMISSIONS EUROPE CREZANCY	EUR 11,500,000	100	(100)
34	NTN Wälzlager (Europa) G.m.b.H.	EUR 14,500,000	100	(100)
35	NTN Kugellagerfabrik (Deutschland) G.m.b.H.	EUR 18,500,000	100	
36	NTN Mettmann (Deutschland) G.m.b.H.	EUR 25,000	100	(100)
37	NTN Antriebstechnik G.m.b.H.	EUR 50,000	100	
38	NTN BEARINGS (UK) LTD.	GBP 2,600,000	100	(100)
G	NTN-SNR R&D Center			

Six consolidated subsidiaries in addition to the Group companies above

Asia and Others



● Sales ■ Production ■ Production and sales ◆ R&D base ● Others

	Company name	Paid-in capital	Holdings as percentage (%)	
39	NTN BEARING-SINGAPORE (PTE) LTD.	SGD 36,000,000	100	(0.97)
40	NTN BEARING-MALAYSIA SDN.BHD.	MYR 1,000,000	100	(100)
41	NTN BEARING-THAILAND CO., LTD.	THB 780,000,000	100	(99.999)
42	NTN MANUFACTURING (THAILAND) CO., LTD.	THB 1,311,000,000	100	(99.999)
43	NTPT CO., LTD.	THB 700,000,000	75	(10.73)
44	PT. NTN BEARING INDONESIA	USD 7,300,000	100	(100)
45	NTN BEARING INDIA PRIVATE LTD.	INR 300,000,000	100	(0.1)
46	NTN NEI Manufacturing India Private LTD.	INR 4,808,000,000	97.4	(24.96)
47	NTN KOREA CO., LTD.	KRW 500,000,000	100	
48	NTN (CHINA) Investment Corporation	USD 388,547,500	100	
49	NANJING NTN CORP.	USD 180,000,000	100	(86.67)
50	SHANGHAI NTN CORP	USD 166,500,000	95	(95)
51	Guangzhou NTN-Yulon Drivetrain Co., Ltd.	USD 12,500,000	60	(12)
52	Xiangyang NTN-Yulon Drivetrain Co., Ltd.	USD 34,000,000	60	(60)
53	NTN-RAB (CHANGZHOU) CORP.	USD 28,440,000	100	
54	NTN CHINA LTD.	HKD 2,500,000	100	
55	TUNG PEI INDUSTRIAL CO., LTD.	TWD 1,257,232,620	27.35	
56	TAIWAY LTD.	TWD 160,000,000	36.25	
57	NTN-DONGPAI (Shanghai) Bearing Sales Co, Ltd.	USD 1,460,000	25	(25)
58	Shanghai Tung Pei Enterprise Co., Ltd.	USD 36,000,000	17.86	(17.86)
59	PT. TPI MANUFACTURING I NDONESIA	USD 55,415,050	28.8	(0.002)
60	PT. Astra NTN Driveshaft Indonesia	IDR 120,000,000,000	49	
H	NTN China Technical Center			

One consolidated subsidiary in addition to the Group companies above

NOTES 1. The scope of consolidation consists of NTN Corporation and 60 consolidated subsidiaries (14 domestic and 46 overseas subsidiaries). A total of 10 affiliates (8 overseas affiliates) were accounted for by the equity method.
The following changes to the scope of consolidation and application of the equity method were made during the fiscal year under review.
◆ Consolidated subsidiaries: 1 addition/No removal
◆ Affiliates: No additions/1 removal
2. Of the above subsidiaries, the following companies are specified subsidiaries: NTN USA CORP., NTN DRIVESHAFT,INC., NTN DRIVESHAFT ANDERSON,INC., AMERICAN NTN BEARING MFG.CORP., NTN-BOWER CORP., NTN do Brasil Produção de Semi-Eixos Ltda., NTN Europe S.A. ("NTN-EU"), NTN TRANSMISSIONS EUROPE, NTN NEI Manufacturing India Private LTD., NTN (CHINA) INVESTMENT Corporation, NANJING NTN CORP., and SHANGHAI NTN CORP.
3. Figures in curved brackets under "Holding as a percentage" indicate the percentage of indirectly owned holdings, and are included in the total holding.
4. None of the companies has submitted a securities registration statement or securities report.
5. Of the above subsidiaries, NTN BOWER CORP. is a company with excess of debts and the amount of excess of debt is 15,728 million yen as of the end of March, 2023.
6. Of the above subsidiaries, NTN BEARING CORP.OF AMERICA and NTN-EU have sales (excluding internal sales between consolidated companies) accounting for more than 10% of consolidated sales. Figures for NTN-EU are consolidated figures encompassing eight NTN-EU subsidiaries.
7. Of the above subsidiaries, I to VIII are NTN Corporation business units, 1 to 27 and 30 to 54 (in symbols ●■■) are consolidated subsidiaries, and 28, 29, and 55 to 60(in symbols ●■■) are affiliates subject to the equity method.

NTN Report 2023 third-party opinion



Professor, School of Business Administration, Kwansei Gakuin University

Chika Saka

Profile
After serving as a full-time lecturer and assistant (associate) professor at the School of Business Administration, Kwansei Gakuin University, she has been a professor since 2008. Doctor of Commercial Science. Currently, she is a member of the Sustainability Standards Board of Japan (SSBJ), a member of the Business Accounting Council of the Financial Services Agency, an affiliate member of the Science Council of Japan, a member of the Environmental Council of Osaka Prefecture, a member of the Environmental Council of Osaka City, and the Executive Director of the Accounting and Economic Association of Japan. She received the Japan Accounting Association Award. Her publications include "Environmental Accounting" (Tokyo Keizai Publishing Co., Ltd.), etc. in the book.

Noteworthy points in the NTN Report 2023

In June 2023, the International Sustainability Standards Board (ISSB) issued IFRS S1 and IFRS S2, the first sustainability standards. In light of this, the NTN Report 2023 includes the following three notable points.

First, NTN disclosure is generally in line with the general requirements of S1: such as the same scope as the consolidated financial statements is covered, information on sustainability-related risks and opportunities of materiality is covered (P.21, 22), and comparative information is included. Now, if the connections between sustainability information and financial statement information could be reflected in value creation stories, etc., it would be even more useful.

Second, a list of industry-specific accounting indicators based on the SASB Standard disclosure criteria, which are required to be considered in S1, has been continuously disclosed since "NTN Report 2021." The fact that NTN has already begun to recognize and disclose the topics in both the "RESOURCE TRANSFORMATION SECTOR- Industrial Machinery & Goods" and the "TRANSPORTATION SECTOR- Auto Parts" will certainly help NTN to reduce future financial risks and seize opportunities.

Third, the S2 theme of "climate change" was positioned as the first of the 13 materiality items as a contribution to solving social issues. The Carbon Neutrality Strategy Promotion Department of the Group Management Headquarters has been established and governance has been strengthened to achieve this goal. The addition of the "Carbon neutrality realization image" and priority measures (P.53) for Scope 1 and 2 toward 2035 strengthen the roadmap for a long-term response, which is expected to lead to an increase in the level of future efforts.

Note that biodiversity, human capital, and human rights are among the new project for the future proposed by the IFRS Foundation in May 2023. These topics are also already disclosed in the "NTN Report 2023." In particular, the disclosure of human capital now specifies the "five pillars of the human resources strategy" (P.62). The efforts to develop the next generation of human resources who will lead the transformation are expected to contribute to the realization of the various transformations described in the top message and the value creation story.

Sustainability Disclosure Opens the Door to Medium- and Long-Term Enhancement of Corporate Value

The sustainability-related financial information covered by the ISSB's Sustainability Standards can greatly assist in connecting financial and sustainability information to achieve true integrated thinking and integrated reporting. I believe that if the "restructuring of the business and product portfolios" (P.30), which is newly mentioned in "NTN Report 2023," risks and opportunities, and measures to address them (P.56) are related to the financial information, the report will be more persuasive to global investors.

NTN's steady response to sustainability, which can be read from the NTN's report, will enable the company to align the vector of the "business structure transformation" mentioned in the top message with the vector of the mission derived from Purpose, which is "to reduce the environmental impact of business as much as possible while contributing to solving the problem through the provision of products and services". This report may convince that each and every member in the various departments of the organization is on the way to mid- to long-term value creation in the same direction. I expect it will be a great help in achieving this goal.

Response to the third-party opinion

We would like to thank Professor Saka for her valuable opinions.

Through the practice of our corporate philosophy, we aim to contribute to the resolution of social issues surrounding the world and realize a "NAMERAKA Society" where people can easily lead a secure and fulfilling life. Of the 13 items of materiality that we have identified as priority issues to be addressed, we have received high praise for our activities to set the concrete measures and establish the new organization to achieve the goals for carbon neutrality. We have been confident in our efforts to date.

From the viewpoint of increasing the persuasive power of our efforts to investors, as you have indicated, we will more specifically promote the measures for improving our activities to "climate change", strengthening the connections between sustainability information and financial statement information, and promoting information disclosure, including efforts to develop the next generation of human resources who will lead the transformation.

We will listen sincerely to the valuable opinions we have received this time and strive to improve corporate value over the medium to long term.



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ESG Promotion Department
Shumpei Kinoshita

Head Office
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*Moved to the new address on the back cover in August 2023.

Common Stock
Authorized: 1,800,000,000
Issued and Outstanding: 532,463,527

Number of Shareholders
60,346

Transfer Agent for Common Stock
Mitsubishi UFJ Trust and Banking Corporation
4-5, 1-chome, Marunouchi, Chiyoda-ku,
Tokyo 100-8212, Japan

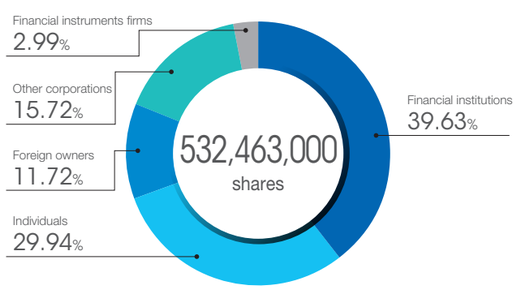
Stock Exchange Listings
First Section of Tokyo Stock Exchange
(#6472)

Independent Audit Firm
Ernst & Young ShinNihon LLC

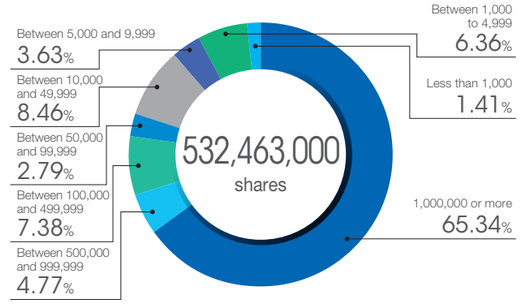
General Meeting of Shareholders
The General Meeting of Shareholders was held on June 27, 2023 in Osaka

Stock Price Range in the Fiscal Year ended March 31, 2023
High: 378 yen
Low: 195 yen

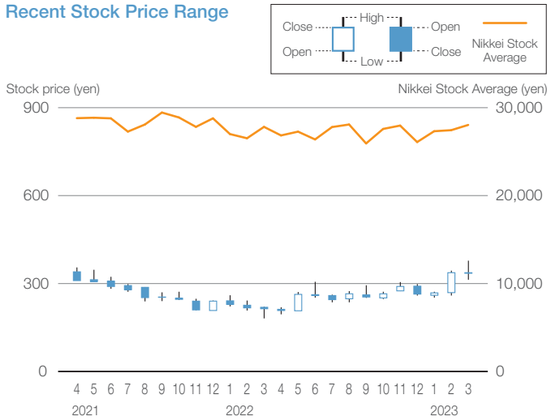
Breakdown of Shareholders



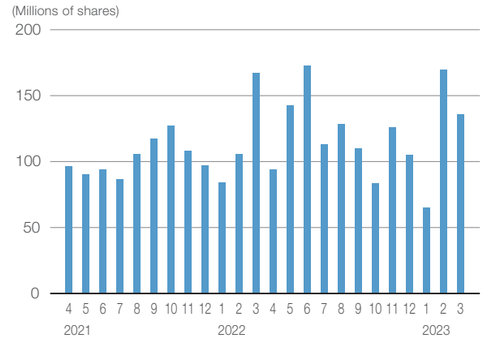
Breakdown of Number of Shares Held



Recent Stock Price Range



Monthly Volume Traded



Status of inclusion in ESG indexes

* Inclusion status as of the end of July 2023.

Morningstar Japan ex-REIT Gender Diversity Tilt Index

S&P/JPX Carbon Efficient Index

Sompo Sustainability Index

FTSE Blossom Japan Sector Relative Index

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NTN on the Internet
NTN's website offers a variety of corporate and product information, including the latest NTN Report and financial results.
https://www.ntn.global.com

SASB Index

Information is disclosed in accordance with the requirements of the SASB classification of “RESOURCE TRANSFORMATION SECTOR-Industrial Machinery & Goods” and “TRANSPORTATION SECTOR-Auto Parts.”

Although there are some indicators that do not apply to us or that we have not been able to disclose, we will disclose as much information as we can and continue to work to enhance our disclosure on these SASB topics.

RESOURCE TRANSFORMATION SECTOR-Industrial Machinery & Goods

Sustainability Disclosure Topics and Metrics

Topic	Metric	Unit of Measure	Fiscal year ended March 31, 2023	SASB Code
Energy Management	(1) Total energy consumed	TJ*	P.58 Resource Recycling and Pollution Prevention Material Balance	RT-IG-130a.1
	(2) Percentage grid electricity	GWh*	P.58 Resource Recycling and Pollution Prevention Material Balance	
	(3) Percentage renewable	GWh*	P.58 Resource Recycling and Pollution Prevention Material Balance	
Employee Health & Safety	(1) Total recordable incident rate (TRIR)	Number*	https://www.ntnglobal.com/en/csr/nonfinance.html	RT-IG-320a.1
	(2) Fatality rate	Rate	https://www.ntnglobal.com/en/csr/nonfinance.html	
	(3) Near miss frequency rate (NMFR)	Rate	Not disclosed	
Fuel Economy & Emissions in Use-phase	(1) Sales-weighted fleet fuel efficiency for medium- and heavy-duty vehicles	Gallons per 1,000 ton-miles	N/A	RT-IG-410a.1
	(2) Sales-weighted fuel efficiency for non-road equipment	Gallons per hour	N/A	RT-IG-410a.2
	(3) Sales-weighted fuel efficiency for stationary generators	Watts per gallon	N/A	RT-IG-410a.3
	Sales-weighted emissions of: (1) nitrogen oxides (NOx) and (2) particulate matter (PM) for: (a) marine diesel engines, (b) locomotive diesel engines, (c) on-road medium- and heavy-duty engines, and (d) other non-road diesel engines	Grams per kilowatt-hour	N/A	RT-IG-410a.4
Materials Sourcing	Description of the management of risks associated with the use of critical materials	Discussion and Analysis	P.61 Sustainable Supply Chain/Procurement activities with an emphasis on environment and society P.67-68 Prosperous Human Development/ Respect for human rights	RT-IG-440a.1
Remanufacturing Design & Services	Revenue from remanufactured products and remanufacturing services	Qualitative information*	P.50-51 Contribute to Carbon-Free Society/ Reduce energy loss	RT-IG-440b.1

Activity Metrics

Topic	Metric	Unit of Measure	Fiscal year ended March 31, 2023	SASB Code
Activity Metric	Number of units produced by product category	Number	N/A	RT-IG-000.A
	Number of employees	Number	P.17-18 Value Creation Process P.93-94 Consolidated Financial Indicators (Past 11 Years)	RT-IG-000.B

TRANSPORTATION SECTOR-Auto Parts

Sustainability Disclosure Topics and Metrics

Topic	Metric	Unit of Measure	Fiscal year ended March 31, 2023	SASB Code
Energy Management	(1) Total energy consumed	TJ*	P.58 Resource Recycling and Pollution Prevention Material Balance	TR-AP-130a.1
	(2) Percentage grid electricity	GWh*	P.58 Resource Recycling and Pollution Prevention Material Balance	
	(3) Percentage renewable	GWh*	P.58 Resource Recycling and Pollution Prevention Material Balance	
Waste Management	(1) Total amount of waste from manufacturing	ton*	P.58 Resource Recycling and Pollution Prevention Material Balance	TR-AP-150a.1
	(2) Percentage hazardous	ton*	P.58 Resource Recycling and Pollution Prevention Material Balance	
	(3) Percentage recycled	%	P.58 Resource Recycling and Pollution Prevention Material Balance	
Product Safety	Number of recalls issued	Number	Not disclosed	TR-AP-250a.1
	Total units recalled	Number	Not disclosed	
Design for Fuel Efficiency	Revenue from products designed to increase fuel efficiency and/or reduce emissions	Reporting currency	P.50-51 Contribute to Carbon-Free Society	TR-AP-410a.1
Materials Sourcing	Description of the management of risks associated with the use of critical materials	Discussion and Analysis	P.61 Sustainable supply chain/Procurement activities with an emphasis on environment and society P.67-68 Prosperous Human Development/Respect for human rights	TR-AP-440a.1
Materials Efficiency	Percentage of products sold that are recyclable	%	Not disclosed	TR-AP-440b.1
	Percentage of input materials from recycled or remanufactured content	%	Not disclosed	TR-AP-440b.2
Competitive Behavior	Total amount of monetary losses as a result of legal proceedings associated with anti-competitive behavior regulations	Reporting currency	P.95-98 Consolidated Financial Statements	TR-AP-520a.1

Activity Metrics

Topic	Metric	Unit of Measure	Fiscal year ended March 31, 2023	SASB Code
Activity Metric	Number of parts produced	Number	P.39 Reorganization of production	TR-AP-000.A
	Weights of parts produced	M/T	Not disclosed	TR-AP-000.B
	Area of manufacturing plants	number of bases*	P.17-18 Value Creation Process	TR-AP-000.C

*Information is disclosed in units different from those required by SASB.

Make the world NAMERAKA

NTN corporation

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