

# NTN Report 2018

For the fiscal year ended March 31, 2018



For New Technology Network

# NTN®

For New Technology Network

# Make the World “NAMERAKA”\*

NTN is a precision equipment manufacturer that engages in R&D, production and sales of products such as bearings and driveshafts. We have one of the world’s No. 1 market shares for bearings, a components used to reduce friction in various rotating parts.

Our bearing technology is used to produce hub bearings that have the world’s No. 1 market share and our driveshafts have the world’s No. 2 market share.

NTN’s products ensure the smooth operation of various machinery by providing high quality and reliability. They are used in a wide range of industries such as automobile, construction machinery, wind turbine, aerospace and rolling stock, and help make modern life possible for users around the world.

\* “NAMERAKA” means “smooth” in Japanese



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Creating value to help ensure sustainability.

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\* About product photos: some photos are cross-sectional models of products.

### Editorial Policy

NTN believes that the active disclosure of management plans and business results, as well as its basic policy for corporate social responsibility (CSR), CSR activities, and environmental preservation initiatives, among other information, will help garner the understanding and support of all stakeholders. This “NTN Report,” which has been issued since the fiscal year ended March 31, 2010 after combining the “Annual Report” with the “CSR Report,” is part of this active approach to information disclosure

### Organization Covered and Reporting Period

Reporting period:  
Fiscal year ended March 31, 2018 (April 1, 2017 to March 31, 2018)  
Includes some activities for the fiscal year ending March 31, 2019.

Organization covered:  
NTN Group  
Includes some reports for NTN only.

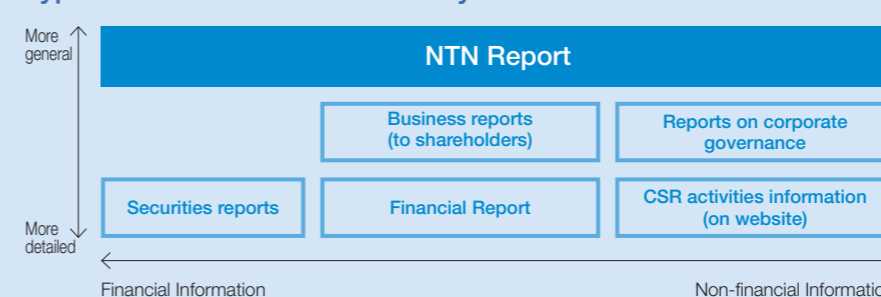
### Reference Guidelines

International Integrated Reporting Council (IIRC)  
International <IR> Framework  
Ministry of Economy, Trade and Industry  
Guidance for Integrated Corporate Disclosure and Company-Investor Dialogues for Collaborative Value Creation

### Disclaimer

This report contains future results and forecasts regarding NTN’s future plans, strategies, and business results. Please understand that actual business results may vary from the forecasts made herein by the Company.

### Types of Information Provided by NTN



This report presents both financial and non-financial information, focusing on especially important topics. More detailed financial information is available in securities reports and in Financial Reports. Detailed information on the Company’s CSR activities is also available on our website.  
<https://www.ntnglobal.com/en/index.html>

# Corporate Philosophy System

To mark our 100th anniversary, we have reviewed our corporate philosophy system. We have also supplemented our corporate philosophy with the addition of NTN Spirit, a new corporate philosophy code of conduct. Based on the new corporate philosophy system, we will work on to achieve “a company where the corporate philosophy is understood by all employees around the world and where all employees think and act for themselves” as stated in NTN’s long-term vision.

The NTN corporate philosophy system consists of the NTN Spirit, the mindset and actions NTN group employees are to aim for, based on our founders’ spirit (Frontier spirit, Coexistence and co-prosperity spirit), with NTN corporate philosophy (MISSION, VALUES) at the summit.

NTN will use “NTN Spirit” as a cornerstone of its own work, put the corporate philosophy into practice during each employee’s everyday tasks more than ever, and contribute towards achieving a smooth society.



## Corporate Philosophy

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

### For New Technology Network

- 1 Creation of original technologies.
- 2 Offering the technologies for additional value and service that are suitable for each customer and end user.
- 3 Improvement of employees’ standard of living, distribution of fair returns to stockholders, and contribution to society based on the steady growth of our business.
- 4 Promotion of globalization, and formation of management systems/corporate organization which are essential for NTN, as an international leading company.

## 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 and 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.

# FOUNDERS' SPIRIT

NTN Corporation celebrated its 100th anniversary in March 2018.

Founded just over a century ago by Noboru Niwa and Jiro Nishizono, NTN has a long history of rising to meet each new challenge head-on. Our founders emphasized the importance of having “Frontier Spirit” and “Coexistence and Co-prosperity Spirit”—two key traits that define the Founders’ Spirit.

## Frontier Spirit

Co-founder Noboru Niwa became interested in the idea of manufacturing bearings in Japan to meet the country’s demand at the time. Learning that a ship carrying a cargo of foreign bearings had sunk in the Port of Yokohama, Niwa lost no time in bidding successfully for the entire cargo. He then engaged engineer Jiro Nishizono to refurbish the bearings, selling them as reclaimed parts. Bearing manufacturing got fully underway after the proceeds of the sale were put toward research and prototyping work done by Nishizono to produce bearings in Japan. After its founding, the Company had to overcome a long series of hardships, struggling to do business as a solo independent operator not affiliated with the government or a major conglomerate. The founders’ “Frontier Spirit” strongly influenced work on later challenges such as developing original products, actively seeking out technology partnerships and expanding overseas.

“Through creating new technologies and developing new products”



**Noboru Niwa**

NTN’s first president. Created the company to manufacture bearings.

## Coexistence and Co-prosperity Spirit

Niwa was also committed to the idea of sharing the wealth created from business profits instead of monopolizing it. It was a value his mother had taught him from an early age. He realized that being able to produce low-cost bearings in Japan as an alternative to expensive imported bearings would assist the growth of a wide range of industries. This realization came from the values his mother had taught him, and inspired him to work with Nishizono to attempt to manufacture bearings in Japan. “Coexistence and co-prosperity Spirit” is still a core of the Company’s activities. It is behind our work on tribology technology used in energy-saving applications designed to help the global environment, and our CSR activities that return business profits to the community.

“Contribute to international society”



**Jiro Nishizono**

NTN’s co-founder. Did the first research and development work on bearings.

# ABOUT BEARINGS

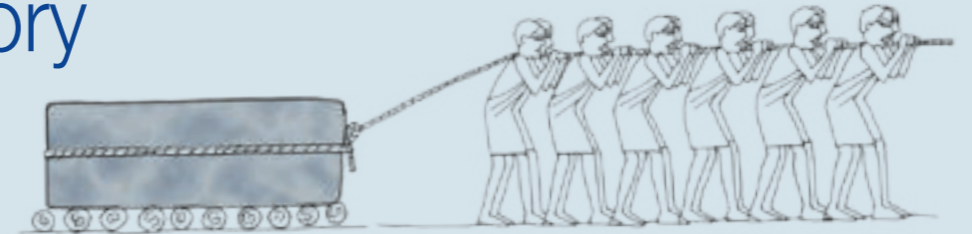
Bearings are eco-products that reduce energy consumption by supporting various rotating mechanical parts and reducing friction.

Bearings are mounted inside machinery and are usually hidden from view.

But they play a key role in improving the safety and reliability of machinery, helping contribute to “NAMERAKA\* Society.”

\*“Nameraka” means “smooth” in Japanese.

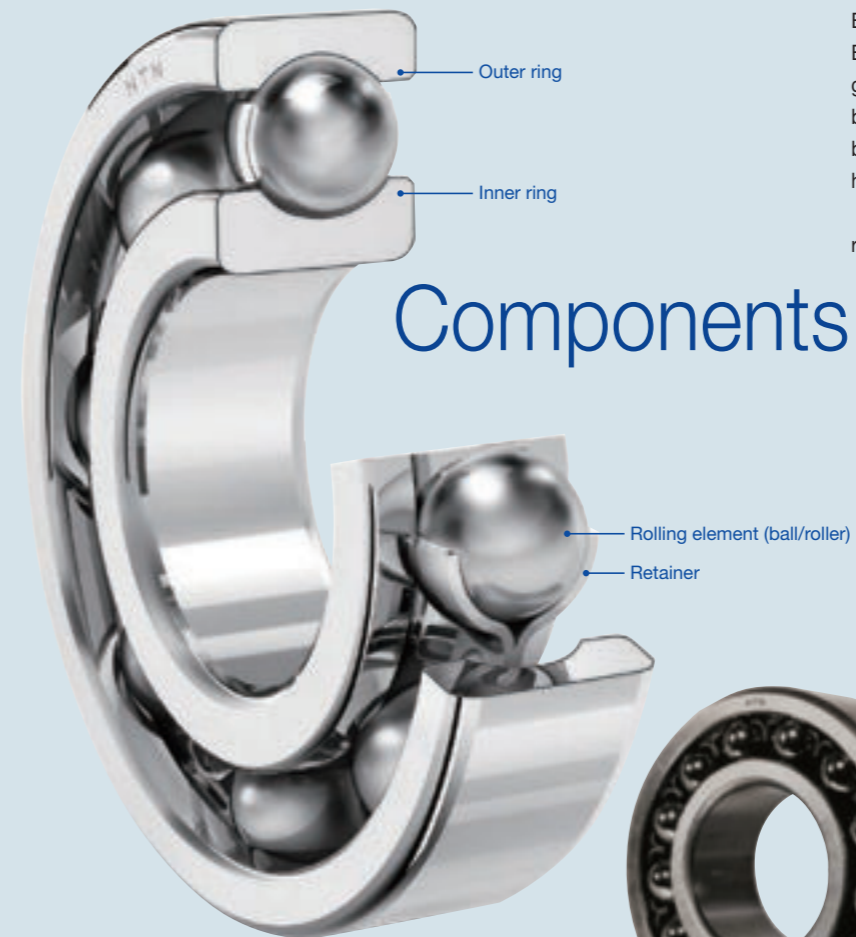
## History



Bearings date back to the time of the ancient Egyptians. The Egyptians placed logs on the ground for use as rollers when moving the heavy blocks used to build the pyramids. Rolling the blocks over the logs reduced friction, enabling human workers to move the massive blocks.

Modern bearings are devised on the same roller principle used since ancient times.

## Components



## Key Role in Everyday Life



General-purpose bearings are composed of four types of components: an outer ring, inner ring, rolling elements (balls/rollers) and retainers. While the structure seems simple, any irregularities or cracks in the rings or rolling elements will prevent the bearing from turning smoothly.

Every ball used in bearings must be manufactured with a high degree of technological expertise and enough precision to ensure that irregularities will vary by less than one ten-thousandth of a millimeter.

**The NTN brand as it appeared at the time of our founding (left) and today (right)**

Bearings are in widespread use in everyday mechanical equipment. For example, the average automobile contains anywhere from 100 to 150 bearings. Bearings also support a wide range of industries. They are used in construction machinery, aerospace applications, rolling stock, wind turbines, medical equipment and other areas requiring high technological expertise.

# A Century in Business

The quality-first approach practiced since our founding boosted NTN's reputation and achievements, setting the stage for our vision of how to engage with the world over the next hundred years. NTN has started looking to its next hundred years in business, helping create a smooth society.

## 1918 Start of ball bearing research and manufacturing at Nishizono Ironworks

Young engineer Jiro Nishizono started the Nishizono Ironworks in Kuwana, Mie Prefecture in 1918 at the age of 21. Nishizono had decided to become an independent metalworker after honing his skills for about 2 years at a local ironworks. Noboru Niwa (later the Company's first president) was running a machinery and tool shop that he had started in Osaka at the age of 22. The two co-founders met when Niwa approached Nishizono Ironworks for production work needed when he began to manufacture and sell rice polishers.

In 1922, Tomoe Trading Co. successfully bid for an entire cargo of bearings that had been aboard a Swedish vessel that sank in Japan. Nishizono Ironworks was commissioned to refurbish the bearings, which were then sold for a higher profit than anticipated. Motivated strongly to produce bearings domestically, Niwa bought three grinders with the proceeds of the sale. He installed them at Nishizono Ironworks, urging Nishizono to work on bearing research and development. Bearing manufacturing got fully underway when Nishizono started research and prototyping work to create a domestically produced bearing alternative to the imported ball bearings that were the only option available in Japan at the time.

### Origin of the Company name

The two Ns in the name NTN stand for Niwa and Nishizono. Noboru Niwa was the Company's first president who provided its startup capital, and Jiro Nishizono was its co-founding engineer. The T linking the two letters stands for Tomoe Trading, the organization that initially handled the Company's sales. The Company's products have always carried the NTN logo since the name was adopted.

The Company's name has changed a number of times through the years. It was first renamed "NTN Manufacturing," and then became "Toyo Bearing Manufacturing" in 1937 as the Company's presence expanded from Japan to the entire East Asia region (Toyo in Japanese). It was again renamed in 1972, becoming "NTN Toyo Bearing Company."

The Company was renamed "NTN Corporation" in 1989, representing "For New Technology Network," which was adopted as a new direction the Company should moving forward to.

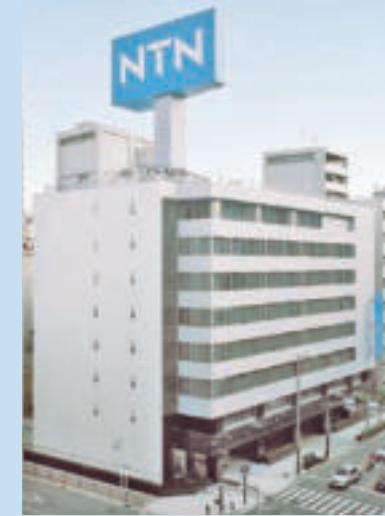
## 1963 Start of driveshaft manufacturing

Shortly after technology partnerships had become permitted under Japan's Foreign Investment Law, NTN entered into a technology partnership with German manufacturer Industriewerk Schaeffler in 1962. The project resulted in the construction of the INA-NTN needle roller bearing plant next to the Iwata Works. Another technology partnership was formed with UK manufacturer Hardy Spicer to produce driveshafts (constant velocity joints), a promising product expected to enjoy rapid future growth in demand for automotive applications. Production started in 1963 at the Kuwana Plant.



First driveshaft model produced

## 1989 Name changes to NTN Corporation



Current head office building

## 1918

### Milestones of Our Business



**1964** The Company has helped enable faster and lighter rolling stocks by developing technology tailored to the evolution of high-speed rail and providing high-quality, high-reliability products. Our journal bearings for 0 Series Shinkansen trains were recognized as Tribology Heritage\* by the Japanese Society of Tribologists.



\* Tribology Heritage: Tribology related technology and things recognized by the Japanese Society of Tribologists as having a particularly important contribution to the development of science and technology

## 1954 NTN becomes the first Japanese machinery manufacturer to win the Deming Prize\*



NTN (then known as "Toyo Bearing Manufacturing") was one of the first machinery manufacturers to adopt statistical quality control. Quality control was applied throughout the Company, and not limited to just plants. These achievements were recognized when we won the Deming Prize in 1954. This honor was a first for not only a bearing manufacturer, but also for any Japanese machinery manufacturer. The Deming Prize is one of the world's most prestigious awards for TQM (total quality management). NTN is the first bearing manufacturer to win the award.

\*Deming Prize: A prize created by the Japanese Union of Scientists and Engineers to honor the achievements of W. Edwards Deming, a US engineer, statistician, professor, author, lecturer, and management consultant who popularized statistical quality control in postwar Japan and built the foundation needed to raise the quality of Japanese products to world standards.

## 1960s Overseas sales expansion/augmentation

Starting around 1956, rising bearing export growth started boosting sales. With help from trading companies, NTN began steadily expanding its overseas markets. In 1961, we opened our first overseas sales company (in Dusseldorf, Germany) as a way to flexibly adapt to local demand. Our overseas sales expansion continued with the opening of a sales company in New York in 1963, followed by sales companies in France and the UK the year after.

## 1970



**1970s** Demand for front-engine, front-wheel-drive (FF) vehicles increases along with the increasing popularity of more compact, fuel-efficient models. Driveshafts improving the ride comfort of FF vehicles contribute greatly to their rise.

## 1971 onwards Overseas production expansion/augmentation

NTN became the first Japanese manufacturer to open a production base in Europe with the establishment of a German bearing manufacturing subsidiary in 1971. A bearing manufacturing subsidiary in U.S. was also established that year. Our presence in the Americas was later expanded by opening bases in Brazil and Mexico, and we boosted our local production system by establishing plants for both finished products and pre-processes.

In the Asia region, we established manufacturing subsidiaries in countries such as China, Thailand and India.

Establishing these overseas manufacturing subsidiaries has augmented our local production. NTN products are produced at the locations where they are needed by customers around the world.

## The latter 1970s Evolution of hub bearings

The latter half of the 1970s saw the Company release its first-generation axle bearings (GEN1) that were the forerunners of our hub bearings that now have the world's top-ranked market share. These products evolved into second-generation hub bearings (GEN2) by combining the axle bearing with peripheral components such as knuckles in a single unit.

The evolution into third-generation products (GEN3) was subsequently accomplished by packaging additional parts such as hub bolts, flanges and knuckles into a single unit to improve ease of hub bearing assembly on automobile assembly lines. The third-generation lineup began mass-production in Japan for the first time in the mid-1980s. The third-generation lineup has continued to evolve since its debut. Refinements are still being made today, such as by adding sensors and improving ease of assembly.



First generation

Second generation

Third generation

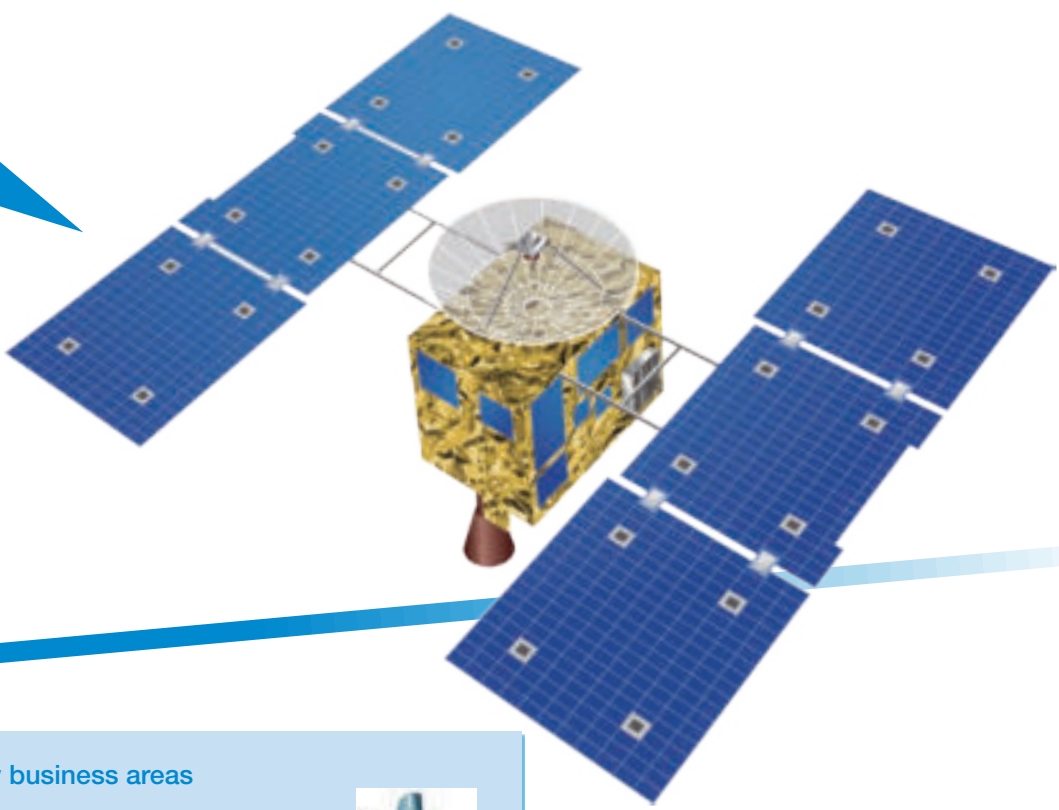
**1983** NTN products are delivered to major engine manufacturers and supplied for use in commercial passenger aircraft around the world.



**2000**

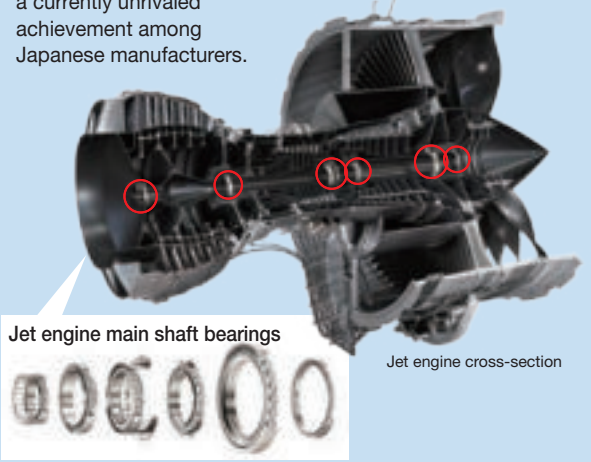
**2010**

**2014**  
The Hayabusa 2 asteroid probe is launched. Spherical plain bearings are mounted in the hinges used to open the solar panels.



**1986** Construction of Japan's first aerospace bearing plant

Since then, NTN has been continuing to produce bearings for aerospace applications with consistently high quality and reliability. We are a certified supplier of main shaft bearings to the world's four major jet engine manufacturers, a currently unrivaled achievement among Japanese manufacturers.



Jet engine main shaft bearings  
Jet engine cross-section

**2008** SNR ROULEMENTS acquisition

Seeking to expand business in Europe, the Company invested in French bearing manufacturer SNR ROULEMENTS in 2007, making it a consolidated subsidiary the following year. The addition of SNR ROULEMENTS to the NTN Group has boosted previously struggling European sales. It has also made our business more geographically balanced, with sales from Japan, the Americas, Europe, and Asia and other regions each accounting for roughly 25% of the total.



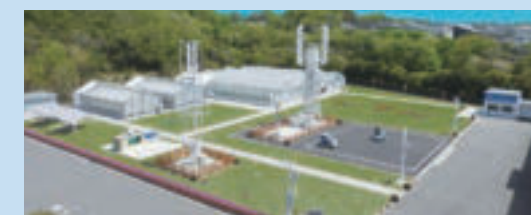
NTN-SNR ROULEMENTS (Current head office building)

**2015** Start of four new business areas

In 2015, the Company began focusing on creating businesses in new areas fueled by the technologies acquired throughout our product development history. We have been developing products and technologies for business areas such as energy, EVs, robotics and service solutions.



NTN Micro Hydro Turbine



NTN Green Power Park (Kuwana, Mie Prefecture)



NTN Hybrid Street Light

**2018** Company's 100th anniversary

In March 2018, the Company celebrated its 100th anniversary and created a new Medium-term Management Plan called "DRIVE NTN100." The plan is designed to realize our long-term vision for sustainable growth over the next hundred years.



**2017** NTN Next Generation Research Alliance Laboratories

This research facility was created in the Graduate School of Engineering at Osaka University, a center of cutting-edge technology. The lab's activities are designed to create a stronger partnership between NTN and university, augment our portfolio of core technologies by acquiring pioneering technologies, and enable R&D work for creating next-generation business areas.

Milestones of Supporting Our Business **E** Environmental **S** Social **G** Governance

- 1999**  
**E** "NTN Environment Policy" is established  
**E** ISO 14001 multi-site certification acquired for business sites in Japan
- 2002**  
**E** Start of forest conservation project
- 2004**  
**G** Start of Executive Officer System

- 2005**  
**G** CSR Department is established (now known as Corporate Value Promotion Department)
- S** Start of project to encourage women in the workplace  
**S** Start of "Meister Program"
- 2006**  
**G** "CSR Committee" is established

- 2007**  
**E** "NTN Group Green Procurement Standards" is established
- 2008**  
**G** "Risk Management Committee" is established  
**G** An outside director is appointed for the first time
- 2009**  
**S** "Bear Kids Land Iwata" is opened

- 2010**  
**G** Release of first "NTN Report" as integrated report
- 2011**  
**E** Start of project to protect and encourage firefly habitats (woodland biodiversity)
- 2012**  
**G** "Fair Trade Monitoring Committee" is established

- 2014**  
**G** "CSR Headquarters" is established  
**S** "Global Human Resource Development Department" is established  
Start of "Diversity Team Project" (now known as Diversity Promotion Group)
- 2015**  
**G** Stakeholder Dialog is held with CSR experts for the first time.
- G** "Compliance Committee" is established  
**G** Endorsement of UN Global Compact

- 2016**  
**E** Setting of medium-to-long term Japan CO2 targets  
**S** "NTN CSR Procurement Guidelines" is established  
**G** "Compensation Advisory Committee" is established
- 2018**  
**G** New Corporate Philosophy System is established  
**S** "Bear Kids Land Kuwana" is opened

# Strengths Gained Through the Years

01

## A Leading Bearing Manufacturer

Hub bearings  
World's  
No. **1**  
market share

Driveshafts  
World's  
No. **2**  
market share

Headquartered in Osaka, Japan, NTN is a leading manufacturer of precision mechanical parts and components. Particularly in the world bearing market, NTN has the largest market share of hub bearings and the second largest of driveshafts. As a quality leader in the industry, NTN products are selected by a number of world-class industrial customers for their products, ranging from automobile, railcar, construction machinery, jets to medical instruments. NTN products support the well-being of people around the world.



02

## Well-established Local Brands with Long Histories in Countries around the World

Overseas sales ratio  
**72%**

Overseas employee ratio  
**66%**

With over 25,000 employees at about 220 business locations in 33 countries, the NTN Group strives to offer even better products and services while engaging in R&D, manufacturing, marketing and technical support. NTN has taken full advantage of premium regional brands to strengthen its worldwide network. In Europe, NTN-SNR ROULEMENTS was established in 2008 by integrating SNR ROULEMENTS, the largest bearing manufacturer in France. Now NTN-SNR ROULEMENTS has secured an unshakable status as the market leader utilizing maximized synergy effect in terms of technological, geographical and commercial enhancement. Since its foundation in North America in 1963, NTN Bearing Corporation of America plays a key role in developing aggressive multi-brand strategy working closely together with BCA and BOWER brands. While in Asia, NTN offers highly value-added products suited to local needs, deploying manufacturing, marketing and R&D facilities in China, South Korea, Singapore, Thailand and India. Uniting the entire NTN Group strength to pursue more synergy effect, NTN endeavors to promptly respond to the needs and expectations of its customers around the world.



03

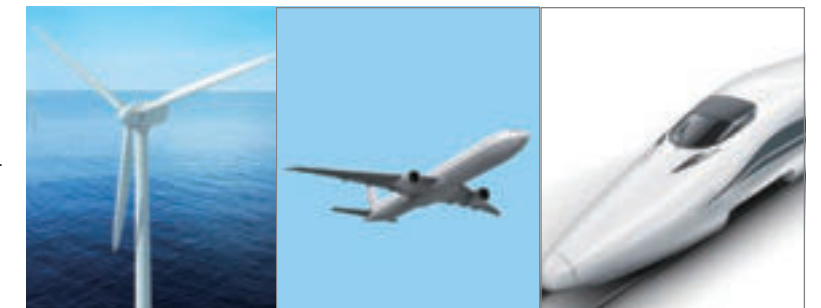
## Reliance on Advanced Technology

Turning  
**100**<sub>m</sub>  
diameter blades

Operating at temperatures of  
**200**°C

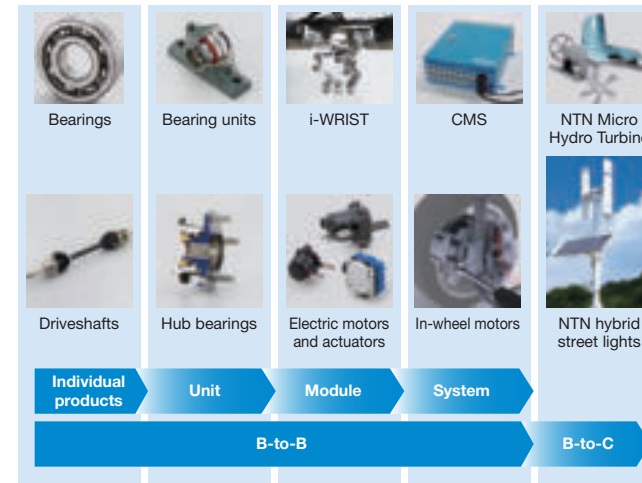
Helping ensure safety at  
**300** km/h

A host of world-class manufacturers place every confidence in NTN's precision technology. Its quality products are selectively used for a broad spectrum of demanding applications that work under extremely severe environment such as for jet engines at high temperature (200°C) and high-speed revolution (10,000 RPM), and high-speed railcars throughout the globe running at 300 Km/h or over. NTN products are also adopted for wind turbines, rockets, automobiles and medical instruments that require technological competence. Furthermore, its quality products are used for home appliances and copiers that require high performance with less energy consumption.



04

## Broadening the Application Fields of Bearings



Unit products can be created by adding gears, motors (drive circuits) and other peripheral components to core products such as bearings used as mechanical elements. Control technology can also be added to create module products and system products.

In addition to our traditional B-to-B business areas, we are now working on growing our B-to-C business through areas such as sales of natural energy products. Bringing safety and security to users will be an ongoing focus.

05

## Technical Service units in use throughout the World

visits **727** client

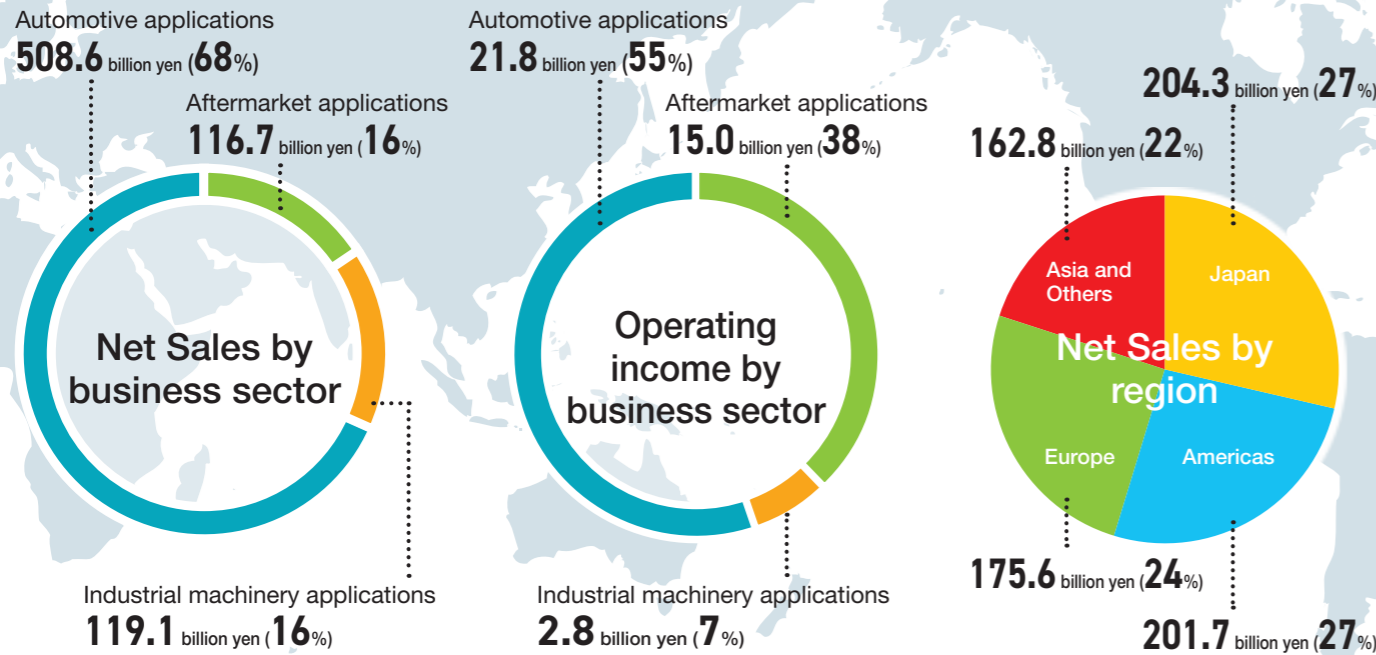
We, at NTN, are committed to be a reliable partner to manufacturers who need to use our products. At our local sales offices, technical service units with maintenance tools and sample products regularly visit customers' work sites and conduct technical analysis and training sessions. Thus, NTN takes great care to support our customers and help them work through their diverse problems.



# Revenue Structure, Main Products

Sales: **744.4** billion yen Operating income: **39.6** billion yen

(Fiscal year ended March 31, 2018)



## Main Products Aftermarket applications P. 49-50

<p><b>Mining machinery</b></p> <p>Spherical roller bearings with reinforced retainers</p>	<p><b>Metal industry equipment</b></p> <p>Sealed four-row tapered roller bearings</p>	<p><b>Paper-making machinery</b></p> <p>ULTAGE spherical roller bearings Type EA, Type EM</p>	<p><b>Food processing machinery</b></p> <p>PolyLube sealed bearings for food processing machinery</p>
<p><b>Auto parts</b></p> <p>Part kits with combinations of several bearings</p>	<p><b>Technical training/maintenance tools</b></p> <p>Induction heater Self-centering hydraulic puller with arms Technical service units</p>		

## Main Products Industrial machinery applications P. 51-52

<p><b>Construction machinery</b></p> <p>Applications for resource mining and civil engineering</p>	<p><b>Gearboxes</b></p> <p>Helping ensure high robot productivity</p>	<p><b>Agricultural machinery</b></p> <p>Helping ensure stable food supplies</p>	<p><b>Wind turbines</b></p> <p>Meeting growing renewable energy demand</p>	<p><b>Aerospace</b></p> <p>Used for worldwide jet engine applications</p>
<p><b>Rolling stock</b></p> <p>Helping ensure safety of worldwide high-speed railways</p>	<p><b>Machine tools</b></p> <p>Helping ensure high machining precision</p>	<p><b>Office equipment</b></p> <p>Helping ensure smooth copier/multifunctional printer operation</p>	<p><b>Electronic devices</b></p> <p>Used for Hard drive and thin fan motor applications</p>	<p><b>Medical equipment</b></p> <p>CT scanner and artificial heart applications</p>

## Main Products Automotive applications P. 53-54

**[Engines]**

- Split needle roller bearings (for camshafts)
- High-density, high-strength sintered gears for starter motors
- Pulley bearings for high-speed rotation

**[Accessories]**

- Auto tensioner with the variable damper mechanism for ISG-equipped engine
- Mechanical clutch units for next-generation steering systems

**[Steering components]**

- Needle roller bearings for rocker arms
- Clutches for seat lifters

**[Seats]**

- Hub bearings

**[Axle/Drivetrain]**

- Long-life series TAB bearings
- Ball screw drive modules for electric hydraulic brakes
- Driveshafts

**[Brakes]**

- Needle roller and cage assembly bearings for planetary gear

**[Automatic/manual transmissions]**

- Thrust needle roller bearings
- Needle roller bearings for automotive applications
- BEAREE seal rings

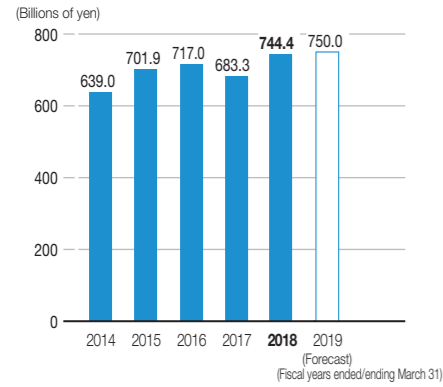


# Financial/Non-Financial Highlights

## Financial Capital

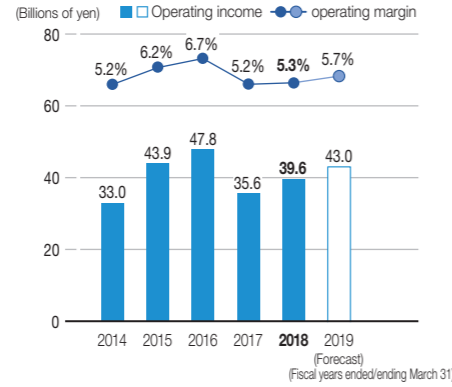
### Net Sales

**744.4** billion yen



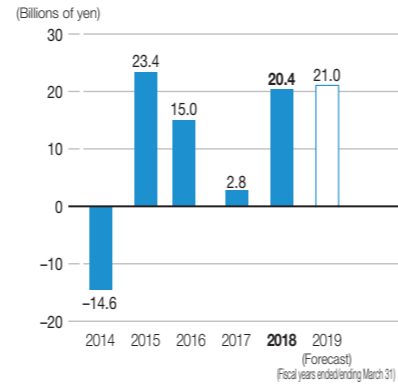
### Operating Income/Operating Margin

Operating Income **39.6** billion yen  
Operating Margin **5.3** %



### Net Income (loss) Attributable to Shareholders (parent company)

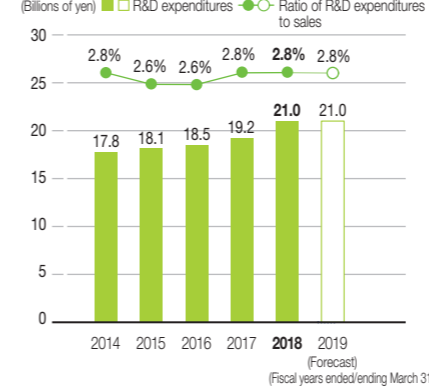
**20.4** billion yen



## Non-financial Capital

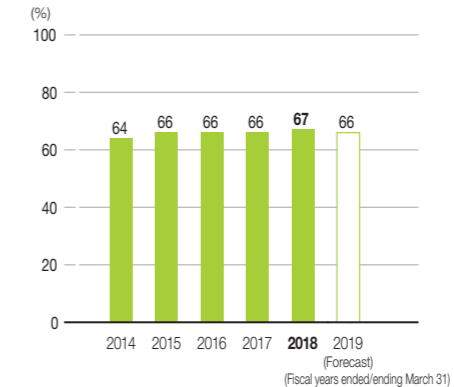
### R&D Expenditures; Ratio of R&D Expenditures to Sales

R&D expenditures **21.0** billion yen  
Ratio of R&D expenditures to sales **2.8** %



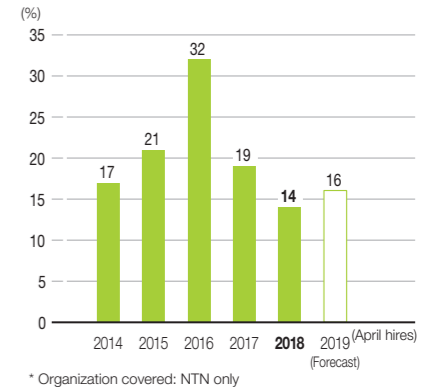
### Percentage of Employees Overseas

**67** %



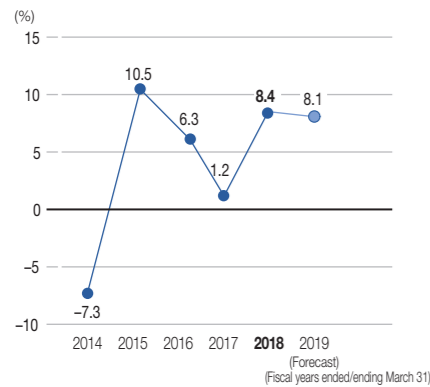
### Percentage of Hired female Graduates\*

**14** %



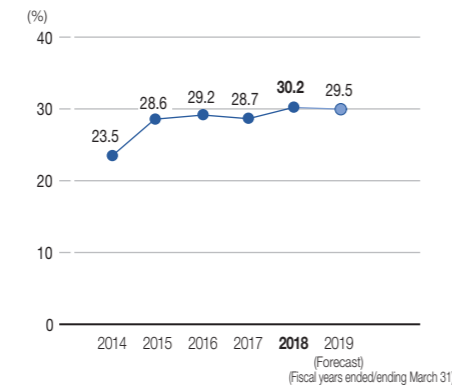
### Net Income/Average Shareholders' Equity (ROE)

**8.4** %



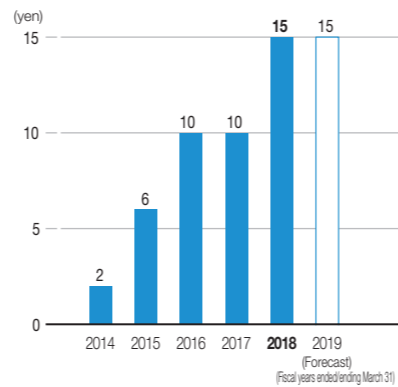
### Equity to Capital Ratio

**30.2** %



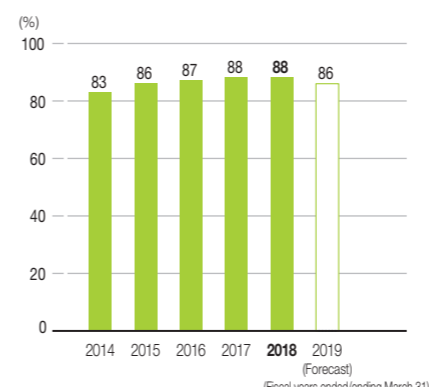
### Cash Dividends

**15** yen



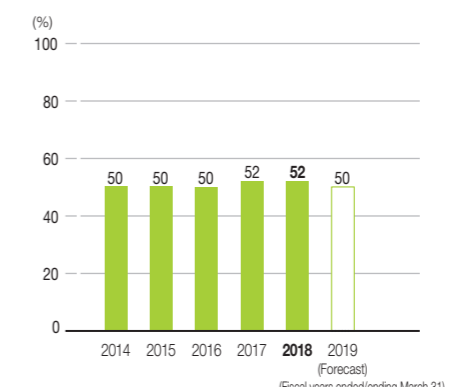
### Ratio of Local Procurement

**88** %



### Ratio of Overseas Production

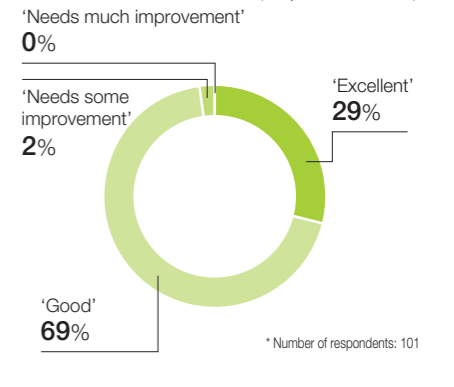
**52** %



### Client Satisfaction Survey Responses

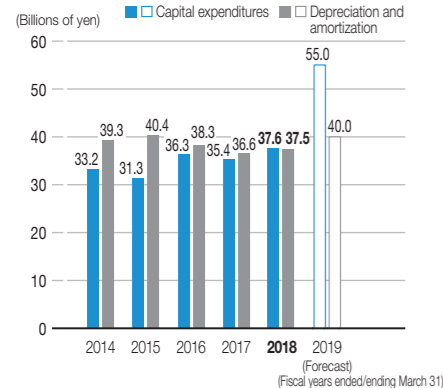
Either 'Excellent' or 'Good'

**98** %



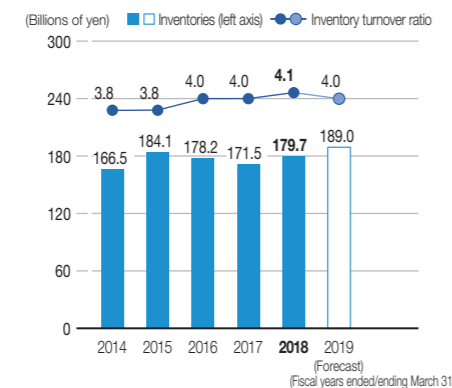
### Capital Expenditures/Depreciation and Amortization

Capital Expenditures **37.6** billion yen  
Depreciation and Amortization **37.5** billion yen



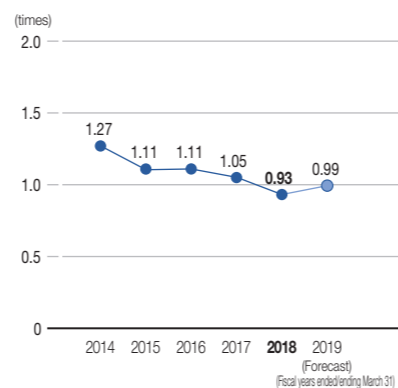
### Inventories/Inventory Turnover Ratio

Inventories **179.7** billion yen  
Inventory Turnover Ratio **4.1**



### Net D/E Ratio

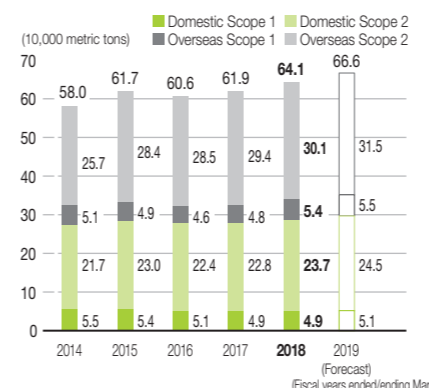
**0.93** times



### CO<sub>2</sub> Emissions [Scopes 1 and 2]

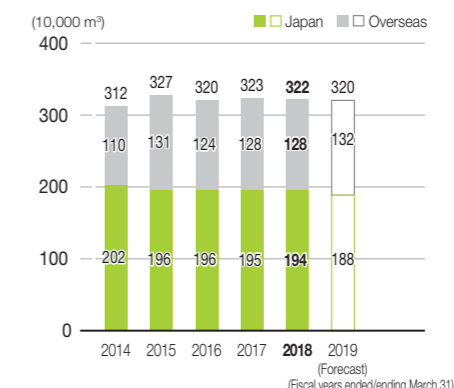
\* Figures for domestic production and non-production bases have undergone third-party verification.

Domestic Scope 1 **49,000** metric tons  
Domestic Scope 2 **237,000** metric tons  
Overseas Scope 1 **54,000** metric tons  
Overseas Scope 2 **301,000** metric tons



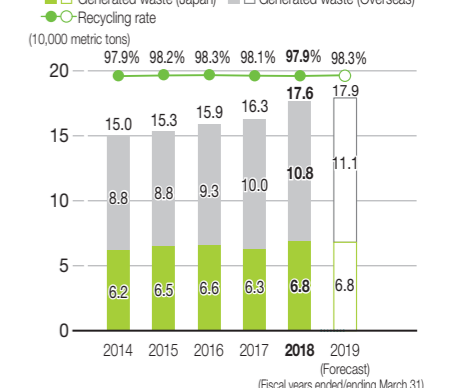
### Water Consumption (Japan/Overseas)

Japan **1.94** million m<sup>3</sup>  
Overseas **1.28** million m<sup>3</sup>



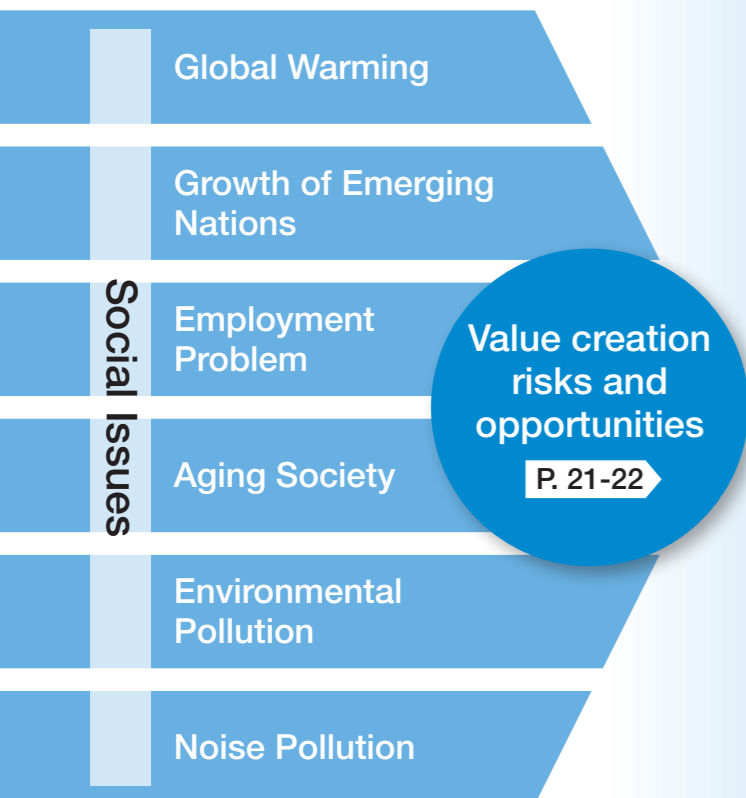
### Waste Quantities and Recycling Rates (Japan/Overseas)

Generated waste **176,000** metric tons  
Recycling rate **97.9** %



# Value Creation Process

Based on our corporate philosophy, we create products such as bearings and driveshafts by applying the resources we have accumulated over our 100-year history to a value chain consisting of R&D, Procurement, Production and Sales processes. Our business activities help bring solutions to social issues while providing value to all our stakeholders. These activities are also designed to further improve our corporate value through reinvestment of applied resources. NTN will continue working to achieve a smooth society by making proposals for ensuring sustainability.



## Our stakeholders



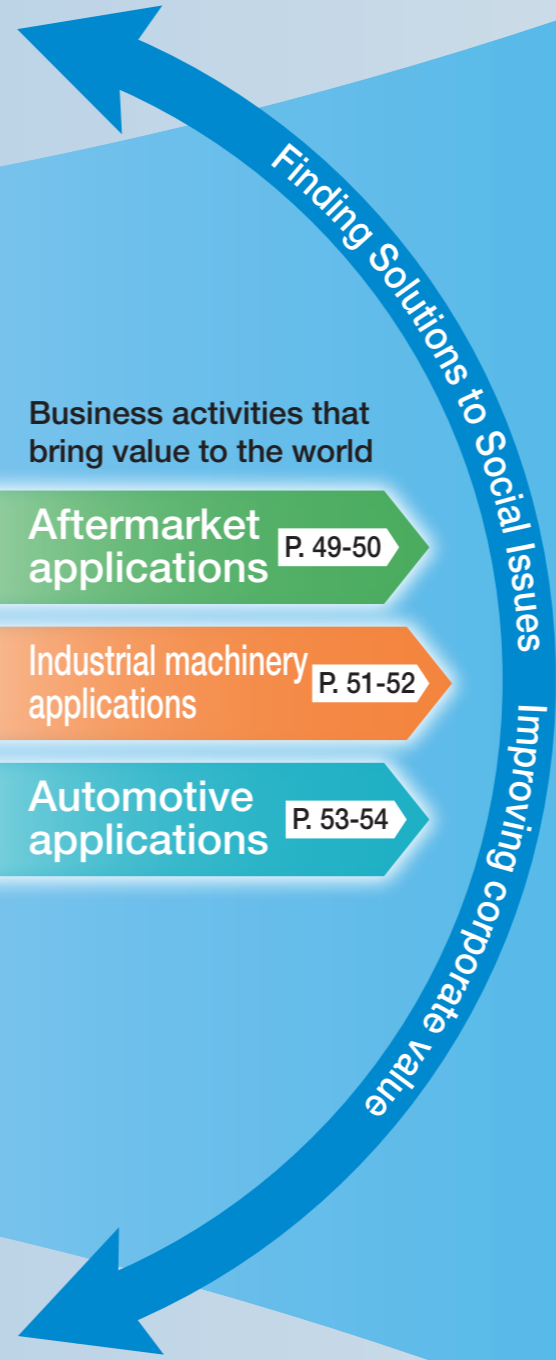
## Reducing energy loss



## Providing safety and comfort



## Proposal of sustainable society using natural energy



- Business activities that bring value to the world
- Aftermarket applications P. 49-50
- Industrial machinery applications P. 51-52
- Automotive applications P. 53-54

Achieving a smooth society

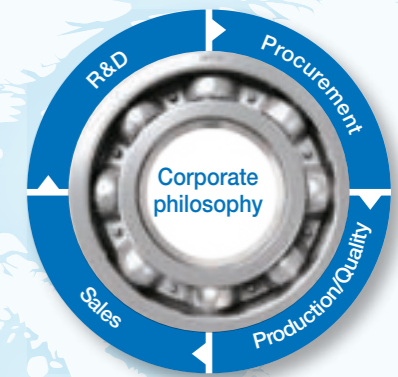
## NTN's Resources and Governance

<b>Intellectual Capital</b>  <b>R&amp;D</b> P. 47	<b>Manufacturing Capital</b>  <b>Production/quality</b> P. 79, 81	<b>Human Capital</b>  <b>Human resources</b> P. 75	<b>Social and Relationship Capital</b>  <b>Procurement/local communities</b> P. 77, 89	<b>Natural Capital</b>  <b>The environment</b> P. 83	<b>Financial Capital</b>  <b>Financial strategies</b> P. 41
 <b>Corporate Governance</b> P. 57					

<b>Aftermarket applications</b> NTN helps to improve the productivity of customers' equipment and maintain consistent operations through the stable supply of products and a quick delivery system by our global supply chain. For the maintenance needs of automobiles, we offer a wide range of auto parts that combine bearings and peripheral components. We also provide after-sales services, such as holding engineering seminars with a technical service units, to help our customers improve their production efficiency and ensure their stable operation.	<b>Industrial machinery applications</b> NTN ULTAGE Series, the world's highest class new generation bearings, is expanding its lineup to address the needs for higher precision and speed. In response to various industrial market needs, NTN's products provide solutions that contribute to low torque and reduction in size, weight and environmental burdens. Going forward, NTN continue to develop elemental technologies of bearings, as well as highly value-added products by unitizing or systemizing peripheral components.	<b>Automotive applications</b> Our work in the automotive segment includes developing more advanced bearings, hub bearings and driveshafts to create higher added value. We are also combining these core products with core technologies to develop module products. To prepare for the coming era of electrification and autonomous driving, we have released a series of "Electric Motor and Actuators" composed of ball screws, motors and controllers. We are working on expanding their range of applications and proposing them to customers. Marketing these products globally will allow us to meet demands for better fuel efficiency and ride comfort in conventional vehicles, while also meeting rapidly growing needs for electrification.
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# Value Creation in the Value Chain

The Company's corporate philosophy is "We shall contribute to international society through creating new technologies and developing new products." We are investing the capital acquired over our 100 year history to bring based on this philosophy — working on R&D, procurement, production and sales activities to improve the lives of users around the world. The interactions among each business process enable sustainable growth by keeping the cycle of value chain processes flowing.

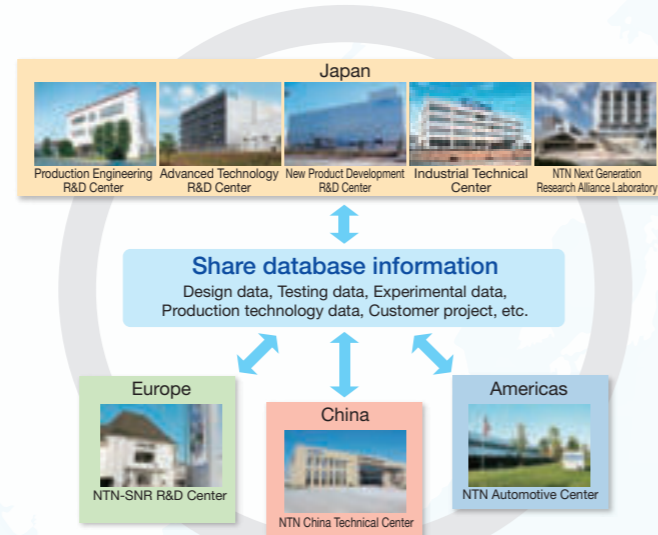


## R&D P. 47

The Company's R&D work focuses on tribology technology and is divided among four regions throughout the world. To rapidly identify and respond to customer needs, each region shares information on areas such as design, prototyping, testing, production technology and customer projects. We are moving into new business areas by refining individual bearings into module products that incorporate sensors and other peripheral technologies, and system products that combine mechatronics and control technologies.

In September 2017, we created the "NTN Next Generation Research Alliance Laboratories" to help us strengthen our core technologies and create businesses in new areas.

### Our R&D approach: Global four-region R&D system



## Procurement P. 77

The "Basic Procurement Policy" clarifies our direction with the concept of: globalization, fairness/impartiality, and environmental preservation, and it is used to guide our procurement activities. We engage in green procurement, giving priority to trading partners with outstanding environmental preservation work or environmental quality. We also work to promote procurement in local and the optimal regions. Guided by the "NTN CSR Procurement Guidelines" we have created, we actively encourage suppliers to take part in CSR activities to promote CSR throughout the entire supply chain. We have started holding Supplier Meeting events to improve our communication through Supplier Meeting, growing partnerships with suppliers.



Explaining the Company's policies at a Supplier Meeting



## Sales P. 49-54

Reps from our sales departments visit customer development sites to discuss the issues they face while developing new products, and even provide precisely targeted responses to any problems they are having with existing models. We also maintain adequate stock and extensive lineups to meet customer production plans. The staff of our sales departments include sales technology reps who can rapidly identify customer needs and suggest appropriate solutions. Before customer put our products into actual use, we provide them with after-sale services in the form of on-site briefings to explain important topics such as bearing usage methods.



Along with selling products, sales reps also visit customers in technical service units, hold technical workshops and provide other technical services.

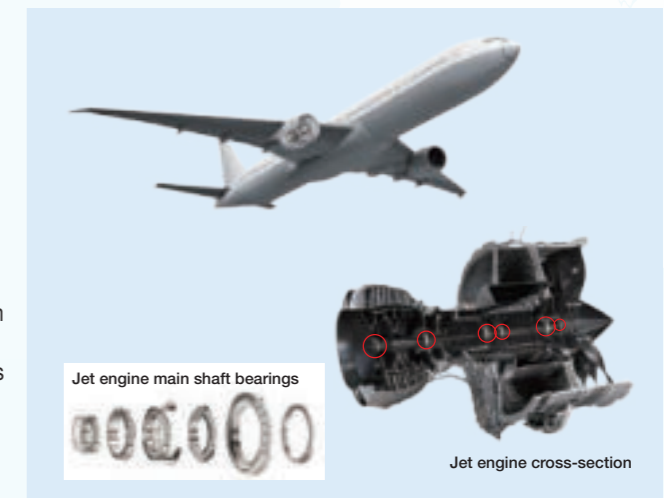


## Production P. 79 Quality P. 81

We engage in worldwide production in areas of local demand as a way to meet customer needs, reduce total lead time and reduce distribution costs. Establishing smart factories is an area of focus in Japan. We will promote concentrated production of ball bearings (a core product) at the Wakayama Works, a new facility that manufactures high value-added products with growing market demand.

At our overseas production bases, we are working on creating more robust rules for model transfers and process changes, while sending out support staff from mother plants and quality control departments to handle on-site auditing, investigation of past problems and process improvement. These activities are designed to ensure stable quality from the very start of production and quality assurance systems that conform to the same standards worldwide.

Developing and producing our manufacturing equipment in-house lets us expand on our portfolio of proprietary expertise, while our proactive approach to human resources training ensures that this expertise passes to the next generation of employees.



NTN is the only certified Japanese supplier of bearings to the world's four major jet engine manufacturers, and provides highly reliable bearings for aerospace applications.

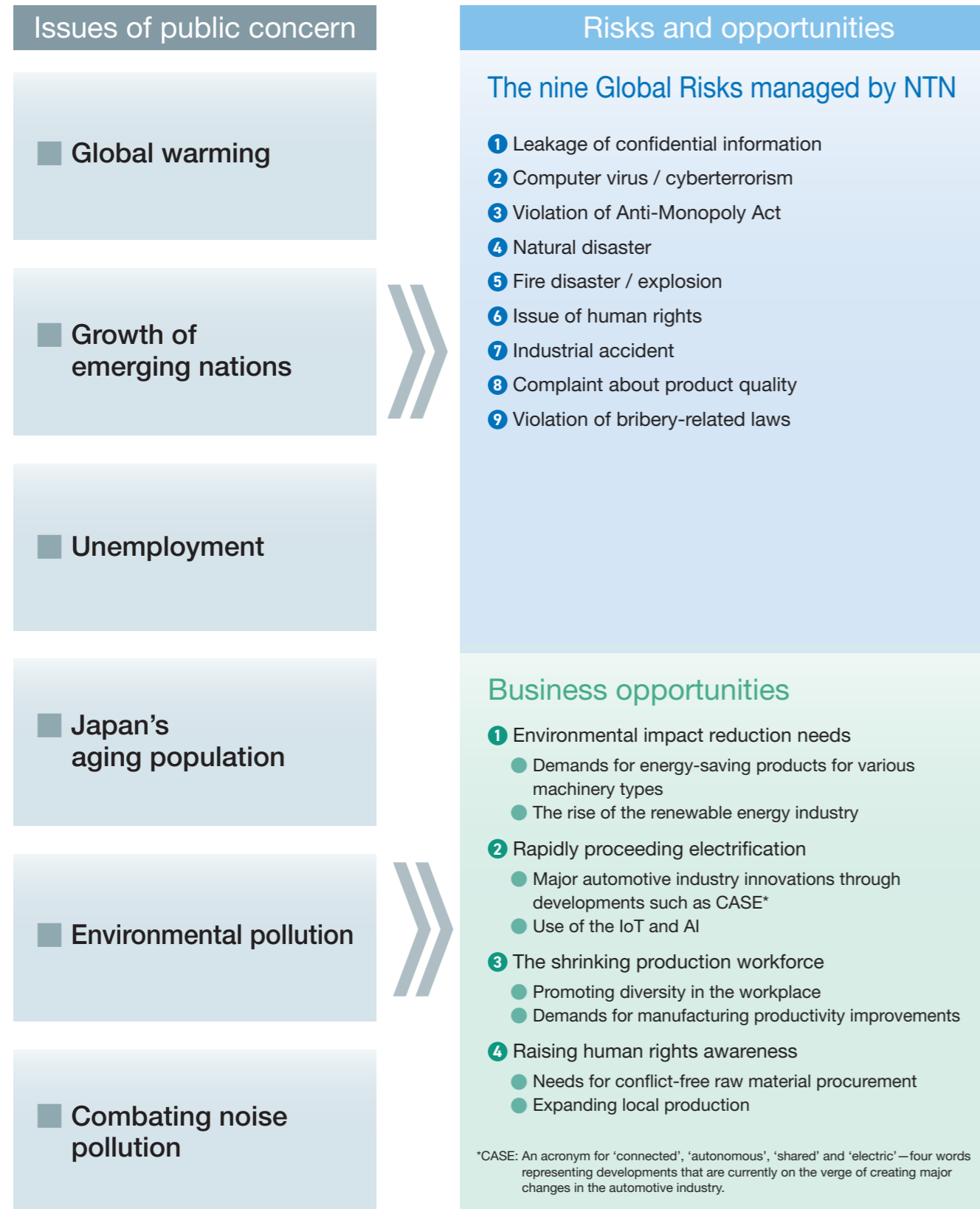
# Value Creation Risks and Opportunities

To respond to changes in the external environment and social issues, the NTN Group periodically and comprehensively checks on the status of risks surrounding Group business.

We have selected a set of nine Global Risks for priority management that are common to all the regions we do business in, and are expected to have major business impacts if actualized.

While we identify changes in the external environment or social issues as risks, we also recognize their potential as business opportunities as we engage in business activities designed to grow the NTN Group and help resolve these issues.

Our business activities are also designed to achieve the UN's Sustainable Development Goals (SDGs), helping create a world of sustainability, diversity and inclusion in which no one is left behind.



# Our Vision

NTN Corporation celebrated its 100th anniversary in March 2018.

To enable sustained growth over the next hundred years, we have created a long-term (10-year) vision.

In order to realize “Our Vision,” we will pursue competitive advantages by strengthening our core technologies and products to create competitive advantages, while developing businesses in new areas by harnessing our core technologies and R&D achievements.

We are also stepping up our development speed by proactively seeking outside partnerships, while enabling sustainable growth by creating a more robust business platform to support these new business areas.

## Initiatives Realizing “Our Vision”

**Our Vision**

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



# NTN in 10 Years

Before creating our 3-year Medium-term Management Plan, we set targets to be achieved in 10 years targets to be achieved in the following 10 years after the plan.

These 10 year numerical targets were set with the aim of moving away from our traditional role as a manufacturer to become a provider of client value through both tangible and intangible means. We will achieve these targets by approaching changes in the external environment as growth opportunities. We will respond to new market needs and transform our business structure while strengthening our core technologies and products.

Our automotive and industrial machinery business is working on strengthenings core business areas and responding to new customer needs. Our aftermarket business is expanding our technical services while shifting the business focus from products to services.

We will also work on growing our natural energy product segment and other new business areas that provide solutions to social issues.

## 10 year targets

Transform from a “Manufacturing Company” into a “Company that Delivers Value to Customers through Products and Services”

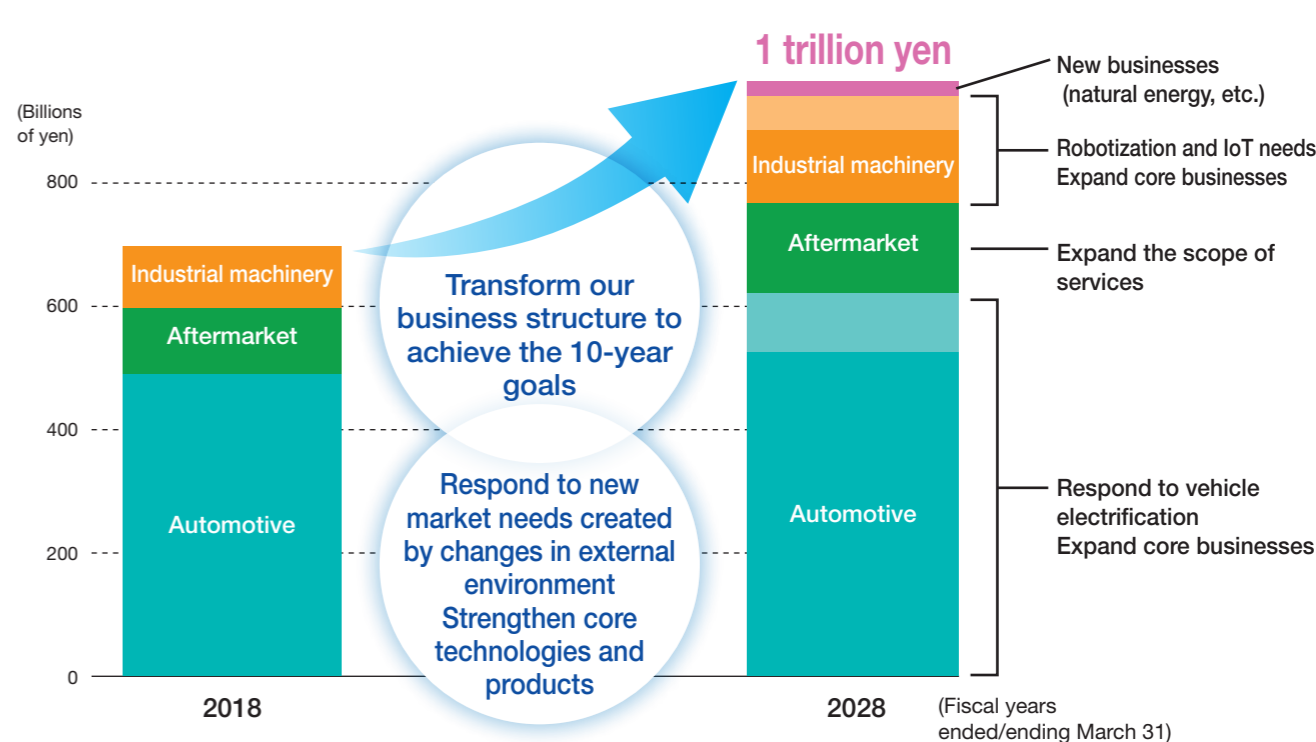
**Changes in external environment**

**Automotive industry**  
A change that occurs only once a century (CASE)

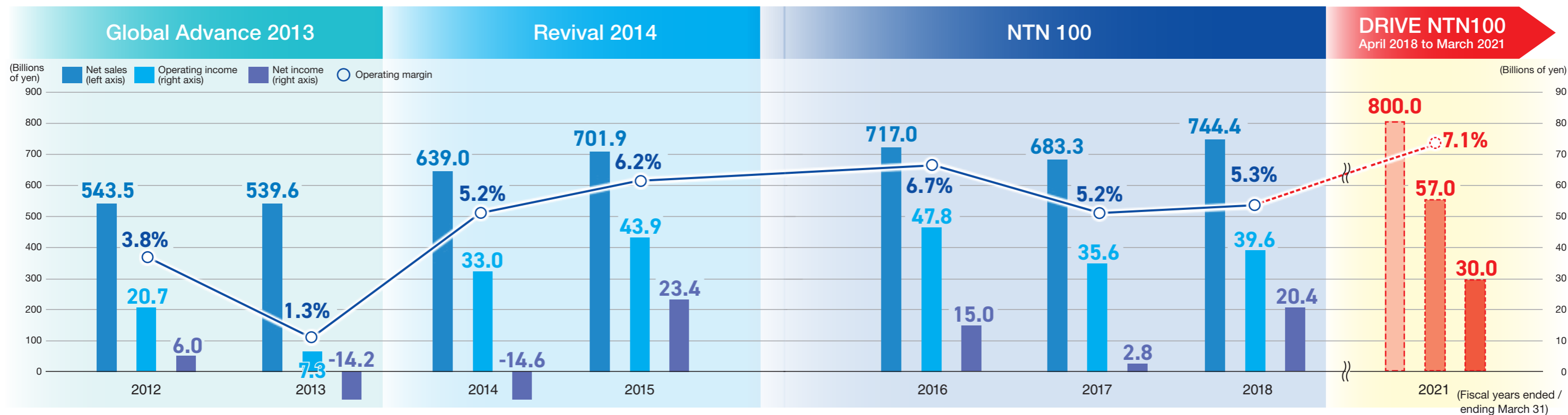
**Industrywide**  
IoT, robotization, and AI

**Issues of public concern**  
Population increase, climate change, resource depletion, poverty, starvation, etc. (SDGs)

Numerical targets	
Net sales	<b>1 trillion yen or more</b>
Operating margin	<b>10% or more</b>
Total asset turnover	<b>1.0 or more</b>
Exchange rate sensitivity	<b>To be halved from the current level</b>



# Management Review and Issues



## Global Advance 2013 (April 2011 to March 2013)

**Basic policy:** Acceleration of globalization by "On local sites with local materials by local personnel"

### Activities and achievements

We adopted an approach of "On local sites with local materials by local personnel" to seek business growth in growth markets. The policies implemented were designed to grow business, reduce costs and improve local management in each region.

In Japan, we worked to achieve earlier commercialization of EV system products by creating the EV System Division, exhibiting a demonstration vehicle (Q'mo) at the 2011 Tokyo Motor Show, and giving presentations on the new potential of in-wheel motors. We also worked on achieving overseas business growth at a number of locations worldwide. Our ratio of overseas production increased and products produced at overseas plants were supplied to a number of destinations worldwide. While large amounts of capital were invested as a result, our business environment was significantly altered by events such as the Great East Japan Earthquake and other natural disasters, and the European debt crisis and Chinese credit squeeze. Our 3 year Medium-term Management Plan was terminated prematurely.

### Challenges

"Global Advance 2013" was created to achieve high worldwide growth, but a number of adverse events forced us to make a course correction. Aftershocks from the Great East Japan Earthquake of March 2011 continued to rock Japan. The Greek government debt crisis that came to light in 2010 grew into a European financial crisis when Greece received a further credit downgrade in July 2011. Floods in Thailand beginning in late October 2011 negatively impacted the automotive industry, dragging our earnings down with it.

## Revival 2014 (April 2013 to March 2015)

**Basic policy:** Reform business structure to generate profit

### Activities and achievements

Declining earnings caused us to reset the "Global Advance 2013" worldwide high-growth strategy. Instead, we worked on improving profitability and strengthening our financial structure through a set of policies in four areas. These areas were "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) and "Expansion of New Product and New Business" (towards further growth).

Our efforts to improve our automotive business' earnings, grow our aftermarket business and reduce inventories were aided by favorable exchange rates, resulting in an upward revision to our forecast for the fiscal year ended March 31, 2015. We were able to recover from the crisis, get back on course and even work on our next growth phase.

### Challenges

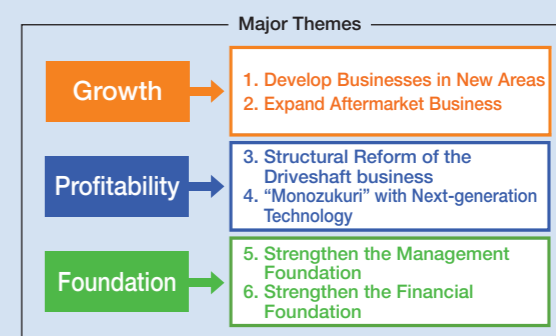
Although we managed to exceed the numerical targets planned for figures such as net sales and income, much of the success came from favorable exchange rates. Our basic policy of "reforming our business structure to generate profit" remained challenging. Creating new business areas along with our core products and segments was still the challenge to overcome to achieve sustainable large-scale growth over the next hundred years.

## NTN 100 (April 2015 to March 2018)

**Basic policy:** Basic period for Our Vision  
Implement main policies based on 3 Basic Policies to become a co-creative partner company for customers



- Concentrate resources (personnel, materials and cash) on strategic areas
- Reform business structure from "volume" to "value" to generate profit
- Strengthen management and financial foundations



### Activities and achievements

To overcome the unresolved challenges of Revival 2014, we worked on six major themes guided by our three basic policies of "Manage Growth" (concentrate resources: personnel, materials and cash on strategic areas), "Manage Profitability" (reform business structure from "volume" to "value" to generate profit) and "Manage Foundation" (strengthen management and financial foundations).

For the first of these basic policies (Manage Growth), we worked on creating business in new areas by signing licensing agreements for in-wheel motors, marketing products for electrification and starting sales of natural energy products. Another activity area for this basic policy was "Expand Aftermarket Business" by especially focusing on

expanding our technical services.

For the second basic policy (Manage Profitability), we worked on "Structural Reform of the Driveshaft business" by focusing on improving earnings. We achieved a 4.5 percentage point increase in earnings over 3 years. "Monozukuri" with Next-generation Technology" was another theme for this basic policy. Progress was made on completing next-generation technologies such as electron beam welding.

Our third basic policy (Manage Foundation) consisted of activities to "strengthen the management foundation and the financial foundation." Activity areas for this policy included strengthening compliance globally and reducing interest-bearing debt.

### Challenges

The coming years will require reforms to adapt to major changes in the external environment, enhancements to our core technologies and products, and work in new business areas. Meeting these needs and "Drive forward the transformation of business structure for the new 100 years" are the issues we have identified as the next challenges the Company will face.

Next page:  
**DRIVE NTN100**

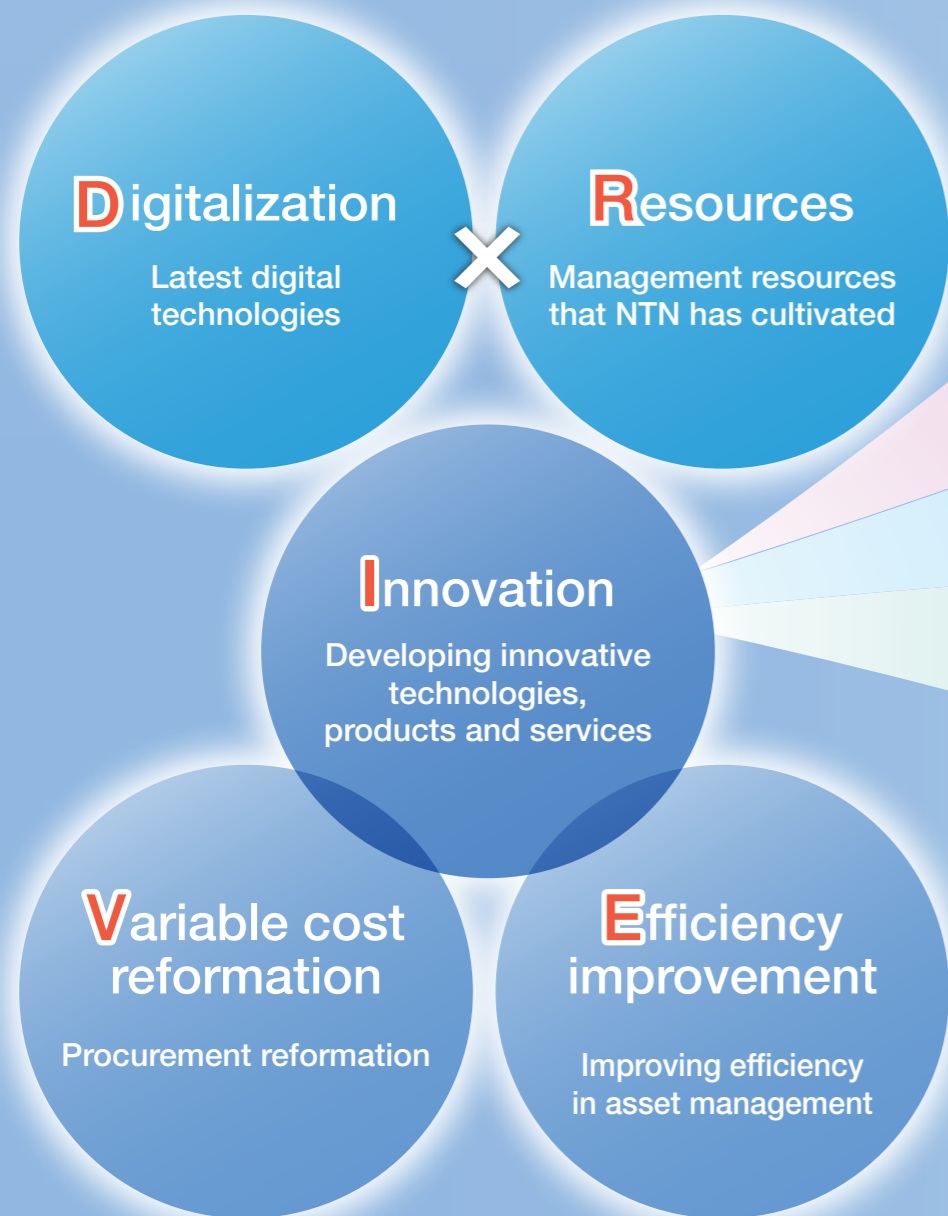
New Medium-Term Management Plan

# “DRIVE NTN100” Basic Policy (April 2018 to March 2021)

Drive forward the transformation of business structure for the next 100 years

~DRIVE NTN Transformation for New 100~

In addition to the meaning of “acceleration,” each letter of DRIVE also includes a meaning: Integrate latest technologies (Digitalization) into the management resources that NTN has cultivated (Resources). Develop innovative technologies, products, and services (Innovation). Accelerate global procurement and centralized purchasing (Variable cost reformation). Achieve the world’s highest productivity and quality and improved efficiency in asset management (Efficiency improvement). With acceleration of these elements, NTN will realize “Our Vision” and achieve our target in 10 years.



Develop businesses in new areas

Strengthen core technologies and products

Strengthen management bases that support our business

**Natural energy and other areas**  
Utilize core technologies and external technologies

**Automotive business**  
Improve the profitability of core products  
Product development in response to vehicle electrification

**Industrial machinery business**  
Expand core businesses  
Develop robot and IoT-related businesses

**Aftermarket business**  
Reinforce sales and technical service network

Focus our efforts on improvements in profitability and asset management efficiency in preparation for new competitive environment

Variable cost reformation  
Structural reform of man-hours and resources  
Enhancing SCM\*, concentrating investment

\* SCM: Supply chain management

Targets for the fiscal year ending March 31, 2021

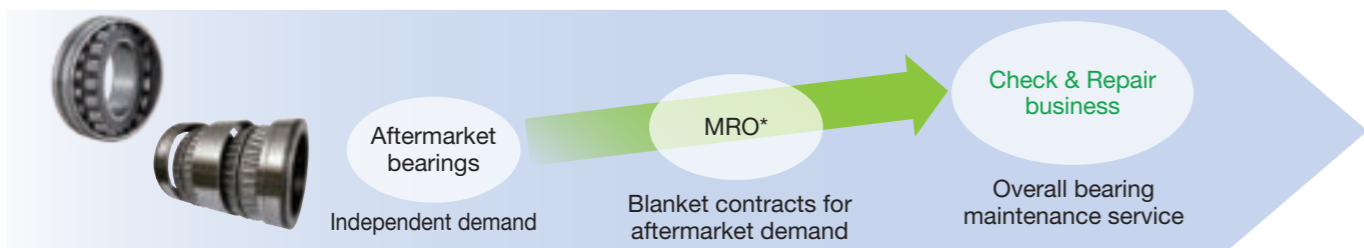
Net Sales	800.0 billion yen
Operating Income	57.0 billion yen
Operating Margin	7.1%
Net income Attributable to Shareholders (parent company)	30.0 billion yen

(Foreign exchange rates: 1 USD = 110 JPY, 1 EUR = 115 JPY)

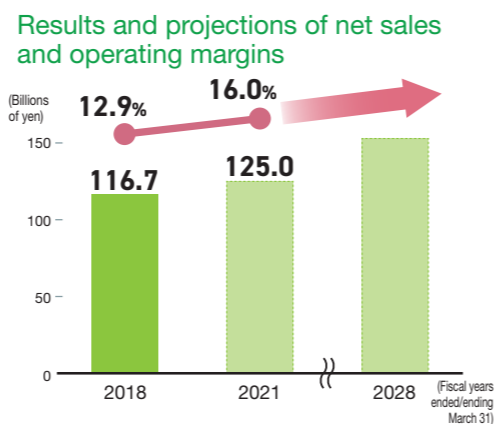
# New Medium-term Management Plan "DRIVE NTN100" Business Policies and Targets

## Aftermarket Business P.49-50

**Target** Transform our business from products to services, or from selling bearings to providing selling services  
 → Utilize bearing sensing technology for industrial machinery business



- Tasks**
- Enhance brand power through the expansion of MRO sales
  - Expand aftermarket part lineup to not miss sales opportunities
- Actions**
- Continue to improve technical services including maintenance
  - Establish a production system independent of OEM business, and maintain sufficient quantities of aftermarket parts in stock
  - Utilize overseas production bases and globally available stocks
  - Aftermarket part production and efficient stock management using a new core IT system



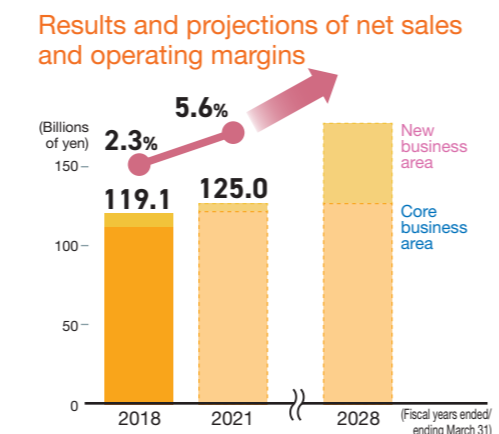
## Industrial Machinery Business P.51-52

**Target** NTN will become a company that customers in the industrial machinery market rely on most for its exceptional technological competence

**Strengthen core technologies and products** P.43-44

Further development of core technologies; development of high-performance products

For gearboxes of robots <b>Compact, high rigidity</b> 	For main spindles of machine tools <b>Proprietary air-cooling technology</b> 	For main spindles of wind power generators <b>Long-life, large and offshore needs</b> 
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**Develop businesses in new areas** P.45-46

Robot-related business (robotics)	<b>Develop system products for collaborative robots</b> Enhance proprietary control technologies	
Service, solutions business	<b>From monitoring to AI and WEB services</b> Industry-academia collaboration for enhanced bearing residual life prediction	

## Automotive Business P.53-54

**Target** As an indispensable presence for the automotive market, NTN will become a company that offers products and services for vehicles all over the world

**Strengthen core technologies and products** P.43-44

**Become the world's top maker of drive-train systems** (including EVs)

**Low friction/Lightweight**

- World's No. 1 market share: Hub bearings
- World's No. 2 market share: Driveshafts

**Develop businesses in new areas** P.45-46

- Respond to electrification and EVs**  
"eHUB," Hub Bearing with Motor Generator Function
- Respond to 48 V mild HVs**  
"sHUB," a Hub Bearing with Steering Assist Function
- Vehicle stabilization**  
Electric Motor and Actuator
- Expand the scope of electric-powered devices**

**Results and projections of net sales and operating margins**

Fiscal year	Net Sales (Billions of yen)	Operating Margin (%)
2018	508.6	4.3%
2021	550.0	5.5%
2028	600.0	-

## New Business: Green Energy Products Business

**Target** From B to B to B to C, build sales and service networks for green energy products

<p>NTN Green Power Park (Kuwana, Mie Prefecture)</p> <p>Green energy circulation model "Green Power Park" where electricity generated from wind, water and solar light is used to charge up Electric Vehicles (EVs) and power the air conditioning control systems at vegetable factories</p>	<p>NTN Micro Hydro Turbine</p> <p><b>The world's first flow-through hydro power generator</b> Launch the type intended for electric power selling Promoting the development of high-power type</p>	<p>NTN Hybrid Street Light</p> <p><b>The highest hybrid power generation performance in the world</b> Promote the creation of demand for this product as a social stock that contributes to crime prevention and disaster preparedness. Develop a community surveillance function and a Wi-Fi-based communication function jointly with Osaka University, etc. Install this product at disaster evacuation sites (500,000 locations in Japan).</p>
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Contribute to a low-carbon society; responding to the needs to utilize natural energy in local communities



# Strengthen management bases that support our businesses



## Variable Cost Reformation

Build a procurement network that supports the expansion of global production capacity and the utilization of external production capacity  
Reduce external procurement cost

### 1. Accelerate global procurement

- Promote procurement in the most appropriate regions based primarily on local procurement
- Pursue cost reduction effects
- Minimize exchange and inventory risks

### 2. Accelerate centralized purchasing

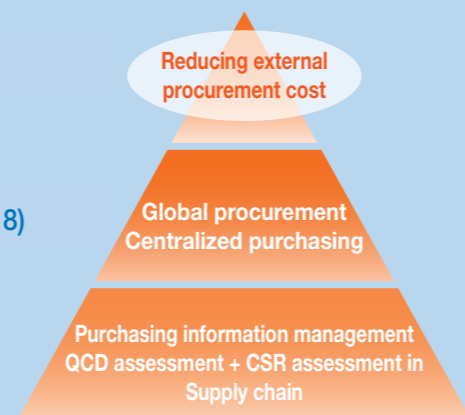
- Promote the control of the number of suppliers and the centralization of procurement price management

### 3. Establish Procurement Headquarters (April 2018)

- Promote global procurement
- Promote centralized purchasing
- Quality, price, production capacity, and compliance assessment (QCD\* and CSR assessment)

\*QCD: Quality, cost, delivery

**Goals for effects of variable cost reformation**  
3rd year: **3.0** billion yen on top of conventional cost reductions  
10th year: **30.0** billion yen on top of conventional cost reductions



## Structural Reform of Man-Hours and Resources

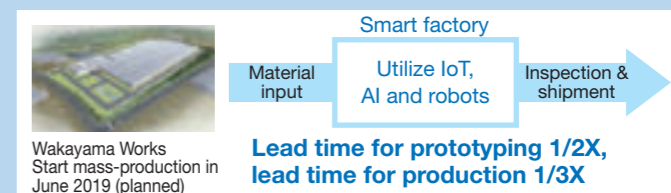
Use IoT, AI, and robots to take care of part of operations in the manufacturing department  
Introduce RPA to improve the quality of operations in backoffice departments

**3-year goals for reductions in personnel expense**

Manufacturing departments: **1.0** billion yen  
Technical and administrative departments: **0.5** billion yen

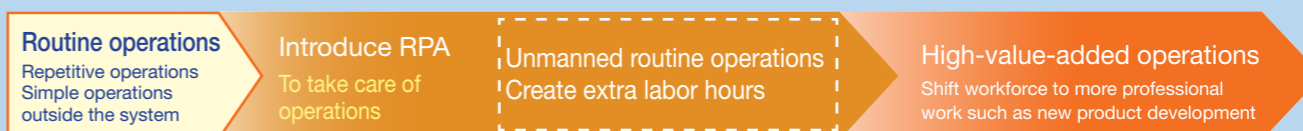
### 1. Promote the introduction of smart factory designs

- Optimize and automate manufacturing processes using IoT and AI
- Use robots to take care of part of operations in the manufacturing department
- Reduce lead time to improve responsiveness to customer needs



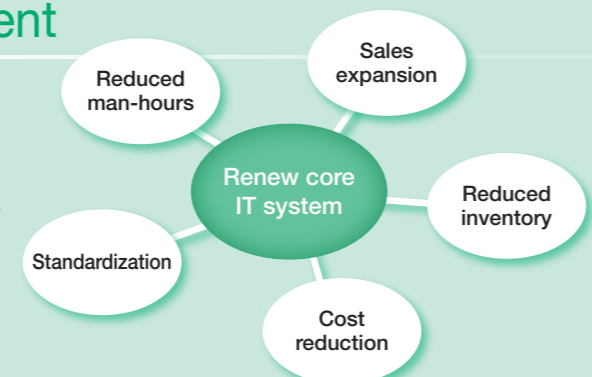
### 2. Use robots to take care of part of operations in indirect departments (introduction of RPA)

- Introduce RPA (Robotics Process Automation) in indirect departments
- Use robots to take care of routine operations in technical and administrative departments



## Enhance Supply Chain Management

- Utilize the new core IT system
- Efficient inventory holdings and reducing lead time  
Inventory visualization and efficient inventory holdings  
Promoting the utilization of globally available inventories



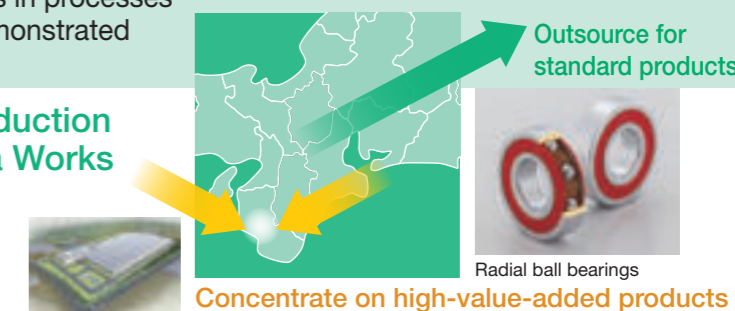
Enhance and optimize supply chain management

## Concentrated investment

- Intensively investing management resources in processes in which our technical strengths can be demonstrated  
Proactively utilizing outsourcing

### Reorganize existing domestic production with a central focus on Wakayama Works

- Reorganize domestic radial ball bearing production bases in Japan
- Intensively invest in high-value-added products such as for Evs
- Utilize outsource for standard products



# Management Commitment



President

## Based on Our New Medium-Term Management Plan “DRIVE NTN100,” We accelerate our efforts to realize “Our Vision.”

### Celebrating our 100th anniversary

NTN marked its 100th anniversary on March 1, 2018. I would like to express my sincere gratitude to you for your long-standing patronage and support, without which we would not have reached this mark. NTN is a precision equipment manufacturer with a global business presence. Our major products are bearings, which are eco-friendly components that lower energy consumption by reducing friction. Our products help make everyday life possible, and are used by customers around the world in an extensive lineup of machinery such as automobile, rolling stock, construction machinery, aircraft and medical equipment. Our products for automotive applications have been helping improve vehicle ride comfort and fuel efficiency for many years. Our hub bearings (used to support tire rotation) have the world's No. 1 market share, and our driveshafts (used to transmit engine drive power to the tires) have the world's No 2 market share.



Hub bearing Driveshaft

NTN's technologies play an indispensable role in the development of safer and more comfortable automobiles. We supply bearings of high quality and reliability that were used in Japan's first fully domestically produced aircraft, and continue to be used for aerospace applications today. We are a certified bearing supplier to the world's four major jet engine manufacturers, a currently unrivaled achievement among Japanese manufacturers. The NTN Group has about 220 bases in 33 countries throughout the world. More than 25,000 employees are engaged in research, development, production, sales and service activities designed to enable better products. Their passion and technical expertise fuels the evolution of our historic brand. We are harnessing our technologies to help protect the environment, contribute to local communities. And we work to realize long-term vision “Our Vision” for sustainable growth over the next hundred years.

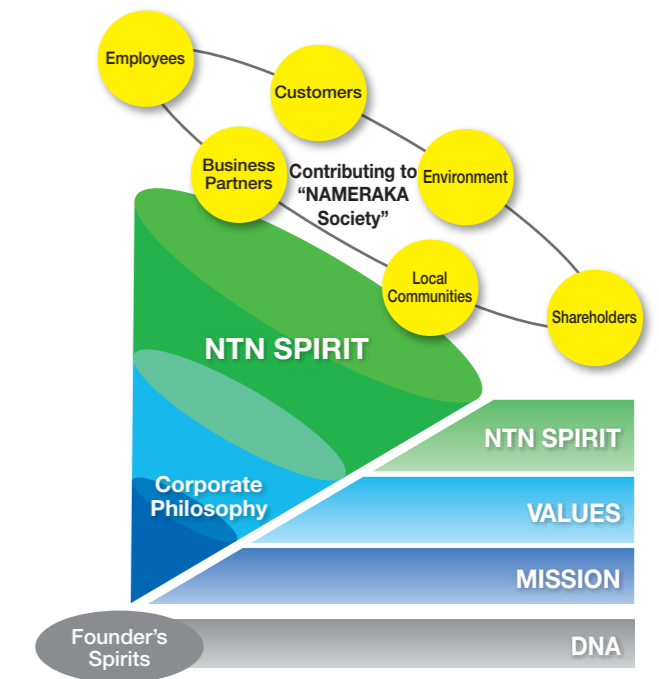
#### Our Vision

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

### Spreading our corporate philosophy

We are engaged in business activities based on our corporate philosophy “We shall contribute to international society through creating new technologies and developing new products.” We have marked our centennial by renovating the framework used to bring our corporate philosophy to life, creating a new corporate philosophy code of conduct called NTN Spirit. The long-term vision “Our Vision” statement is to create a company where its corporate philosophy is understood by all employees around the world and where all employees think and act for themselves. To determine the best approach to this awareness-raising, we have analyzed in-house questionnaire surveys and created a study committee (working group) to research the issue. Our efforts have enabled us to document the attitudes and actions that all NTN Group employees need to aim for as they work on bringing the corporate philosophy to life. These activities were designed to give employees a better understanding of the corporate philosophy, helping them put it into practice by showing them how it relates to their routine operations.

By putting our corporate philosophy into practice, we want to help solve global social issues through our technical expertise and products. Our mission is to develop “smooth society” and help ensure its sustainability over the next 100 years.



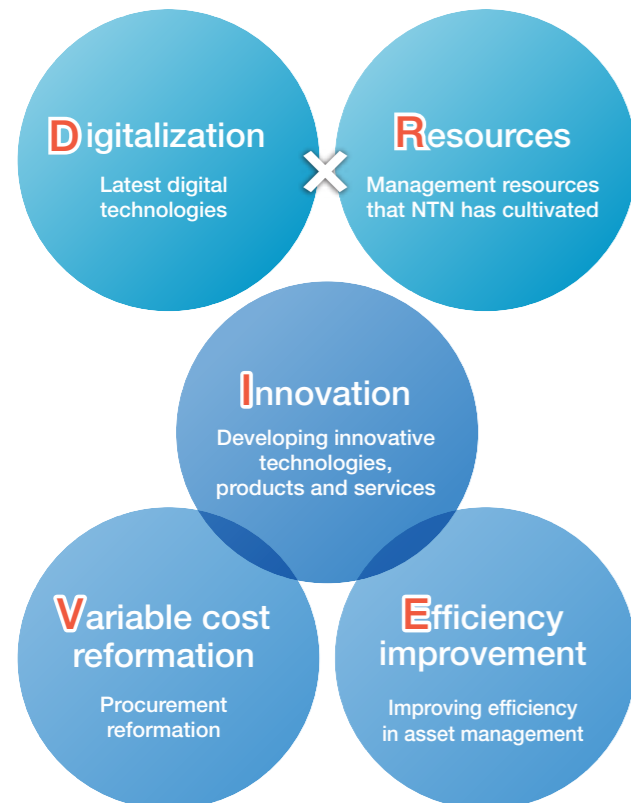
New corporate philosophy system

## Management Commitment

### From “NTN 100” to “DRIVE NTN100”

DRIVE NTN100 is the name selected for our current Medium-term Management Plan. The plan began in April 2018 and runs for 3 years. The name “DRIVE NTN100” is an abbreviation of “DRIVE NTN Transformation for New 100.” In addition to the meaning of acceleration, the five letters of “DRIVE” represent the first letters of key areas. The latest digital technologies (Digitalization) will be integrated into the management resources (Resources) that NTN has cultivated, in order to develop innovative technology, products and services (Innovation). In profit-related area, we will work on Variable cost reformation and Efficiency improvement

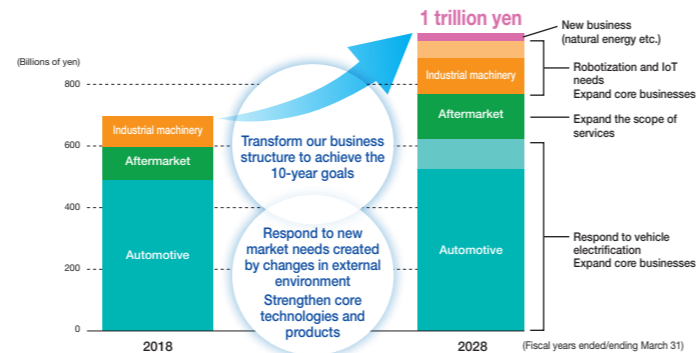
Under our previous Medium-term Management Plan “NTN 100.” We have built the foundation for “Our Vision.” Over the next 3 years, we will work on implementing “DRIVE NTN100” by building on the foundation created by “NTN 100.” Our aim is to step up business structure reforms designed to sustain us over the next 100 years, while realizing “Our Vision” and attaining our 10 year targets.



### NTN in 10 years

Our new Medium-term Management Plan includes a goal to be achieved over the next 10 years. This goal is to transform from a “Manufacturing Company” into a “Company that Delivers Value to Customers through Products and Services.” We will continue our “Monozukuri” by providing products to customers and maintaining the same high productivity and world-class quality as always. We will also transform business structure to “Services” by providing intangible value in the form of various services such as technical services.

We want to make our organization not easily affected by exchange rates, and are targeting a 50% reduction in foreign exchange sensitivity in 10 years’ time. Other numerical targets for the fiscal year ending March 31, 2028 are net sales of 1 trillion yen or more, an operating margin of 10% or more and a total asset turnover ratio of 1.0 or more. We will achieve these targets by approaching changes in the external environment as growth opportunities. We will respond to new market needs and innovate our business structure while strengthening our core technologies and products.



### Expanding Business in the aftermarket applications market

Reforms for the aftermarket segment do not yield benefits rapidly. We are aiming to become a leading name in the aftermarket product market, and will continue to strengthen the immediate delivery system and technical service system created through our previous Medium-term Management Plan “NTN 100.”

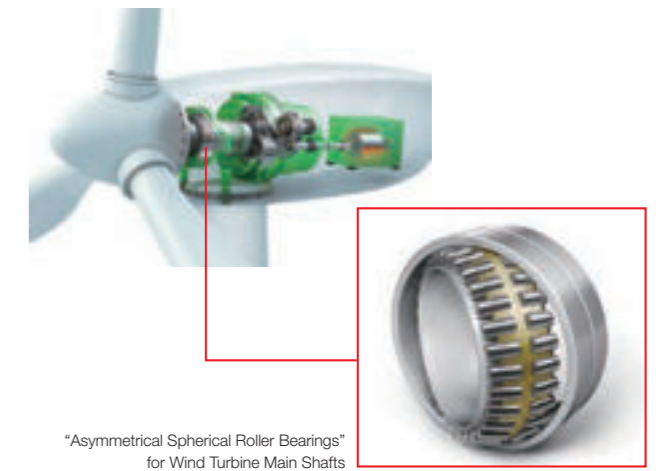
We want to create further service and sales growth by renovating our sales system in Japan, and through worldwide efforts that will draw on our overseas production network and global product stocks. A new initiative of “DRIVE NTN100” is our work on transform our business from products to services, or from selling bearings to providing services. We will use bearing sensing technology to predict future bearing demand, and provide a full range of bearing maintenance services.

### Strengthening our core technologies and products for the industrial machinery market

Bearings are used in nearly every rotating device. High-end bearings are required for applications such as robots and machine tools. NTN provides products satisfying demands for characteristics such as high rigidity, precision and speed.

Renewable energy is currently attracting a lot of interest. Demand for wind power is expected to grow, and wind turbines are becoming larger. Today’s turbines can have a nacelle height of about 60 meters, and blades’ diameter of about 100 meters. Bearings support turbine blades at the center of rotation, making them key turbine components. NTN excels at manufacturing main shaft bearings for wind turbines, and has created an integrated production system for large bearings in the Noto region of Ishikawa prefecture. We have developed new products “Asymmetrical Spherical Roller Bearings” for Wind Turbine Main Shafts. They support the operating conditions unique to wind turbine main shafts, helping the rise of renewable energy. Aircraft and rolling stock are also promising areas for growth in demand.

Bearings used in industrial machinery need to provide low friction and long operating life under operating environments characterized by high temperatures and speeds. Users also demand ever smaller and lighter models. We will continue to meet these demands by cultivating core technologies to release advanced products that can help reduce environmental impact and provide solutions to other social issues.



“Asymmetrical Spherical Roller Bearings” for Wind Turbine Main Shafts



## Management Commitment



### New areas for the industrial machinery market

Japan's declining working-age population is a major issue for every industry. With robots currently on the rise as a way to tackle this issue, NTN is active in the robotics segment. One of the products developed for this segment is a parallel-link high-speed angular control device called i-WRIST™ that can reproduce human wrist movements. The product uses constant velocity joint technology to enable operation in a smaller space than a two-arm robot, and is being marketed for appearance inspection robot applications.

We are also using bearing diagnostic and sensing technologies to step up work on our service solutions segment. We provide bearing status monitoring services using a wind turbine condition monitoring system (CMS) we have developed. We will apply technology to rolling stock in order to help improve rail service safety.



i-WRIST



We have also been finding new applications for our legacy technology, creating a number of new business areas. Our color filter repair equipments for liquid crystal displays are a successful legacy NTN technology that we have now repurposed for use in "Desktop Type High-speed Microscopic Coating Applicator." This technology could have a growing range of coating applications used to make biochips that detect various illnesses. If successful, it will enable a single chip to process blood or urine samples for diagnoses and drug design at medical sites. Microscopic Coating Applicators are also being used in the field of regenerative medicine, and are the subject of a joint research project we have started with Osaka University.



Desktop Type High-speed Microscopic Coating Applicator

### Strengthening our core technologies and products for the automotive market

With as many as 100 to 150 bearings used in an average vehicle, bearing performance has played a key supporting role in vehicle evolution. EVs (electric vehicles) are expected to gain a larger market share as global population growth increases new vehicle production volumes worldwide, but hybrids and other vehicles with engines and transmissions are also expected to see growing production volumes.

Reducing CO<sub>2</sub> emissions from vehicle engines has recently been a key concern for combating environmental issues such as global warming. Carmakers have been releasing more environmentally friendly vehicles in the expectation of countries around the world creating stricter fuel efficiency regulations in the coming years. We will provide high value-added products for these environmentally friendly vehicles through our core business such as hub bearings and driveshafts.

Currently ranked as the world's No. 1 market share, our hub bearings play an important role in supporting vehicle tires to keep them turning smoothly. We have developed a model called "Low-Friction Hub Bearing II" that reduces friction by 50% relative to bearings released in 2000. It helps improve vehicle fuel/electric power efficiency. We have also improved our driveshafts with the development of our Ultra high-angle and High-efficiency Fixed Constant Velocity Joint "CFJ-W." This new product improves fuel efficiency by reducing the torque loss ratio by 50%. It also increases the maximum operating angle from 50 to 55 degrees, enabling a smaller minimum turning radius and improving handling for vehicles with relatively large bodies. To meet demand for today's increasingly popular SUVs and four-wheel drive vehicles, we will also provide a range of other vital automotive products as we strengthen core technologies and products.



### New areas for the automotive market

The automotive market is currently facing changes encapsulated by the acronym CASE (for 'connected', 'autonomous', 'shared' and 'electric'). CASE is used to signify the rise of connectivity, autonomous driving, ridesharing/ carpooling and EVs. But other new changes are also occurring that we view as business opportunities rather than risks.

To adapt to the rise of EVs, we have started a new business of "Electric Motor and Actuator." We are confident that it will become a core product for automotive structural support in the next generation of vehicles. Our "eHUB" and "sHUB" bearing models have been developed to meet demand for autonomous driving applications. "eHUB" has a motor generator function, and "sHUB" a steering assist function.



NTN began to research and develop in-wheel motor drive systems around 2003. We have been demonstration-testing these systems and reducing their size and weight since then. We have recently signed a technical licensing agreement with a Chinese EV manufacturer for these systems. Along with the in-wheel motor drive systems we have researched over many years, the agreement also covers a new vehicle motion control system we have developed called i<sup>2</sup>-Drive System. It licenses the use of these technologies in EVs, to enable acceleration mass-production of the world's first EVs with in-wheel motors. Mass production will start in 2019, and the annual production volume is expected to be 300,000 units in 2023. NTN is a global provider of products designed to accommodate the coming CASE era.



In-Wheel Motor Drive System

## Management Commitment

### Accelerate creation of new business and technological innovation by strengthening industry-university collaboration

NTN has partnered with Osaka University to research and develop a groundbreaking type of artificial 3D cellular tissue for use in drug design and regenerative medicine applications. The tissue is being created using NTN's microscopic coating applications and Osaka University's cell layering technology with iPS-derived cells. In September 2017, we created the NTN Next Generation Research Alliance Laboratories at Osaka University's Graduate School of Engineering. The lab is using AI (artificial intelligence) to identify deterioration states of bearings and grease used in applications such as automobile, rolling stock and machine tool. Along with bearing residual life prediction technology, the lab also plans to start developing sensorized bearing technology. Multifunctional sensors will be added to the bearings themselves to enable trend management and damage prevention for machinery bearings during operation.

The lab is also working with high-precision analysis technology to enable faster calculation of load and stress values by simulating actual equipment evaluations. This type of research will help reduce customer development time.

Osaka University is a center of cutting-edge technology. The lab's activities are designed to create a stronger partnership between the Company and university, strengthen our core technologies by acquiring pioneering technologies, and enable R&D work for creating next-generation business areas.

### Strengthen management bases that support our businesses

Our Medium-term Management Plan "DRIVE NTN100" is targeting sales of 800.0 billion yen, operating income of 57.0 billion yen, an operating margin of 7.1% and net income attributable to shareholders (parent company) of 30.0 billion yen in the fiscal year ending March 31, 2021.

The plan calls for two major initiatives: (1) Variable Cost Reformation, and (2) Structural Reform of Man-Hours and Resources.

In Variable Cost Reformation, we will step up our global procurement activities to promote global business growth. We will focus on local procurement while ensuring the locations of procurement sources are optimized from region to region. These reforms are designed to help cut costs and reduce foreign exchange rate risk. We will accelerate centralized purchasing to consolidate suppliers and manage prices more robustly. We will also work on documenting rules and creating a system for comprehensive evaluation of suppliers on the basis of factors such as quality, cost, delivery time and compliance.

The Procurement Headquarters is a business unit we created in April 2018 to help with the system-based aspects of these efforts.

We are targeting cost-cutting benefits of 3.0 billion yen in 3 years, and 30.0 billion yen in 10 years from these procurement reform efforts.

Our manufacturing departments will work on Structural Reform of Man-Hours and Resources by continuing their work on robotics applications while drawing on the IoT and AI. Back-office departments will work on enabling full automation by adopting RPA (robotics process automation) as an alternative to human labor for standard operations. The Wakayama Works is planning to start mass-producing ball bearings in June 2019, and will work on becoming a smart factory through both these initiatives. We are targeting to reduce personal expense of 1.5 billion yen in 3 years from these efforts.

### Enhance supply chain management and concentrated investment

To hold stock efficiently and reduce lead times, we are working on renewing our core IT system and enhancing our supply chain management system. Investments will be directed to restructuring our domestic ball bearing production bases starting with the Wakayama Works. The Wakayama Works will make active use of outsourcing for standard products, while installing cutting-edge equipment to consolidate production of high added-value products for EVs and other applications.



Image of Wakayama Works



Radial ball bearings

### Ensuring sustainable growth through work on ESG issues

Ensuring diversity to accommodate Japan's decreasing birthrate, aging population and increasingly diverse needs has become an important issue for ensuring the sustainable growth of the Company. We have provided a number of programs and facilities to create pleasant working environments for employees. Examples include our seminars on encouraging women in the workplace, and our intra-company child daycare center "Bear Kids Land." These efforts have been successful in increasing the percentage of female managerial-level employees at the Company. We also have programs for the disabled. We have created in-house workshops for disabled employees called Dream Workshops, and make active efforts to hire disabled employees through collaborative efforts with special education facilities and similar institutions. We engage in a variety of initiatives in this area, but still have a large number of issues to contend with.



Bear Kids Land Kuwana

Our global workforce training activities include yearly events designed to pass on technical skills and improve quality such as the Global QC Circle Convention and NTN Technical Skills Competition.

In 2015, the NTN Group endorsed the United Nations Global Compact, an international initiative that outlines ten principles in the four areas of human rights, labour, the environment and anti-corruption. We have also documented a list of Global Risks as a way to enable more robust responses to risks that could prevent our sustainable growth.

We will continue to work on ESG issues by putting our corporate philosophy into practice and helping ensure a sustainable world.

### Growing alongside our stakeholders

NTN began operations in 1918 by researching and developing ball bearings, a key technology for industrial growth at the time. "Frontier Spirit" and "Coexistence and Co-prosperity Spirit" were the two defining values of NTN co-founders Noboru Niwa and Jiro Nishizono. With the support of our stakeholders, these values have helped us overcome various obstacles and grow our business through the years. "We shall contribute to international society



through creating new technologies and developing new products" is the corporate philosophy we have created to reflect the values of our founders.

Industry and the world at large are currently undergoing radical changes. And since NTN's growth would be meaningless without a properly functioning world to grow in, we are working on transforming our identity to help ensure a sustainable world over the next 100 years. I mean "Transformation" not "Change." We will emerge with a completely new identity without changing the resources that fuel us today. We are committed to maximizing our potential and bringing greater benefits to the world under our new identity.

"Make the World Nameraka\*" is the slogan we use to describe our 100 years in business as a company that supplies the world with bearings and other products designed to keep machinery operating smoothly. We are committed to our mission of making everyday life and making the world smooth.

I look forward to seeing NTN continue to move ahead, transform and grow together with our stakeholders in our mission to keep the world smooth. We hope to keep enjoying the same generous patronage and support you have provided over the years.

\*"Nameraka" means "smooth" in Japanese.

# A Message From Director in charge of Finance Headquarters

## Looking to Our Next 100 Years: Ensuring a Well-Balanced Financial Structure and Stable Investor Returns



Managing Director, Director in charge of Finance Headquarters



### Our recent history

With the term of our Medium-term Management Plan "NTN 100" now over, I'd like to summarize the recent major events that have affected the Company at the dawn of its second century. In April 2011, we started a Medium-term Management Plan "Global Advance 2013" as a first step in recovering from the global recession brought on by the 2008 financial crisis. But major changes in the economic environment throughout the world created poor earnings that resulted in the withdrawal of Global "Advance 2013" after 18 months and its replacement with a new plan called "Revival 2014." These changes included events such as bearing transactions suspected of violating foreign and domestic anti-monopoly act (competition laws), the aftermath of the Great East Japan Earthquake, flooding in Thailand and other natural disasters, prolonged yen strength in the foreign exchange market, the European financial crisis and the Chinese credit squeeze.

### The three years of "NTN 100"

"Revival 2014" was a course correction that moved the Company away from its previous expansionary path and toward a profit-oriented one. We worked on structural reforms to strengthen earnings, while gradually moving toward recovery assisted by a drop in the yen. But our financial structure was weakened by extraordinary losses from expenses such as fines and settlements paid for the competition law violations mentioned above. As a result, our equity ratio fell from 31.6% in the fiscal year ended March 31, 2011 to 28.6% in the fiscal year ended March 31, 2015, and our interest-bearing debt increased by 135.8 billion yen over the same period (from 223.3 to 359.1 billion yen).

A number of financial issues remained to be solved, such as cutting back our rising borrowings and creating a business management structure impervious to exchange rate fluctuations.

We began our three-year Medium-term Management Plan "NTN 100" in April 2015 as a way to tackle these remaining issues. It involved selling off nonessential assets, reducing total borrowings such as by using surplus cash for internal loans, strengthening support systems for unprofitable Group companies, increasing exchange rate hedges (expanding hedges for emerging nation currencies) and procuring capital from low-interest markets.

"NTN 100" targeted an operating margin of 8.8%. But despite initially increasing to 6.7%, the operating margin repeatedly failed to meet the target as it fell to 5.2% and 5.3% thereafter. Unfortunately there were two major causes for the decline. One was missed sales targets mainly from our high profit-ratio aftermarket applications segment. The other was a rapid rise in customer demand in the plan's final year that resulted in production improvements being postponed. Without these improvements, our fixed costs became higher than expected, making it impossible to adequately reap scale benefits. This poor performance was a major setback, but we are looking toward a rapid recovery. We are now working on a number of initiatives designed to sustainably increase our corporate value. In order to generate Free Cash Flow, we are focusing on efficient capital investment, harnessing next-generation technologies to enable innovative manufacturing that will make us more cost-competitive, and expanding sales of high value-added new products. Selling and administrative expenses have been about 13% of sales for the past few

	NTN 100		DRIVE NTN100
	Plan for the fiscal year ended March 31, 2018	Achievements for the fiscal year ended March 31, 2018	Plan for the fiscal year ending March 31, 2021
Net Sales	800.0 billion yen	744.4 billion yen	800.0 billion yen
Operating Income	70.0 billion yen	39.6 billion yen	57.0 billion yen
Operating Margin	8.8%	5.3%	7.1%
Net Income Attributable to Shareholders (parent company)	42.0 billion yen	20.4 billion yen	30.0 billion yen
Capital Expenditures	135.0 billion yen (3 years)	109.3 billion yen (3 years)	170.0 billion yen (3 years) (Including 20.0 billion yen of intangible capital expenditures)
Free Cash Flow	67.0 billion yen (3 years)	47.1 billion yen (3 years)	45.0 billion yen (3 years)
Inventory Turnover Ratio	4.5 times	4.1 times	4.5 times
Net D/E Ratio	1.0 or less	0.9	1.0 or less
Equity to Capital Ratio	30.0% or more	30.2%	30% or more.
ROE	Above 14%	8.4%	10.0% or more
NTN-ROI*	9.2%	5.7%	7.5% or more
Dividend Payout Ratio/Dividends	30% (average)	49% (average)	15.0 yen or more
Foreign exchange rates	USD	JPY 110.0	JPY 110.8
	EUR	JPY 130.0	JPY 129.6

\* NTN-ROI: Net operating income after tax ÷ (tangible fixed assets + inventories)

years. But instead of forcibly cutting fixed costs and R&D expenditures, we will continue to work on raising efficiency, strengthening management and making additional improvements that we hope will improve our operating margin.

Financial highlights for the fiscal year ended March 31, 2018 include a 27.8 billion yen reduction in interest-bearing debt relative to the fiscal year ended March 31, 2015 (excluding exchange rate effects), and a recovery in our equity ratio to over 30%. But our failure to meet our 60.0 billion yen target for interest-bearing debt reduction will be an ongoing challenge carried over to our New Medium-term Management Plan. It was the result of our missed operating income target, high extraordinary losses, and poor showings from our aftermarket and industrial machinery applications.

### Achieving the aims of New Medium-term Management Plan "DRIVE NTN100"

We will need to further improve our financial structure to support future growth as we look toward creating new business areas and further expanding our existing business areas in emerging markets and elsewhere. Our immediate challenge is making further gains in profitability and asset efficiency. The financial departments are looking to create financial structure improvements that will help in achieving the targets of the Medium-term Management Plan "DRIVE NTN100" begun in April 2018. Specific targets for the fiscal year ending March 31, 2021 include an equity ratio of at

30% or more, a net D/E ratio 1.0 or less and an NTN-ROI of 7.5% or more as a way to provide well-balanced improvements in profitability and asset efficiency while raising our ability to generate free cash flow. Through these financial structure improvements, we are targeting net sales of 800.0 billion yen, operating income of 57.0 billion yen, and net income attributable to shareholders (parent company) of 30.0 billion yen.

### Financial outlook to Support the Next 100 Years and Sustainable Growth

Our financial departments will need to strengthening financial functions worldwide. We want to attain this goal by providing educational programs designed to help managerial-level employees in technology, production and sales departments approach their work from a financial mindset. These programs should be approached with three activities in mind:

- (1) Tailoring the training of financial managers to the needs of global management,
- (2) Strengthening global tax and funding service functions, and
- (3) Strengthening global auditing functions.

While increasing free cash flow will be a requirement for investing activities, we will also need to make investments that help increase medium-term operating cash flow. We will make stable dividend payments to return profits to shareholders, while working on finance-based methods of improving our corporate value.

Special Feature **1**

# Major Opportunities in Core Business Areas

## From Stricter Global Environmental Regulations and Changing Market Needs

NTN are working on core products for automotive applications by reducing bearing and driveshaft size, weight and torque, and developing modular and system products. Europe and other areas of the world are starting to enact stricter fuel efficiency regulations. We have responded with worldwide releases of new products that accommodate these changing needs, helping increase vehicle fuel efficiency and improve ride comfort.

Our core products for industrial machinery applications includes work on adapting bearings to higher power outputs and harsh installation environments for use in larger onshore and offshore wind turbines. For rolling stocks, aircrafts and robotics applications, we are working on reducing size, weight and torque, while finding ways in which bearings can reduce environmental impact. To meet market needs such as higher levels of precision and speed, we will continue to develop elemental bearing technologies while working to develop high value-added products in the form of units and systems that combine bearings with peripheral components.

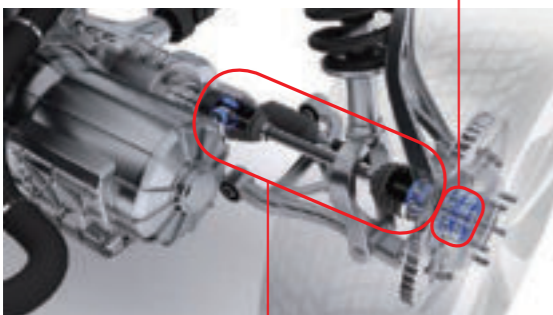
Along with standard bearings, NTN also develops, manufactures and sells sliding bearings (made of sintered and plastic materials) and magnetic products (made of magnetic materials). We are working to harness and apply our strengths in these areas to develop in-house modular and system products that will give us a competitive edge.

### Core business areas for automotive applications

Hub bearings and driveshafts account for about 80% of our sales of core products for automotive applications. Our hub bearings have the top share of the global market, and our driveshafts the second-largest share. Hub bearings and driveshafts are used in vehicle axles/drivetrains and will continue to be indispensable products in the EV era. Global population growth is increasing vehicle production in emerging nations and other world markets, creating growth opportunities for NTN. For the other bearing types that account for the remaining 20% of our sales, we are working on proposing products designed for new needs such as the higher rigidity demanded in the EV era.

#### Hub bearings World's No.1 market share

When used to support tire rotation, hub bearings perform the key functions of holding the vehicle body weight and turning the tires. NTN's hub bearings are packaged as units to reduce their size, weight and number of components. They help improve fuel efficiency and improve safety.



#### Driveshafts World's No.2 market share

Driveshafts are components that transfer engine power to the tires. NTN was the first Japanese manufacturer to release driveshafts. The high technical expertise of NTN driveshafts has made them market leaders since their debut. We develop and supply lightweight, compact driveshafts featuring long operating life and advanced functionality. Besides automotive applications, they are also used in industrial machinery applications such as steelmaking machinery and food processing machinery.

Developing high added-value products meeting market needs

#### Low-Friction Hub Bearing II Reduces rotational friction by 50%

Friction reduction helps improve fuel efficiency since less friction enables smoother operation when the engine is running. A new grease used inside bearings has been developed along with a low friction seal. By combining these two components, we have developed a hub bearing model that reduces friction by 50% relative to conventional products.



#### Ultra High-angle and High-efficiency Fixed Constant Velocity Joint "CFJ-W" World's highest maximum operating angle (55°) improves handling of SUVs and 4WD vehicles

We began mass-producing a high-angle fixed constant velocity joint with a maximum operating angle of 50° in 2012. We have now increased the angle to 55° with the development of CFJ-W. Increasing the operating angle decreases the vehicle's minimum turning radius, improves handling and reduces the torque loss ratio by 50%. These improvements help improve fuel efficiency.



### Core business areas for industrial machinery applications

Bearings can be found in any equipment that moves or turns. We develop and supply products designed to enable use that optimizes sophisticated requirements in areas such as safety, security, comfort, durability and precision. Our products for industrial machinery applications support the harsh usage environments encountered in applications such as rocket engines (with ultra-low temperature fuel), food processing machinery (requiring corrosion resistance for the large amounts of water used), and large wind turbines (over 2 meters in diameter and 2 metric tons in weight).

#### Robotics applications

Industrial robots come in various sizes and series lineups with varying demand. Bearing designs need to accommodate these conditions by keeping costs affordable while addressing the need for more advanced robotic arms and for operation improvements for human operators.

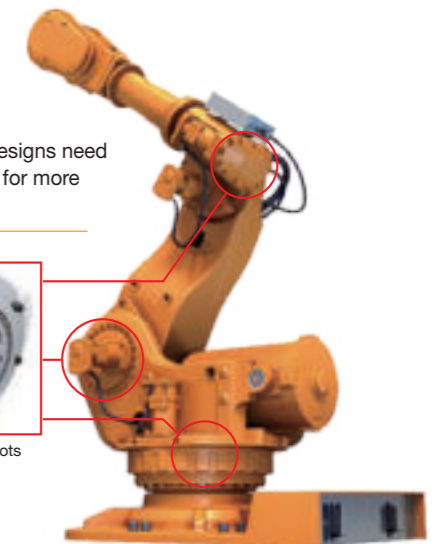
Industrial robots are used for applications such as assembly processes. Parts carried by robots are always picked by the same method and moved along the same track to the set position, so positioning always needs to be accurate. Welding and coating processes also require stable movement to accurate positions. NTN develops bearings satisfying the need for compact, high rigidity and precision.



Tapered roller bearings



Gearbox used in robots and other industrial machinery



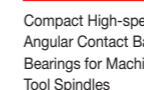
#### Machine tool applications

Bearings for main spindles of machine tools need to accommodate higher operation speeds and provide high rigidity and precision. They also need to help reduce equipment size and environmental impact to satisfy energy and space-saving demands.

Improvements in machine tool functions are creating a greater need for main spindle bearings with higher rigidity and the ability to support ultra high-speed rotation. Looking for ways to reduce heat generation, NTN has developed bearings with world-class high-speed rotational performance by using air-cooling spacers with proprietary air cooling technology. We also develop and propose angular contact ball bearings supporting low-vibration operation and long operating life for small spindles. Small spindles are used for small product machining and precision micromachining applications, which are becoming increasingly common industry trends.



Machine Tool Main Spindle Bearing with Air-cooling Spacers



Compact High-speed Angular Contact Ball Bearings for Machine Tool Spindles



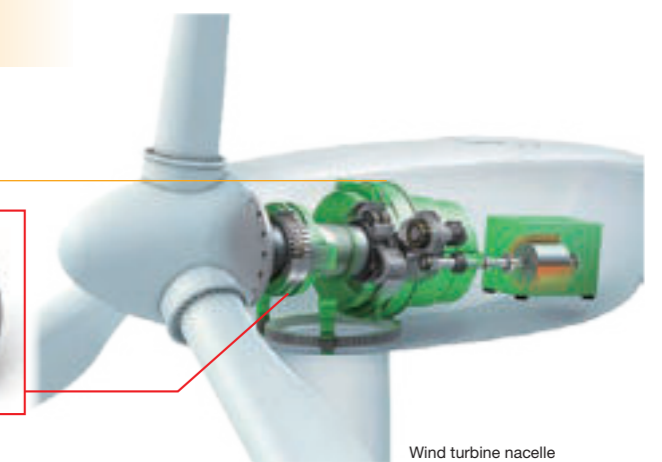
#### Wind turbine applications

The main shaft bearings of wind turbines are often spherical roller bearings, which have high load capacity enabling outstanding installation tolerances.

The main shaft bearings have the most demanding operating conditions of any wind turbine component. We have developed a proprietary, world-first bearing for use in turbine main shafts. It uses two rows of asymmetrical rollers placed at the front and rear (as viewed from the front of the turbine). The front row supports the load of the turbine blades, while the rear row mainly supports the load generated by the wind. This design has enabled us to develop a bearing able to distribute the load as needed. It enables long operating life and improves wear resistance.



"Asymmetrical Spherical Roller Bearing" for Wind Turbine Main Shafts



Wind turbine nacelle

# NEW AREAS

## Special Feature 2

### New Areas

#### with Proprietary Technologies Developed from Core Business

NTN is expanding its businesses in new areas that contribute to development of a recycling-based society that keeps circulating smoothly with its core tribology technologies developed through bearing works NTN will develop businesses in new areas addressing natural energy, electrification of automobiles, safety innovations, robots working and living with people, and services/solutions driven by big data.

### Products applicable to electrification of automobiles

The automotive market is currently facing changes encapsulated by the acronym CASE (for 'connected', 'autonomous', 'shared' and 'electric'). CASE is used to signify the rise of connectivity, autonomous driving, ridesharing/carpooling and EVs. But other new changes are also occurring that we view as business opportunities rather than risks. By harnessing our core technologies, we are working on combining modularization with control systems while stepping up development of products for the EV era.

#### sHUB

Hub bearings with steering assist function

"sHUB" is a system product that provides vehicle steering assistance, improving fuel efficiency by minimizing course deviation. By calculating the travel conditions from the vehicle speed and steering wheel angle, sHUB enables drivers to correct steering angle at wheel rapidly to the optimum angle. Besides improving fuel efficiency, sHUB can also improve vehicle handling by reducing the steering wheel angle needed to change lanes. sHUB is a world-first technology that looks promising for use in collision avoidance in the autonomous vehicles of the future.



#### eHUB

Hub bearings with motor generator function

Mounted on non-driven vehicle wheels, "eHUB" uses a motor to provide drive assistance that reduces engine load. When the vehicle decelerates, eHUB acts as a generator by regenerating kinetic energy into electric power. When used with a 48V mild HV system, eHUB improves fuel efficiency by 25% relative to a conventional engine-only vehicle. A hub bearing and motor combined into a single unit is an industry-first, high added-value product requiring motor control and modularization technologies.



#### Electric Motors and Actuators

Actuators are products that convert rotary motion into linear motion. NTN's "Electric Motors and Actuators" are electrically powered, reducing environmental impact by eliminating the use of oil. They combine NTN's core bearing and ball screw product technologies with motor design technology and electrical control technology used for vehicle control. They also reduce weight by eliminating the need for a hydraulic pump, helping improve fuel efficiency.



#### Mass-production of world's first in-wheel motor EV to start in 2019

With their highly environmentally friendly performance, EVs are expected to become widespread as the next generation of vehicles in the coming years. NTN has been researching in-wheel motor drive systems for EVs. These systems provide outstanding vehicle road performance by driving each wheel independently, and also enable roomier vehicle interiors. We have developed "In-wheel Motor System" composed of an in-wheel motor with a motor reducer on each wheel, along with a control system controlled by sensor information. We have licensed technology to Changchun Fawson Auto Tech Co., Ltd. (FSAT), an EV developer based in China's Jilin Province. FSAT is planning to start mass-producing an in-wheel motor EV with a 450 kilometer range in 2019.



### Work on new business areas in industrial machinery sector

#### Robot-related business

##### "i-WRIST" Wrist Joint Module (Parallel-link High-speed Angular Control Equipment)

While working on constant velocity joints for automotive applications, we developed a constant velocity joint with a 90° operating range. The joints could not be used in automotive applications due to their rigidity. But we found the same technology could be repurposed for robotics, resulting in the development of "i-WRIST." Existing robots require ample space to move, and need a new location whenever there is a change in the various products they support. "i-WRIST" addresses these issues by saving space and enabling easy setup. It can perform the same movements as the human wrist joint, requires little space even for a large range of movement, and can support a wide range of needs with just software changes. By enabling the human wrist movements that today's robots have previously been unable to recreate, "i-WRIST" has opened the door to operations previously only possible with human workers.

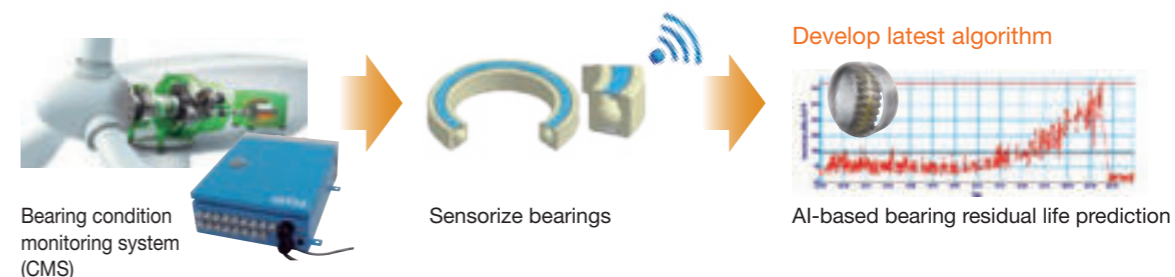


Constant velocity joint with an operating angle of 90 deg, Grease application, Appearance inspection, Robot wrist modules, AI-controlled robotic hand systems

#### Service/solution business

##### From monitoring service to AI and web service

By refining bearing condition monitoring technologies and integrating sensing technologies with bearings, detection of defects in machines and robots will be possible in a variety of settings. NTN has conducted research in collaboration with Osaka University to make major advances in using AI to predict bearing residual life. Realizing this technology will enable monitoring of all bearings used for automotive, industrial machinery and other applications, contributing greatly to reliability and safety. We are hoping to pioneer this technology through this industry-academia partnership.



Bearing condition monitoring system (CMS), Sensorize bearings, Develop latest algorithm, AI-based bearing residual life prediction

#### Green energy

##### Creating a green energy product sales/service network



NTN Hybrid Street Light

"NTN Hybrid Street Lights" are lights with self-contained power sources. They generate power from sunlight during the day and from wind at night, when they also provide LED street illumination. Since "NTN Hybrid Street Lights" are unaffected by power failures during earthquakes, typhoons or other natural disasters, we are working on creating demand by marketing them as durable infrastructure for crime prevention and disaster preparedness. "NTN Micro Hybrid Turbine" can generate energy from the running water of an agricultural water channel, sewer or water supply line, industrial water channel without falling water construction.



NTN Micro Hydro Turbine

#### Medical applications

##### Use of microscopic coating technology

We have been strengthening our portfolio of microscopic coating technologies since the 1980s, and now can apply coatings more rapidly and on a more miniature scale than is possible with standard dispensers. Our microscopic coating technology is being used for applications such as helping treat cancer by applying coatings to biomarker plates. It is helping shift sales from the produced goods to the consumer goods, making it a promising area for the future.





# Research & Development



## Strengthening our R&D System

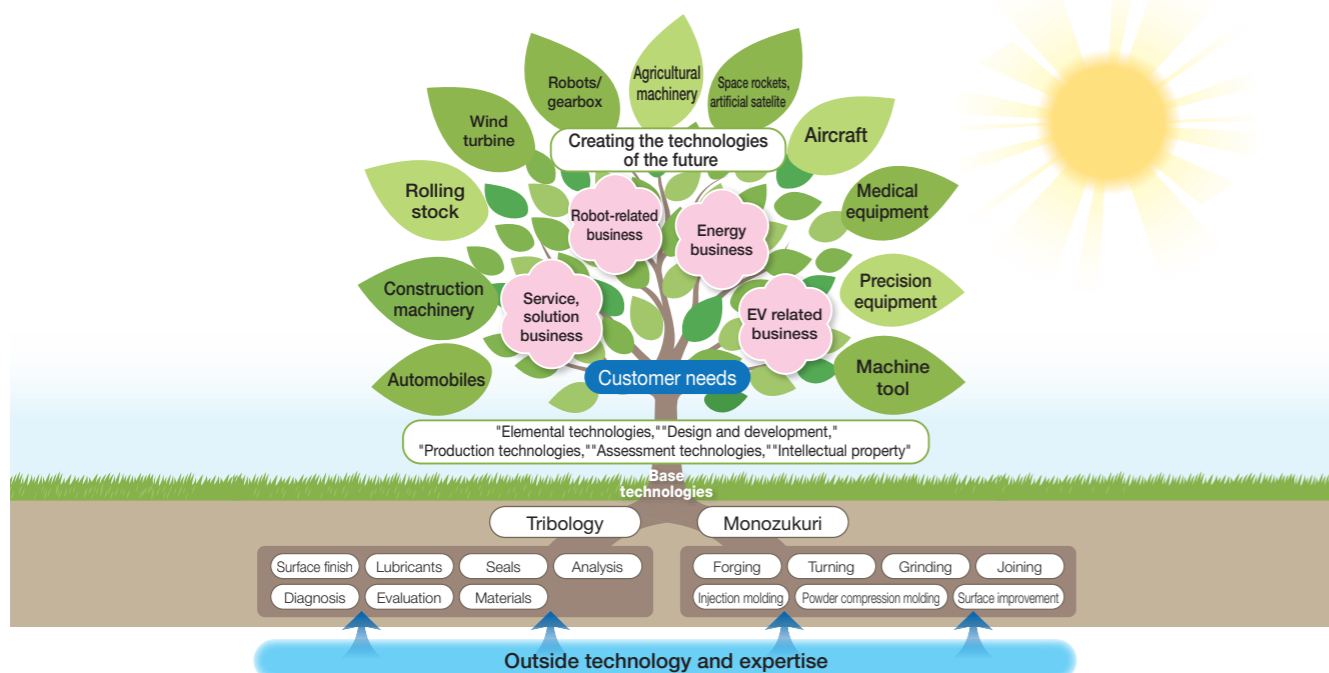
Utilizing core technologies that include tribology, material/heat treatment, precision processing, precision measurement, rotation control, precision positioning technology and analysis, we are developing technologies that meet market needs for long service life, low weight, compact design and low friction. We are also commercializing products in new areas. Our R&D work also incorporates cutting-edge technologies such as the IoT and AI. It is designed to sustain us over our next 100 years in business, letting us augment our core business areas while expanding into new areas.

We are working on strengthening our R&D framework to enable these activities to produce results as rapidly as possible.

In September 2017, we created the "NTN Next Generation Research Alliance Laboratories" in the Graduate School of Engineering at Osaka University. Seeking to be the first national university in Japan to augment its alliances with industry, Osaka University created a joint research course and collaborative lab on its campus while calling for corporate participation. Our desire to help our research and technical divisions flourish over our next 100 years in business aligned with Osaka University's

desire to strengthen its industry alliances, leading to the creation of the NTN Next Generation Research Alliance Laboratories. It represents the beginning of a new venture in our history designed to help us acquire cutting-edge technologies as we look to growing our business 5 or 10 years in the future. The lab is working on research that will enable artificial intelligence (AI) based bearing residual life prediction, and trend management or breakdown prevention during bearing operation. Osaka University is a center of cutting-edge technology. The lab's activities are designed to create a stronger partnership between the Company and university, strengthen our core technologies by acquiring cutting-edge technologies, and enable R&D work for creating new business areas.

We have the Patent Management Rule as well as the Patent Reward Rule in place to reward our employees for their inventions. Foreign patents and know-how are also covered as inventions to be rewarded, and there is no upper limit on the reward payments. We continue to encourage our employees in their creative efforts at developing new inventions.

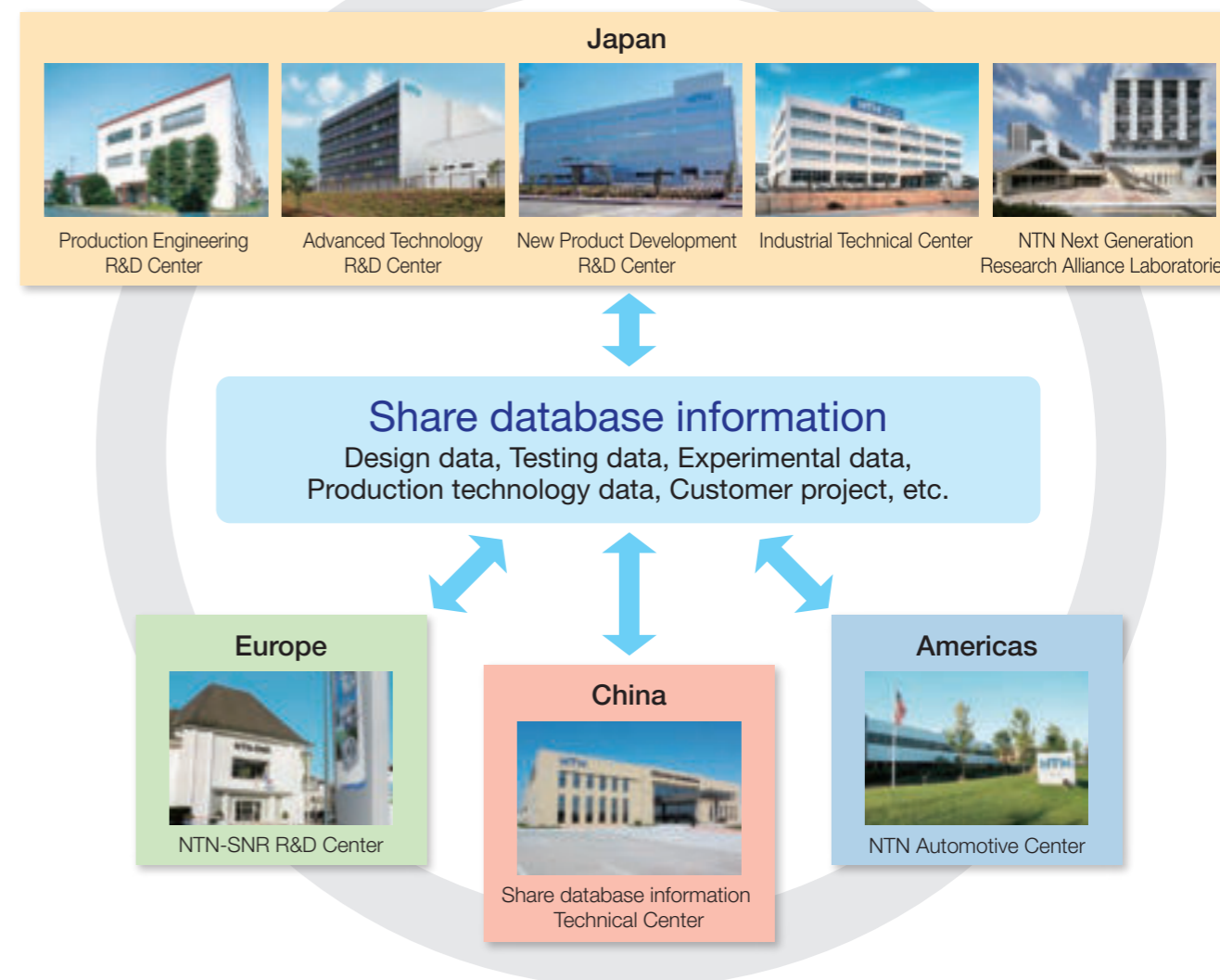


## Global R&D

We have been established an R&D system that is designed to enable acceleration of creating new technologies and products on a global basis, address worldwide market needs and stimulate exchanges of technologies and human resources among R&D bases in Japan, the Americas, Europe, China and elsewhere around the world.

We will promote R&D activities to find solutions to social issues with an awareness of roles that we as a corporation should play in achieving the common worldwide goals, the "Sustainable Development Goals (SDGs)."

### Our R&D approach: Activities divided among four regions throughout the world



## TOPICS

### NTN wins award in automotive component category of "CHO" MONOZUKURI Innovative Parts and Components Awards

NTN's "ULTAGE Tapered Roller Bearings for Automotive Applications" won an award in the automotive component category of the 2017 "CHO" MONOZUKURI Innovative Parts and Components Awards.

This product has optimized roller shape, achieving the world's highest standard of high-load capacity and rotational performance. Achieving the optimized roller shape has conventionally been a difficult task. It was achieved by using optimized design technology along with proprietary machining technology to bring the design to life. The design technology enables creation of the ideal tapered roller shape that enables longer operating life by minimizing roller contact surface pressure and internal stress. This product can be used under the harsh conditions created by downsizing and weight saving of automotive transmissions and differentials, helping improve fuel efficiency and enable a low-carbon society.



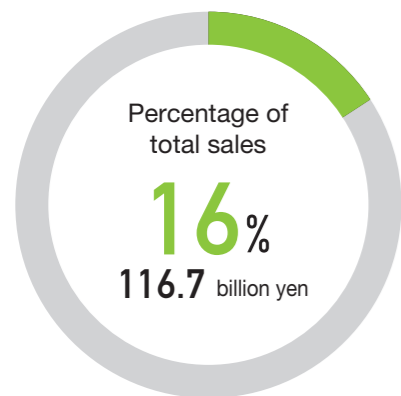
ULTAGE Tapered Roller Bearings for Automotive Applications

Business Overview

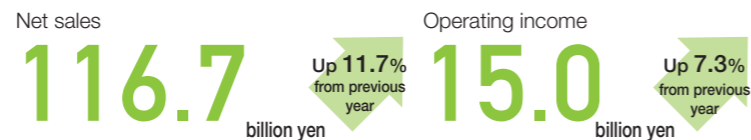


Aftermarket

NTN provides various products for industrial machinery and automotive maintenance needs. For the industrial aftermarket, we provide bearings for general machinery and equipment used in industries such as mining, paper, and steel. For the automotive aftermarket, we satisfy customer needs with a product lineup of service parts (auto parts) composed of bearings and peripheral components. We also provide after-sales services, such as holding engineering seminars with a technical service units, to help our customers improve their production efficiency and ensure their stable operation.

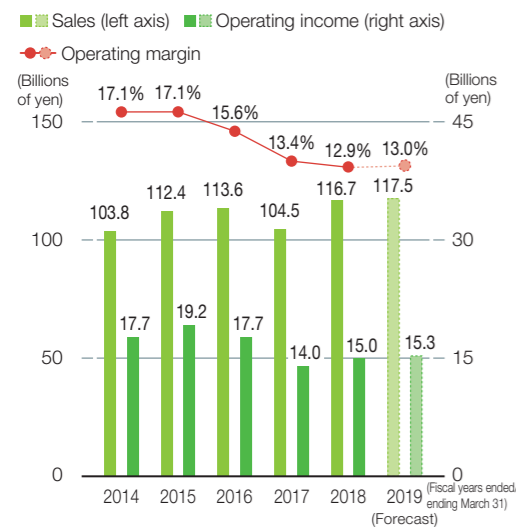


Result for the fiscal year ended March 31, 2018



With regard to the turnover of the aftermarket business, a good market environment resulted in higher sales globally for the industrial aftermarket. The sales for the automotive aftermarket also remained solid in Europe and the ASEAN region.

Sales for this segment were 116.7 billion yen as a result (up 11.7% from the previous year). The sales growth and along with exchange rate effects resulted in an operating income of 15.0 billion yen (up 7.3%) and an operating margin of 12.9%.



Forecast for the fiscal year ending March 31, 2019



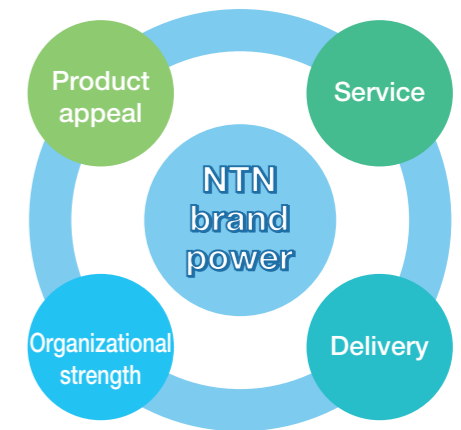
We expect sales growth in the industrial aftermarket mainly due to steady efforts on MRO\* projects in overseas markets and sales expansion to major distributors. For the automotive aftermarket, we will promote sales by expanding automotive parts lineup and our distributor network mainly in the Americas and Europe.

Under these business conditions, we expect to result in sales of 117.5 billion yen, an operating income of 15.3 billion yen, and an operating margin increase of 0.1 percentage point.

\*MRO: Maintenance, repair and overhaul

Business environment and issues

In the aftermarket business, ongoing and steady efforts are required as the outcome, and promotion activities will not lead to an increase in sales immediately. We will work on improving our market presence and brand value in the aftermarket through MRO sales growth, while continuing the activities of our former Medium-term Management Plan "NTN 100" such as establishing a prompt delivery structure and strengthening our technical services. With the demand for industrial machinery bearings currently growing worldwide, we will respond by strengthening our supply chain and expanding our product lineup so as not to lose sales opportunities, and focus on growing our market share through steady sales promotion activities.



"DRIVE NTN100" plans and initiatives

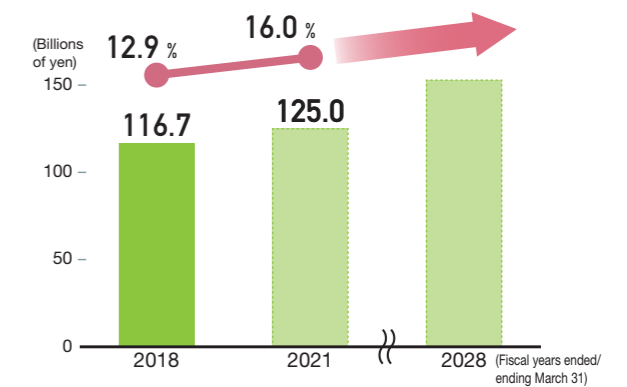
To enable sustainable growth for the aftermarket business, we will promote sales activities led by engineering and strengthen our technical services. We will take advantage of the sales growth in the MRO business to improve our market presence and brand value. In the medium- and long-term perspective, we aim to transform our business structure from a bearing supplier into a service provider that manages maintenance as well as other engineering services. We will also look into new areas such as using sensing technologies.

In order not to miss sales opportunities in the aftermarket, it is essential to have top-selling products in stock at the appropriate level. We will expand the lineup to support prompt supply and establish a stable supply structure that is unaffected by OEM demand, and also efficiently utilize overseas production facilities as well as the global stock.

In Japan, in order to strengthen our marketing power for the industrial aftermarket, we have changed our sales organization and established a new sales company, NTN Sales Japan. Under the new organization, we will focus on improving customer services and sales activities. In

overseas markets, we will try to increase our sales by establishing strong partnerships with major distributors, ensuring steady work on MRO projects, and expanding our distributor network. With regard to the automotive aftermarket, we will focus on sales growth by expanding our automotive parts lineup and our distributor channel.

Sales and Operating Margin (actual and planned figures)



OUR VISION

Transform our business from products to services, or from selling bearings to providing selling services



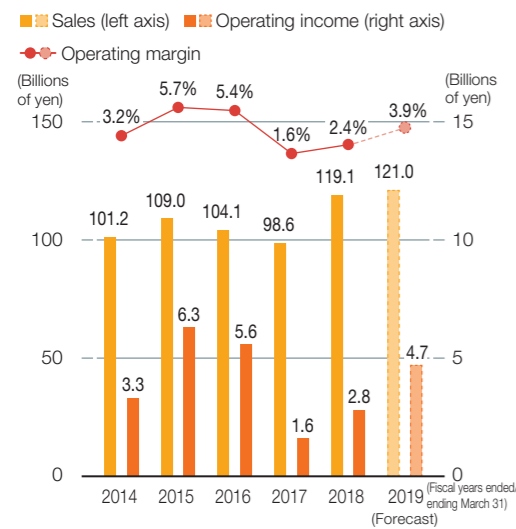
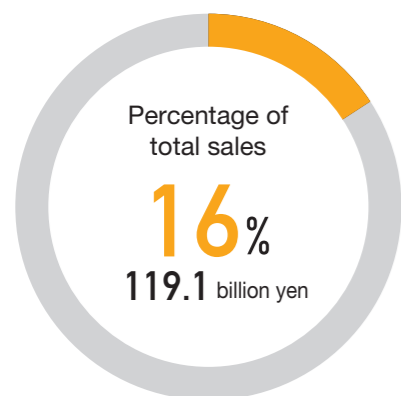
Eiichi Ukai  
Director

The business environment such as demographic shifts, environmental issues, and the rapid development of AI, IoT, and other digital technologies, has been changing continually and companies are required to be flexible in accommodating new market needs to ensure sustained growth. In the aftermarket business, suppliers are faced with new expectations in addition to traditional requirements, including high-quality products, extensive product lineups and prompt delivery. The role of suppliers, particularly those in the equipment aftermarket such as steel and paper industries, is gradually changing from a bearing supplier into a provider of comprehensive maintenance services for equipment and peripheral components. In order to meet these new market needs, we aim to realize new business models, such as the monitoring of bearing operations and the provision of a new service that predicts the bearing life by utilizing our expertise in sensing and digital technologies such as AI and IoT. We are working on transformation from a bearing supplier into a service provider while continuing the activities and projects that we have been managing so far. By making this transformation, we aim to enhance our brand value and get the best customer satisfaction in the aftermarket.

Business Overview

# Industrial machinery market

NTN ULTAGE Series, the world's highest class new generation bearings, is expanding its lineup to address the needs for higher precision and speed. In response to various industrial market needs, NTN's products provide solutions that contribute to low torque and reduction in size, weight and environmental burdens. Going forward, NTN continue to develop elemental technologies of bearings, as well as highly value-added products by unitizing or systemizing peripheral components.



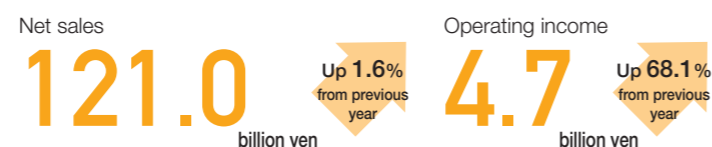
## Result for the fiscal year ended March 31, 2018



Sales for our industrial machinery market were supported on a global basis by robust demand for construction machinery, agricultural machinery and gearbox applications. They also increased as a result of wind turbine applications in Europe and machines tool applications in Asia and other regions.

Sales for this segment were 119.1 billion yen as a result (up 20.8% from the previous year). The sales growth along with exchange rate effects and other factors resulted in an operating income of 2.8 billion yen (up 72.4%) and an operating margin of 2.4%.

## Forecast for the fiscal year ending March 31, 2019



We continue to anticipate steady demands are anticipated in markets of gearboxes for robotic applications, construction and agricultural machineries. By region, sales growths are expected in Europe for new aircraft engine applications and in China for wind turbine applications.

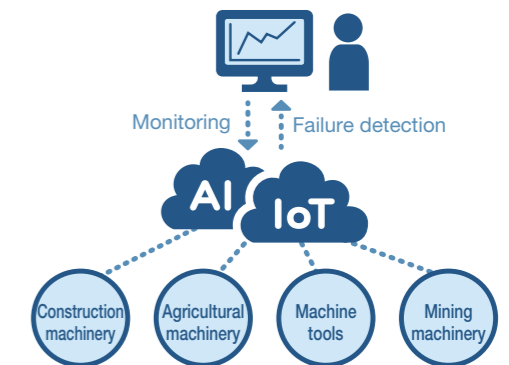
Under these business conditions, we expect to result in sales of 121.0 billion yen, an operating income of 4.7 billion yen and an operating margin increase of 1.5 percentage points.

## Business environment and issues

The industrial machinery markets expect growth supported by an increase in gearbox demands for robotic applications for labor-saving, and of wind turbine applications for renewable energy needs. The aerospace market is expected to grow due to replacement of old airframes and an increasing number of commercial airliner services. The railway market is also expected to grow supported by new constructions of urban transport infrastructures in China and Asian regions.

Industrial core markets, such as construction, mining, and agricultural are indispensable to our daily lives and emerging technologies such as unmanned operations are now required in those markets. Furthermore, monitoring technologies are important to ensure the safe and efficient operations of machineries and prevent accidental stops and the resulting loss. IoT and AI are also becoming more widely

used at an accelerated speed, which bring major changes to the industry.



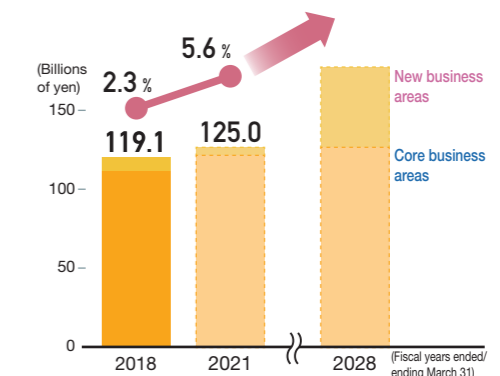
## "DRIVE NTN100" plans and initiatives

To respond to market needs and make our industrial business grow, we are always seeking more advanced core technologies and deploying highly functional, value-added products. For example, compact and high-rigidity bearings are needed for gearboxes for robotic applications. Apart from bearings, in robot-related business, we are finding new markets for NTN i-WRIST, a wrist joint module, and we are currently developing collaborative-robot system products using our original control technology.

Wind turbine applications for large scale and off-shore operations need products that can be used for a long period of time and NTN is introducing such new products. For aerospace applications, NTN offers products with new materials, heat treatments and metal-surface treatments to meet the demand for lighter weight and long-life operations. NTN is improving heat treatments and processing techniques of bearings, which are used in various applications, daily and reinforcing productions globally to ensure a steady supply of products. In the business of service and solutions, researches are conducted for AI-

driven bearing life expectancy prediction, as well as sensing for early-stage anomaly detection to help ensure stable and efficient machine operations.

## Net sales and Operating Margin (actual and planned figures)



## OUR VISION

NTN will become a company that customers in the industrial machinery market can rely on most for its exceptional technological competence



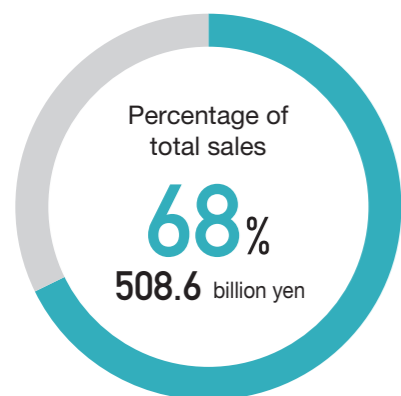
**Kazuki Kawashima**  
Director

In the industrial market, NTN widely covers various segments and machines of customers, and supplies bearings from miniature sizes used in electronic devices to extra-large sizes used in wind turbines and large mining machines. Our products are also extremely reliable in aircraft and high-speed trains, which are directly linked to human life. NTN has always met various market needs, with accumulated technologies on products and productions. Recently, the business environment of the industry is rapidly changing, with increasing awareness of global environmental issues and demographic shifts. The industrial structure itself is also changing as a result of the fast evolution of information technology, such as IoT and AI. By utilizing digital technologies along with the flexible intelligence and creativeness of mankind, we are transforming ourselves and will remain vital to the industrial world for the next 100 years.

Business Overview

# Automotive market

Our work in the automotive segment includes developing more advanced bearings, hub bearings and driveshafts to create higher added value. We are also combining these core products with core technologies to develop module products. To prepare for the coming era of electrification and autonomous driving, we have released a series of “Electric Motor and Actuators” composed of ball screws, motors and controllers. We are working on expanding their range of applications and proposing them to customers. Marketing these products globally will allow us to meet demands for better fuel efficiency and ride comfort in conventional vehicles, while also meeting rapidly growing needs for electrification.

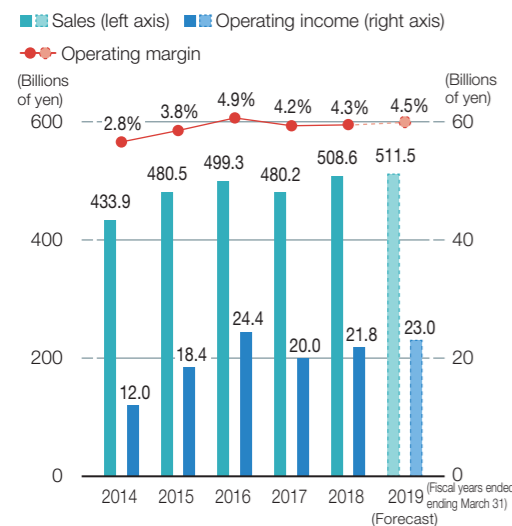


## Result for the fiscal year ended March 31, 2018



Despite sluggish demand for sedans and compact vehicles in North America, sales for the automotive segment were solid due to the launch of new models in Japan and elsewhere in Asia, solid demand in Europe, and good results from Japanese carmakers in China.

Sales for this segment were 508.6 billion yen (up 5.9% from the previous year). The sales growth along with exchange rate effects and other factors resulted in an operating income of 21.8 billion yen (up 9.0%) and an operating margin of 4.3%.



## Forecast for the fiscal year ending March 31, 2019



We expect sales to grow from continued solid results for Japanese manufacturers, growing demand from local manufacturers in China, and the launch of new models in Japan. In the Americas, we expect additional sales from the start of new models at our Mexico plant. In Europe, we expect sales to European manufacturers to be strong.

We anticipate that these demand trends will result in sales of 511.5 billion yen, an operating income of 23.0 billion yen and an operating margin increase of 0.2 percentage point.

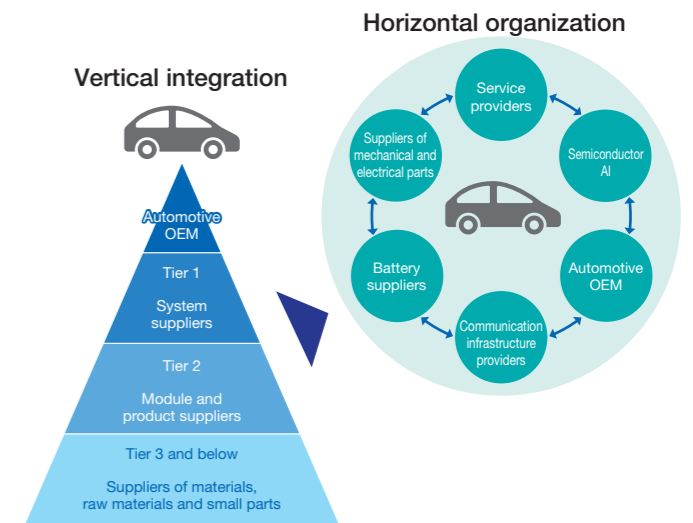
## Business environment and issues

The automotive industry is entering an era of revolution marked by the rise of electrification/EV-shift, autonomous driving and the other trends represented by the CASE\* acronym. New names are entering the industry, cross-sector partnerships and alliances are forming, and the industry is transforming from vertically integrated topped by OEM to a horizontally organized structure. The success or failure of companies in this new ecosystem will be determined by their ability to establish an advantageous position.

With automobile production volumes expected to rise along with population growth and rising income levels in the developing world, product commoditization and falling costs should continue.

For suppliers, this business environment will likely present chances for advancement as well as risks to survival.

\* An acronym for ‘Connected’, ‘Autonomous’, ‘Shared’ and ‘Electric’—four words representing developments that are currently on the verge of creating major changes in the automotive industry.



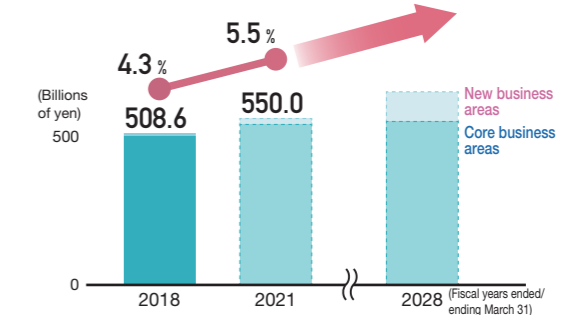
## "DRIVE NTN100" plans and initiatives

We are focusing on steadily increasing the profitability of core products such as our hub bearings and driveshafts (currently world's No. 1 and No. 2 market share), while sowing the seeds of future growth by developing new products and segments that will meet the needs of the coming EV era. These efforts represent the first step in ensuring sustained growth over our next 100 years. We can foresee orders for core products over the next 2 to 3 years. Order volume appears to be making some progress alongside our efforts to transform ourselves into a stably profitable organization. This goal will be achieved by increasing manufacturing efficiency through streamlined capital investment and optimized resource allocation, and by strengthening global procurement functions to shrink proportional costs. Profits from our core business areas will be used to invest in new product and segment development. We will release module product versions of existing products, combine mechanical modules and control systems, and step up releases of products for electrified applications such as “Electric Motor and Actuators,” “eHUB” and “sHUB.” Through a

technology licensing agreement with a Chinese EV manufacturer, we will provide technical support for the world's first mass-produced EV with in-wheel motors (IWMs).

We want to maximize the scale benefits of our core products that have high market shares, creating a self-perpetuating cycle of benefits that uses the earnings from these products to fuel reinvestment in new products and segments.

### Net sales and Operating Margin (actual and planned figures)



## OUR VISION

As an indispensable presence for the automotive market, NTN will become a company that offers products and services for vehicles all over the world



Hideaki Miyazawa  
Managing Director

The rise of electrified vehicles throughout the world's automotive markets calls for functional automotive components with different characteristics or more rigorous performance requirements than are required for conventional internal combustion engine vehicles. We will accommodate these needs by offering different technical expertise and lineups of advanced products providing features such as size/weight reduction, higher speed rotation, lower torques and less noise/vibrations in order to secure a competitive advantage over the competitors.

Ride-sharing and autonomous driving are two other major trends that are expected to change the landscape of the automotive market. Providing these functions will require absolute reliability from the drivetrains responsible for vehicle driving, turning and stopping performance. Carmakers are shifting the focus of their development work from the tangible (vehicle performance) to the intangible (services), creating an expanding range of areas in which NTN can contribute to vehicle safety, reliability and comfort.

We view these dynamic changes in the market environment as opportunities. We will work to provide values that exceed customer expectations through product development and advanced technical services that incorporate future market needs. We aim to become a leading manufacturer in the automotive market's crucial drivetrain component segment.

# Foundation Supporting NTN Business

The foundation that supports our business over the medium to long term is viewed in strategic terms through the lenses of “Governance” and “Resource.” We work actively on tackling ESG (Environmental, Social and Governance) issues through various initiatives.

## Governance Strategies

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## Resource Strategies

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In 2015, the NTN Group endorsed the United Nations Global Compact (an international initiative for developing a global framework for sustainable worldwide growth). We continue to promote our business initiatives while also remaining aware of the United Nation’s Sustainable Development Goals (SDGs).



## SUSTAINABLE DEVELOPMENT GOALS

17 GOALS TO TRANSFORM OUR WORLD



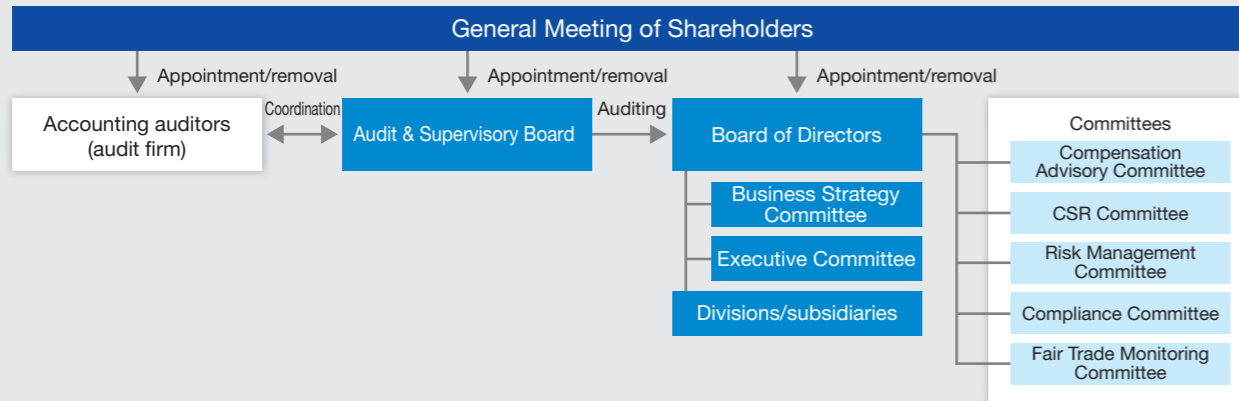
# Corporate Governance

## Basic Approach and Implementation System

Strengthening and enhancing our corporate governance is one of our top management priorities. We take steps to make management more efficient and robust while securing responsiveness to the purport of the Corporate Governance Code.

Communicating with shareholders, investors, and other stakeholders is another priority. We work to increase management transparency by disclosing information in a prompt and accurate manner.

### Corporate governance structure



#### Board of Directors [18]

Supervises the execution of director duties and decides on basic management policies, legally mandated areas and important management issues. The Board holds regular meetings at least once per month, along with extraordinary meetings whenever needed. It is evaluated to enable improvements to its effectiveness.

#### Audit & Supervisory Board [15]

Consists of two standing and two non-standing Audit & Supervisory Board Members. To ensure that business audits are carried out from an independent and objective standpoint, three of the four Audit & Supervisory Board Members are from outside the company. Audit & Supervisory Board audits the execution of director duties, and work to maintain and improve the transparency and fairness of the company's management supervision system by providing input at meetings of the Board of Directors and other important meetings that they attend.

#### Business Strategy Committee [28]

Meets at least twice per month to discuss basic management policies and important management strategies.

#### Executive Committee [12]

An executive officer system has been introduced to enable swift decision-making and business execution. The Executive Committee reviews the execution of monthly operations. It is composed of directors, Audit & Supervisory Board Members and executive officers.

#### Compensation Advisory Committee [5]

Responds to questions from the Board of Directors by discussing the compensation particulars of individual directors and executive officers, giving back advice and recommendations to the Board. The majority of the Committee's members are outside officers.

#### CSR Committee [2]

Deliberates and implements various measures intended to effectively promote CSR activities. Chaired by the head of the Corporate Value Promotion Department and composed mainly of related department heads.

#### Risk Management Committee [3]

Discusses important issues related to the various risks facing the NTN Group. Also formulates Business Continuity Planning (BCP) and implements Business Continuity Management (BCM).

#### Compliance Committee [4]

Handles compliance risks not related to Japan's Act on Prohibition of Private Monopolization and Maintenance of Fair Trade ('Antimonopoly Act') or Act Against Delay in Payment of Subcontract Proceeds, Etc., to Subcontractors ('Subcontracting Act'). Applies a preventive approach to oversee and guide the creation of in-house rules and activities for education, awareness-raising and monitoring.

#### Fair Trade Monitoring Committee [2]

Chaired by the President and focused on full compliance with the Antimonopoly Act and Subcontracting Act. Provides supervision and guidance on effective controls for fair trade practices along with education and awareness-raising activities.

\* [ ] Numbers in brackets above indicate the number of meetings held in the fiscal year ended March 31, 2018.

## Main Activities

### Governance-strengthening transition



### Compensation Advisory Committee

To increase the transparency and objectivity of director and executive officer compensation, we have a Compensation Advisory Committee that responds to questions from the Board and has a majority of outside officers.

The items discussed at the meetings of the Compensation Advisory Committee in the fiscal year ended March 31, 2018 are listed at right. They focused on compensation standards, assessments and amounts for directors and executive officers.

Attendance record of outside directors/  
outside Audit & Supervisory Board  
Members at meetings of Compensation  
Advisory Committee **5 out of 5 meetings**  
**100%**

#### Items discussed at the meetings of Compensation Advisory Committee

- 1st: Points to award under stock compensation plan
- 2nd: Director/executive officer summer bonus amounts  
Director monthly compensation amounts  
Investigation of stock compensation plan for following term
- 3rd: Executive officer winter bonus amounts  
Investigation of stock compensation plan for following term
- 4th: Director monthly compensation amounts
- 5th: Executive officer monthly compensation  
Investigation of stock compensation plan for following term

### Strengthening management auditing functions

To ensure robust management auditing functions, we use an Audit & Supervisory Board Members system with four Audit & Supervisory Board Members including three coming from outside the company. Drawing on specialized knowledge in areas such as finance, management and law, the outside Audit & Supervisory Board Members conduct audits in collaboration with the in-house standing Audit & Supervisory Board Member and the Internal Audit Department.

The Board of Directors, which includes two outside directors, decides on important issues and oversees the execution of director duties. The Audit & Supervisory Board Members provide input at meetings of the Board of Directors and other important meetings that they attend. They work to maintain and improve the transparency and fairness of the company's management supervision system.

All the outside officers (five total; two directors and

three Audit & Supervisory Board Members) are designated as independent officers as defined by the provisions of the Tokyo Stock Exchange, Inc. (TSE). The outside officers submit filings to the TSE.

To ensure transparency and fairness, the Board of Directors selects candidates recommended by the company, and appointments are finalized by submission and approval at the General Meeting of Shareholders. Under the provisions of the Regulations of the Board of Directors, votes of the Board are used to appoint and remove representative directors and directors with special titles, and to assign and remove director duties.

Under the provisions of the Management Rules for Subsidiaries, a management control system is implemented by having subsidiaries report issues related to the execution of their duties and having them apply for the headquarters' approval for certain issues.

## Corporate Governance

### Outside directors and outside Audit & Supervisory Board Members

We have established standards for independent outside directors and independent outside Audit & Supervisory Board Members that must be satisfied by all outside directors and outside Audit & Supervisory Board Members.

Two of our 14 directors are outside directors. They draw on a broad range of knowledge acquired from extensive experience as managers of other business firms to oversee the company's management from independent standpoints and provide appropriate advice and suggestions. Input from the outside directors helps ensure management suitability and legal compliance, strengthening the Board's management decision-making functions.

#### Roles required of outside directors

- Taking part in and overseeing the important decision-making processes done by the Board of Directors
- Drawing on a broad range of knowledge gained through extensive personal experience to provide appropriate advice and suggestions on agenda/report items at meetings of the Board of Directors
- Overseeing management from an independent standpoint to improve the common interests of the shareholders

Three of four Audit & Supervisory Board Members are outside Audit & Supervisory Board Members. They draw on a broad range of knowledge acquired from a wealth of experience and long track record as expert financial practitioners, specialist management practitioners or attorneys. They provide appropriate auditing of the company's business execution from independent standpoints to help ensure ongoing compliance enforcement and improve management robustness and transparency.

As stated previously, five (about 28%) of the total of 18 directors/Audit & Supervisory Board Members are outside officers, helping increase the objectivity and fairness of management oversight.

We send materials related to the Board of Directors' agenda items to the outside directors and outside Audit & Supervisory Board Members in advance and provide explanations as needed. Especially, for the outside directors, we hold advance briefings on agenda items before the Board meets. At each meeting of the Board, there are lively discussions because the outside directors actively interact with the Audit & Supervisory Board Members and share information.

Audit & Supervisory Board was convened 15 times in the fiscal year ended March31,2018, and its members met with the Internal Audit Department every month to share and exchange information.

### Attendance record of outside directors/outside Audit & Supervisory Board Members at meetings of the Board of Directors/Audit & Supervisory Board

Outside Directors	Number of Board of Directors meetings attended (out of 18)	Outside Audit & Supervisory Board Members	Number of Board of Directors meetings attended (out of 18)	Number of Audit & Supervisory Board meetings attended (out of 15)
Akira Wada	18 100%	Kouji Kawahara	18 100%	15 100%
Noboru Tsuda	18 100%	Tadao Kagono	18 100%	15 100%
		Ryo Kawakami	18 100%	15 100%

### Securing Responsiveness to Corporate Governance Code

We take active measures to strengthen our corporate governance while securing responsiveness to the purport of the Corporate Governance Code. We have implemented all of the general principles of the Corporate Governance Code that were in place prior to the revision of June 1, 2018. We will continue to work on strengthening our corporate governance while adapting to changes in our business environment.

### Accessible General Meeting of Shareholders

We try to make it as easy as possible for shareholders to attend the General Meeting of Shareholders, and take various other measures to ensure that shareholder voting is a smooth process.

#### Earlier advance notice of the General Meeting of Shareholders

Three weeks' advance notice of the general meeting is provided (7 days earlier than the legally mandated deadline of 2 weeks before the meeting date).

#### Website posting of general meeting notice

Our early disclosure efforts include providing notice of the General Meeting of Shareholders on our website one month before the meeting date. We also work to improve foreign shareholder convenience by providing an English translation (summarized) of the notice.

#### Provision of detailed information in the general meeting notice

To assist shareholder understanding, the officer appointment-related agenda items are accompanied by a list of the candidate names, photos of the candidates, attendance rates at Board meetings and similar information.

#### Selection of date and venue of the General Meeting of Shareholders

To maximize shareholder attendance, traditionally busy dates are avoided and account closing/auditing schedules are considered when setting the meeting date. The venue was changed from our headquarters building to an outside venue for 2018. We feel this change improves shareholder convenience through easier access and better facilities, and we plan to continue using outside venues in future.

#### Online voting

Advance voting is made possible both by post and online. For the convenience of institutional investors, NTN is also on the Electronic Voting Platform run by Investor Communications Japan (ICJ).

#### Other

The Chairman's discussion at the General Meeting of Shareholders is supplemented by summaries of business reports and earnings information presented on a screen with visual aids such as graphs and photos.

#### The 119th Annual General Meeting of Shareholders (June 26, 2018)

Number of shareholders attended	Percentage of votes cast
213	82.6%

### Information Disclosure Policy

We disclose information based on our Information Disclosure Policy and in compliance with various laws such as the Financial Instruments and Exchange Act and the Rules on Timely Disclosure of Corporate Information by Issuers of Listed Securities stipulated by the Tokyo Stock Exchange. Moreover, we respect the Corporate Governance Code and disclose information in a fair manner according to the Fair Disclosure Rules.

We also strive to disclose, as actively and fairly as possible, information deemed useful for investors even if laws and regulations do not apply to that information.



Information Disclosure Policy can be viewed on our website.  
<https://www.ntnglobal.com/en/csr/sc/investor.html>

### Outside Assessment

We have been assessed as an active practitioner of ESG (Environmental, Social and Governance), and have been included in multiple SRI (Socially Responsible Investing) funds and SRI indexes\*1.

FTSE4Good Index

Morningstar Socially Responsible Investing Index

SNAM Sustainability Index

FTSE Blossom Japan Index

MSCI Japan ESG Select Leaders Index\*2

MSCI Japan Empowering Women Index (WIN)\*2

\*1 Inclusion status as of the end of June 2018.

\*2 The inclusion of NTN Corporation in any MSCI index, and the use of MSCI logos, trademarks, service marks or index names herein, do not constitute a sponsorship, endorsement or promotion of NTN Corporation by MSCI or any of its affiliates. The MSCI indexes are the exclusive property of MSCI. MSCI and the MSCI index names and logos are trademarks or service marks of MSCI or its affiliates.



The details of each index can be viewed on our website.  
<https://www.ntnglobal.com/en/csr/sc/investor.html>

# Officers (As of June 26, 2018)



»(Back row from left to right)

Director

**Kazuki Kawashima**

Corporate General Manager,  
Industrial Business Headquarters  
Green Energy Products Division

Director

**Takehiko Umemoto**

General Manager, EV Module Division  
Deputy Corporate General Manager,  
Automotive Business Headquarters

Director

**Hiroshi Nakano**

Corporate General Manager,  
CSR Headquarters  
Internal Audit Department

Outside Director

**Akira Wada**

Outside Director

**Noboru Tsuda**

Director

**Hidefumi Tsuji**

Production  
Procurement Headquarters

Director

**Toshinori Shiratori**

Corporate General Manager,  
Corporate Strategy Headquarters

Director

**Eiichi Ukai**

Aftermarket Business Headquarters  
Quality Assurance Headquarters  
NTN Korea Co., Ltd.  
ASEAN & Oceania, India &  
West Asia Regions

»(Front row from left to right)

Managing Director

**Hideaki Miyazawa**

Corporate General Manager,  
Automotive Business Headquarters  
Europe & Africa Region  
Electric Module Products Division  
EV Module Division

Managing Director

**Yoshinori Terasaka**

Research, Engineering  
Quality Assurance Headquarters  
Americas Region

President  
Representative Director

**Hiroshi Ohkubo**

Executive Vice President  
Representative Director

**Hironori Inoue**

Composite Material Product Division  
Human Resources  
Project Director, Axle Unit Business  
Strengthening Project

Managing Director

**Keiji Ohashi**

Finance Headquarters  
General Affairs, Environmental  
Management Department  
CSR Headquarters

Managing Director

**Itsuji Goto**

Human Resources  
Cost Planning Department  
China Region



# Officers (As of June 26, 2018)



## Audit & Supervisory Board Members

Standing Audit & Supervisory Board Member  
**Kouji Kawahara**  
 Outside

Standing Audit & Supervisory Board Member  
**Yusuke Iyama**

Audit & Supervisory Board Member  
**Tadao Kagono**  
 Outside

Audit & Supervisory Board Member  
**Ryo Kawakami**  
 Outside

## Executive Officers

Senior Executive Officer  
**Natsuhiko Mori**  
 New Product and Business Strategic Planning Headquarters  
 Composite Material Product Division  
 Chairman, NTN Advanced Materials Corporation

Senior Executive Officer  
**Tetsuya Sogo**  
 Corporate General Manager, Finance Headquarters

Senior Executive Officer  
**Isao Ozako**  
 General Manager, China Region  
 President, NTN (China) Investment Corp.  
 President, Guangzhou NTN-Yulon Drivetrain Co., Ltd.

Senior Executive Officer  
**Koji Kametaka**  
 General Manager, Electric Module Products Division  
 Deputy Corporate General Manager, Automotive Business Headquarters  
 Deputy Corporate General Manager, EV Module Division

Senior Executive Officer  
**Masaki Egami**  
 Advanced Technology R&D Center  
 General Manager, New Product Development R&D Center

Senior Executive Officer  
**Takayuki Matsuo**  
 Corporate Strategy Headquarters

Executive Officer  
**Etsu Harima**  
 Deputy Corporate General Manager, Industrial Business Headquarters

Executive Officer  
**Pete Eich**  
 Director and President, NTN Bearing Corp. of America

Executive Officer  
**Makoto Okasaka**  
 Deputy Corporate General Manager, Automotive Business Headquarters

Executive Officer  
**Alain Chauvin**  
 General Manager, Europe & Africa Region  
 President, NTN-SNR ROULEMENTS

Executive Officer  
**Eiichi Nakamizo**  
 Corporate General Manager, Aftermarket Business Headquarters

Executive Officer  
**Kazuki Hagihara**  
 Deputy General Manager, Americas Region  
 Director and Vice Chairman, NTN Bearing Corp. of America

Executive Officer  
**Katsuaki Miyake**  
 General Manager, Americas Region  
 President, NTN USA Corp.  
 Director and Chairman, NTN Bearing Corp. of America

Executive Officer  
**Koji Ishikawa**  
 Green Energy Products Division  
 Industrial Business Headquarters

Executive Officer  
**Kenji Nono**  
 General Manager, Human Resources Department  
 Global Human Resources Development Department  
 General Affairs, Environmental Management Department

Executive Officer  
**Satoshi Ueda**  
 Deputy Corporate General Manager, Automotive Business Headquarters  
 General Manager, Iwata Works

Executive Officer  
**Masaaki Yamamoto**  
 Deputy Corporate General Manager, Corporate Strategy Headquarters

Executive Officer  
**Herve Brelaud**  
 Deputy General Manager, Europe & Africa Region  
 Vice President, NTN-SNR ROULEMENTS

Executive Officer  
**Ikuo Watanabe**  
 Deputy Corporate General Manager, Automotive Business Headquarters  
 General Manager, Business Planning Department

Executive Officer  
**Masayuki Nishiguchi**  
 Deputy Corporate General Manager, Aftermarket Business Headquarters

Executive Officer  
**Masayuki Kaimi**  
 General Manager, Production Strategy Department  
 Production Engineering R&D Center

Executive Officer  
**Shigefumi Komori**  
 Deputy Corporate General Manager, Industrial Business Headquarters  
 General Manager, Business Planning Department

Executive Officer  
**Takashi Fujii**  
 Corporate General Manager, Quality Assurance Headquarters

Executive Officer  
**Nobuyoshi Ozawa**  
 General Manager, ASEAN & Oceania Region  
 General Manager, India & West Asia Region

# Outside Director Dialog

This forthright and critical exchange of honest opinions is being presented in the context of corporate governance issues and NTN's efforts to achieve ongoing sustainable growth and improve our corporate value.

Outside Director  
**Akira Wada**

Outside Director  
**Noboru Tsuda**

June 2005: Managing Director at Hitachi Zosen Corporation  
 June 2006: Standing Corporate Auditor at NICHIZO TECH INC.  
 June 2011: Outside Director at NTN (current position)

June 2005: Executive Officer at Mitsubishi Chemical Industries Limited (currently Mitsubishi Chemical Corporation)  
 April 2014: Member of the Board (Representative Director), Vice President  
 Executive Officer at Mitsubishi Chemical Holdings Corporation  
 June 2016: Outside Director at NTN (current position)

## TOPIC 1

### What is a weakness in NTN's governance?

**Tsuda:** A weakness is the widely dispersed nature of NTN's business units. This geographic separation prevents any real benefits of scale from being generated when sales increase. Even when the business units are busy, the profits do not follow. It is clearly a difficult industry to be in. A company would normally consider centralization to reduce the number of operations or make stock management easier. But instead of centralization, NTN is using systemization to make its widely dispersed business units more efficient. It is very difficult to maintain high quality consistently as scale expands, which could bring about governance issues in future. NTN needs to check whether quality and cost competitiveness are being properly monitored. NTN has a large number of business units, including several from acquired companies. So it is difficult to keep track of them all and solve problems as they arise. Optimizing business units and business partners requires a lot of effort.

**Wada:** I think the head office should have the mindset that our business is developed "globally." Head office has several functions such as human resources, legal affairs, etc., however, they apparently focus on domestic issues mainly in NTN itself and its subsidiaries. NTN needs to consider more than just Japan when approaching various problems. NTN is working on globalizing head office functions, but we do not yet know if this globalization will be possible. We are currently in a transition period. When I attend the Board of Directors meetings these days, I feel that a lot of weight is given to discussion of domestic issues.

**Tsuda:** We do have a global perspective, but it is true that most agenda items at the Board of Directors are about domestic issues. So I suppose in that sense, it is a bit lacking in global perspective. The head office needs to function as a global holding company, so I think it will be forced to transform into a globally oriented organization.

I also think establishing a responsible profit control organization is a key requirement. The system of responsibility areas has already been established in Japan. But corporate general managers are mainly focused on domestic business units, and responsibility areas are unclear in overseas global management organizations. Bearings are used by either the industrial machinery or automotive industry, so the same product can have different applications. While I understand the difficulty, the responsibility areas of corporate general managers need to be global and not just domestic. In that sense, the current situation of the company is still unclear. Matrix management organizations seem to work well upon superficial examination, but their complex structures prevent unification and make governance difficult to apply.

**Wada:** Yes, it is a difficult problem. NTN makes bearings at multiple business units for use in industrial machinery as well as automobiles. So although the overseas and other business units have organized the breakdown of responsibility areas for each region, it is not always clear who is responsible for handling particular problems when they arise. That is a weakness that NTN has.



**TOPIC 2** How does the Board of Directors work? Does it discuss collaborations with different industries?

**Wada:** This year will be my seventh year as an NTN outside director. When I started in this position, the Board of Directors lacked energy. It was a Board that just went through the motions, following along with what had already been discussed by the Executive Committee. For example, the seating order called for outside directors to sit at the end, and our role was more to receive a report than to ask questions and influence the meeting. But the Board is now seeing quite lively opinions being shared. The seats in front

**TOPIC 3** What aspects of Monozukuri (manufacturing) and Hitozukuri (human resources development) could NTN gain a competitive edge in, and what obstacles to future sustainable growth do you foresee?

**Tsuda:** In general, the selection of the product to manufacture is usually a very important factor in gaining a technological edge in the manufacturing industry. The technology team will examine their technology closely, asking themselves if the quality is high enough and the product good enough. But the most important thing is how the market will assess the product. However it is quite difficult to compete for a technological edge in this industry. Successful manufacturers usually produce good products that sell well and get positive feedback from the market. But for this industry, the emphasis seems to be more on just blindly creating more competitively priced high-quality products for delivery by the set delivery date.

As an outside director, I think NTN's technological edge needs to be precisely assessed to provide a clearer understanding of what the market needs and what technologies NTN excels at.

**Wada:** Bearings are products that form the base technology for many different items. It is important to develop the products that current customers demand and only NTN can provide. These products are not special items that can distinguish themselves from other products on the basis of quality. NTN does not have any points of direct contact with end users—finished items containing our products are assembled and sold by manufacturers of automobiles and

of the chairman have been assigned to outside directors since last year. I feel that it has changed to an atmosphere to be more conducive to speaking than ever.

But there is almost no concrete discussion of areas such as collaboration with other industries. A lot of the discussion is just an extension of past discussions of the direction NTN should take in future as a bearing company. There is not much discussion that approaches the end user's perspective.

**Tsuda:** The Board discussed how to handle new business areas when creating the Medium-term Management Plan. But although NTN is working on applications like wind power and hydroelectric, these businesses are not going as specified in the initial plan. The employees who develop technology are proficient at developing new products, but NTN has a hard time when it comes to marketing. NTN may be able to provide new products to current customers, but it has difficulty getting new products into other areas through marketing. Employees' motivation is aided by painting a clear picture—such as by showing how products for environmental applications can help solve major issues of public concern, for example. So for that reason, NTN needs to boost its marketing ability. But it is a case of easier said than done. As an outside director, I feel I should be asking the Board whether enough human resources have been allocated to marketing. The Board is currently focused on business for the automotive industry. I want to continue providing my input to get it to move away from that focus.

industrial machinery. That is NTN's business model. Should bearing manufacturers just continue providing bearing technologies, or do they need to start approaching end users? I do not think any bearing manufactures have properly answered this question at the present time. If NTN does not stay sharp, it runs the risk of having the uniqueness and dominance of the manufacturing expertise it has accumulated over a century deprived of by emerging nations.

Over the next hundred years, NTN may need to advance to business areas more closely resembling customer solutions business. I think NTN may need to start solution business areas with direct connections to the systems demanded by customers, and made possible by non-interchangeable products that cannot be replaced by competitor models after being mounted in systems.

**Tsuda:** We are now required to collaborate with several different industries. There is a limit to what a single company can do by itself. The selection of collaboration partners will be the key. Collaboration will be difficult if NTN does not partner with companies having a close presence to end users early on. There are companies close to end users in several different industries. As a member of a conglomerate, the chemical company I was previously with had many points of contact with a wide range of industries.

I do not think manufacturers of automobiles would be able to suggest any approaches for starting the sort of solution business as Mr. Wada has mentioned. I think we need to work with non-automotive industries to find applications for friction-reducing technologies. The automotive and bearing industries are both controlled by a small number of players, so NTN needs to find out what its unique abilities are in this type of market. When producing bearings for the usual applications, the important questions to ask have always been how to increase production efficiency, how to increase cost competitiveness and how to improve quality, delivery time and overall efficiency. But when developing new business areas, another important

**TOPIC 4** What issues related to human resources education is NTN facing?

**Wada:** I think NTN is a good company that implements above-average human resources education. It is an outstanding company that generates both sales and profits. That is why I would like to see this company attract applicants with a bit more ambition and drive. I think its brand image still has not achieved nationwide penetration in Japan, so I think the TV commercials which have started since last fiscal year play a great role to improve brand image. But I feel some things are lacking. Its recognition level in Osaka prefecture, Japan, is not very high despite it being an Osaka company. Tokyo, the capital of Japan, has a wealth of human resources, and raising the recognition level there will be an important issue. NTN should appeal a point that we can provide our employees with the attractive job opportunities.

**TOPIC 5** As an outside director, what message do you have for NTN?

**Wada:** There are a lot of very sober and serious people among NTN's top management. That's a very good thing, but it is also a shortcoming. I would like to see some more spirited people in management. I would also like the employees who are in contact with customers to incorporate an awareness of the company's brand image into their dealings with them. Although it will be important to get input from all the employees on the question of how to improve the company's brand image. NTN produced some TV commercials in Japan when it marked its centennial year. The ads have introduced NTN to people with no prior connection to the company, so I would like to see the company use this opportunity to work on improving its brand image.

**Tsuda:** Since I came to NTN from a different industry, I see a lot of things that the insiders miss. NTN is a company with a long history in a small industry, but does not know much about things outside its area. As an outside director, I am struck by how open an environment NTN has. I enjoy being able to speak my mind in this company. We outside directors often speak our minds at Board of Directors meetings, and there are long and unrestrained exchanges of opinions. NTN has a lot of growth potential. Our mission

question to ask will be whether collaborations with other industries are possible.

**Wada:** When providing dependable products for the automotive and industrial machinery industries, NTN has no problems with technology expertise. But it relies too much on business from the automotive industry. It still has not worked enough on collaborations with different industries to develop new business areas, or on providing solutions for the needs of different industries. The initial requirement for providing these solutions will be training employees to have the ability to selectively screen through market needs identified by marketing departments.

**Tsuda:** While location and TV commercials are both important considerations, I think it is also important to consider new employee training methods and to set training plans when new employees are hired.

There is currently no room for the sort of flexibility that employee placements require. But to meet future employee training needs, I think NTN will need to establish systems for handling employees flexibly and enabling overseas postings. The head office organizations will need to draw on their expertise to devise and implement these systems. Factories will also need to reduce their workforces at the same time. I also think employees with international experience will need to be placed in the head office organizations themselves.

is to find out how much we can help that growth.

**Wada/Tsuda:** Since bearings are an industry staple, there will always be a need for them. That may be why NTN has not needed a sense of crisis, resulting in a lot of areas for improvement. I see our role as finding out where and how much to develop these areas, and what sort of changes to make.



# Internal Control

## Basic Approach and Implementation System

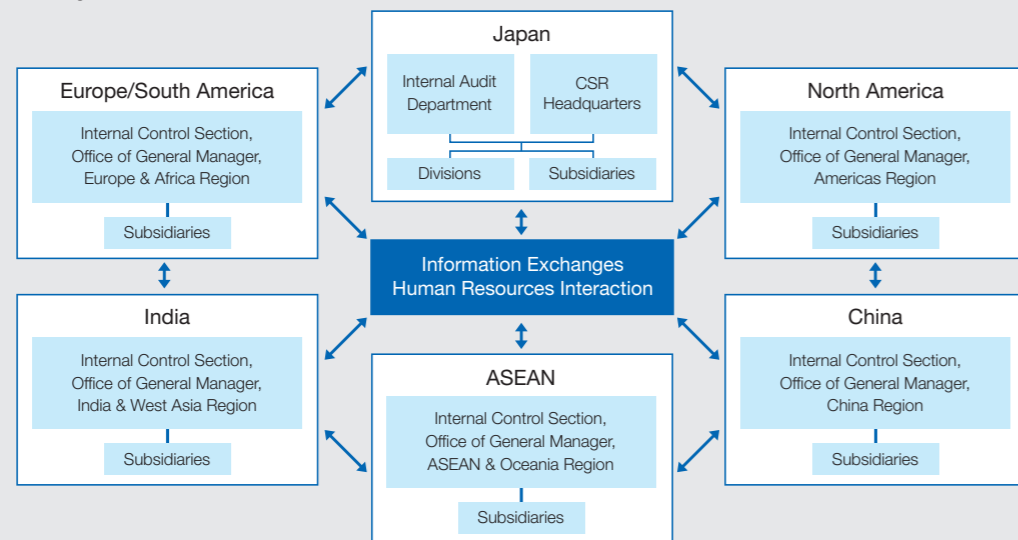
We have established the Internal Control Policy in compliance with the basic framework for internal control set forth in the Business Accounting Council's Standards and Practice Standards for Management Assessment and Audit concerning Internal Control Over Financial Reporting (Council Opinions). As specified by this policy, we have made designing and implementing an internal control system and handle risk management and compliance work one of the company's top priority areas.

The system's operation is led by the Internal Audit Department, which serves as an independent audit organization to audit business execution throughout the NTN Group.

Outside Japan, an Office of the General Manager has been established at each of our various regions outside Japan to oversee and monitor operations. Each has an Internal Control Section within it. The Internal Control Sections work with the Internal Audit Department and CSR (Corporate Social Responsibility) Headquarters (described on P. 71) to implement policies for the local region or country tailored to local needs and characteristics. The CSR Global Meeting is also held periodically to exchange information on local policies and discuss issues. The purpose of the meeting is to strengthen global group-wide internal control and promote CSR activities.

 Detailed information on the CSR Global Meeting can be viewed on our website. <https://www.ntnglobal.com/en/csr/governance/internalcontrol.html>

## Collaboration System with Internal Control Sections



## Main Activities

### Strengthening internal control worldwide

The list of group business units subjected to our company-level control assessments has grown by 2 since the fiscal year ended March 31, 2017, expanding the total to 51 worldwide (including the headquarters). 10 of the business units for assessment are ranked as significant, and we have assessed Process-level control for these 10.

The audits on regular operations had been conducted in the fiscal year ended March 31, 2017 by the Internal Audit Department for subsidiaries in the ASEAN region and South Korea. Also the same audits were conducted for 3 subsidiaries in the China region in the fiscal year ended March 31, 2018. These audits have prevented risks posed by local accounting fraud and legal violations.

In addition to these audits, 1,500 employees in 46 group subsidiaries throughout the world evaluated their president's attitude to compliance through a questionnaire survey conducted in 2017. The findings will be used in audits for purposes such as quantifying the corporate cultures or environments that might lead to misconduct or legal violations at companies in the fiscal year ended March 31, 2018.

# Risk Management

## Basic Approach and Implementation System

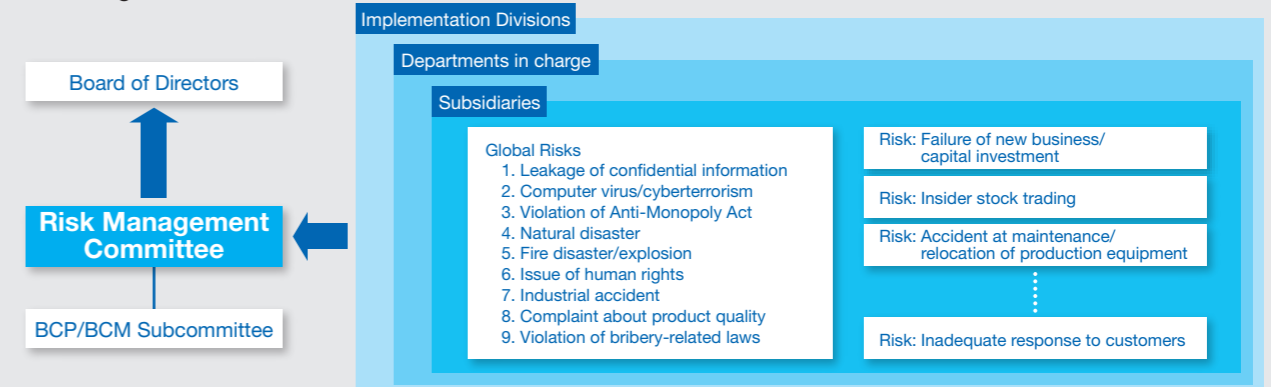
To guide our work on managing risks, we have developed the Risk Management Policy that outlines our basic approach to risk prevention and handling, and the Risk Management Regulations that set forth areas such as risk management organizations and roles.

We convene the Risk Management Committee twice a year to discuss issues such as groupwide risk management policy proposals and measures.

We also work on improving response to risk events by implementing BCP (Business Continuity Planning) and BCM (Business Continuity Management).

 Risk Management Policy can be viewed on our website. <https://www.ntnglobal.com/en/corporate/idea/policy/index.html>

## Risk Management Structure



## Main Activities

### Global Risk selection

We selected nine risks for Global Risks that are common to both domestic and overseas subsidiaries and expected to cause major impacts on management if they occur. To enable comprehensive world wide risk management for the whole NTN Group, we monitor the management of Global Risks in our domestic and overseas subsidiaries. The Risk Management Committee makes periodic revisions in response to changes in the external environment.

### Information security measures

In response to the rise of cyberattacks targeting corporations, the nine Global Risks we have selected include "Leakage of confidential information," "Computer virus/cyberterrorism."

To teach and enforce appropriate information management methods, we have created an Information Security Policy and in-house information security rules, and we provide all our employees with information on our website and e-learning-based educational programs. We have created systems for protecting all business activity-related information from threats such as theft, falsification, destruction, usage interference and leakage.

Our worldwide subsidiaries periodically report on operation conditions related to information security management, letting us stay up-to-date on current conditions throughout the NTN Group and respond as needed.

### Ongoing implementation of BCP/BCM systems

We continually implement BCP (Business Continuity Planning) and BCM (Business Continuity Management) designed to handle a major earthquake in Japan.

In the fiscal year ended March 31, 2018, we worked on identifying impeding factors and responding to issues for domestic subsidiaries and other business units. A system of organizations for rapid business recovery was created along with specific action plans. We have progressively earthquake-proofed our production equipment to minimize damage (such as by adding protections against toppling/falling). Our BCP/BCM Subcommittee (staffed by members of promoting divisions at headquarters) has checked the progress and done follow-up work.

We plan to provide training on assessing the effectiveness of established action plans in each subsidiary in the fiscal year ending March 31, 2019.

# Compliance

## Basic Approach and Implementation System

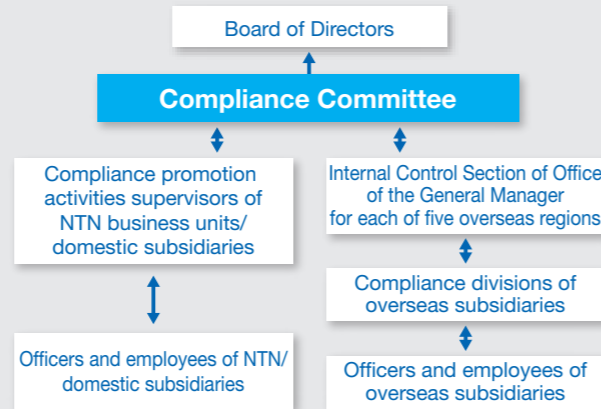
Compliance enforcement is a top priority for the company. Our definition of compliance extends to conforming with generally accepted standards and practices, obeying all applicable laws and following in-house regulations. We have created a system for enforcing compliance on a global scale.

In April 2015, we created a set of rules for compliance promotion activities along with a Compliance Committee that has subsequently met periodically to work on compliance enforcement and improvement. Among the Global Risks selected by the Risk Management Committee, the Compliance Committee handles compliance risks that could lead to legal violations.

Committee members propose and implement policies for risk mitigation in collaboration with compliance promotion activities supervisors at domestic business units and the Internal Control Sections within each Office of the General Manager in five overseas regions. The nature and progress of these activities are reported to the Board of Directors.

A whistle-blower system called Helpline has also been created to reduce compliance risks.

### Compliance enforcement structure



## Main Activities

### Corruption prevention efforts

#### Japan

We enforce in-house regulations created to reflect domestic and overseas anti-corruption laws and generally accepted standards and practices. They prohibit bribery, and set forth the rules and procedures to use when officers or employees are to provide property or profit to domestic or overseas public officials or trading partners. We also carry out rule-based audits, and are creating rules for preventing corruption among business partners.

Our domestic subsidiaries are each creating their own regulations while maintaining consistency with company policies.

#### Overseas regions

Our subsidiaries in the China region enforce in-house regulations created to reflect China's anti-corruption laws and generally accepted standards and practices. They set forth the rules and in-house procedures to use when property or profit are given to or received from public officials or trading partners. Audits are also being done to check enforcement.

ASEAN region subsidiaries have started to enforce in-house regulations localized for each country and created to reflect the applicable local laws and generally accepted standards and practices. Regulations for Thailand went into effect in June 2017, followed by regulations for Singapore and India.

Subsidiaries in the regions of Europe and the Americas are also progressively creating rules reflecting applicable local laws and generally accepted standards and practices.

### Compliance education and awareness-raising activities

#### Compliance training

##### Rank-based training

Separate training programs covering all areas of compliance are provided to employees of different ranks such as recent-graduate new employees, mid-career new employees and new managerial-level employees. Training for new managerial-level employees is designed for application to compliance enforcement in the workplace. Employees are provided with texts and study independently, taking e-learning-based comprehension tests. They are required to retake these tests until they pass, helping solidify their knowledge.

##### Business unit-specific training

Priority topics are set for each business unit, and the unit's compliance promotion activities supervisor provides separate training for each. Supervisors and staff take part in a mass training meeting held at the headquarters once a year. The event helps shape activities by providing opportunities to discuss and share information about issues in our group compliance work, and training activity topics and content.

#### Topic-specific training

Applicable departments are periodically given individual training on specific topics such as Antimonopoly Act compliance, corruption prevention, security trade control and harassment prevention. We also create and administer training programs whenever needed, such as compliance training for CEOs of domestic and overseas subsidiaries.

#### Training in overseas regions

In the overseas regions, the Internal Control Sections oversee the creation and administration of training activities tailored to local characteristics and needs while ensuring consistency with the company's policies. One area of focus is corruption prevention, for which training is provided online and through a number of other training activities. The overseas regions have made varying degrees of progress in creating rules, so the training is tailored to the amount of progress attained in each case.

#### Compliance awareness survey

We conduct an ongoing compliance awareness survey once every year to assess how effective education and awareness-raising activities have been and how well the Business Code of Conduct has been absorbed. The surveys let us identify issues to work on, and are used to enhance the compliance activities for the following year.

#### Compliance database "NTN's Compliance"

NTN's Compliance is a database for sharing compliance-related information. It is used to present compliance-related incidents arising within our group.

### Helpline (whistle-blower system) and educational activities

Our domestic business units have created a whistle-blower system called Helpline with both in-house and outside contact points. Employees can use the system to voice various concerns related to infractions of laws, Business Code of Conduct or in-house regulations. The discussion topics cover harassment, corruption and breaches of the Antimonopoly Act. Issues raised at Helpline contact points are reported to company committees while upholding the company's duty to maintain confidentiality. Compliance-related issues are reported to the Compliance Committee. Issues related to laws on competition (Antimonopoly Act and Subcontracting Act) are reported to the Fair Trade Monitoring Committee. A report on the system's operation is also provided to the Board of Directors (once a year). Whistle-blower information is used in the activities of the two committees and helps improve the our group-wide compliance work. To encourage employees to use the system, information on the Helpline contact points is provided in compliance training information and CSR guidebooks, and posted on our intranet. Whistle-blower systems are being progressively created and operated also in overseas regions, where they are tailored to local needs and circumstances.



### Antimonopoly Act compliance activities

To ensure compliance with the Antimonopoly Act and Subcontracting Act, the Fair Trade Promoting Department undertakes most activities under the guidance of the Fair Trade Monitoring Committee. The Committee is chaired by the President and reports directly to the Board of Directors.

The Fair Trade Promoting Department organizes awareness-raising activities such as internal training and e-learning programs. It also creates a system for keeping abreast of all contact with competitors through measures such as self-audits for Antimonopoly Act compliance and prior applications for preventing and monitoring competitor contact. The Department's main awareness-raising activities in the fiscal year ended March 31, 2018 were (1) an Antimonopoly Act compliance training course (August, 379 trainees), (2) a compliance training course for sales staff (January, 585 trainees), and (3) an Antimonopoly Act e-learning program (November to December, 1,430 trainees). We have held a Compliance Day on July 26 every year since 2016. A special message from the President on this day gives employees the chance to reaffirm the importance of compliance.

Working with the Internal Control Section for each overseas region, the overseas business units have also created systems for activities such as locally led training, prior applications and self-audits. They have created legal compliance systems adapted to local laws on competition.



Our other compliance activities can be viewed on our website.  
<https://www.ntnglobal.com/en/csr/governance/compliance.html>

# CSR Management

## Basic Approach and Implementation System

We have established the CSR (Corporate Social Responsibility) policy in the spirit of our corporate philosophy. We define CSR as:

- Engaging in corporate activities that incorporate concern for the environment and initiatives to ensure fairness and contribute to the community
- Fulfilling the duty of accountability to stakeholders (such as customers, business partners, shareholders, employees, the environment, local communities, etc.)
- Working to improve corporate activities so that they go beyond economic activities and encompass the environment and community

In 2014, we established the CSR Headquarters to strengthen our group-wide CSR activities. Also, in May 2018, CSR Headquarters was re-organized and comprises four departments: Global Risk Management Department (handling risk management), Legal Department (handling compliance), Fair Trade Promoting Department (handling Antimonopoly Act), and Corporate Value Promotion Department (handling activities designed to help improve corporate value). The departments work with each other to implement a variety of CSR activities, while managers and other CSR staff in charge of CSR are appointed at domestic and overseas subsidiaries to plan and perform activities tailored to local needs and characteristics.



CSR policy can be viewed on our website.  
<https://www.ntnglobal.com/en/corporate/idea/policy/csr.html>

## Main Activities

### UN Global Compact

In 2015, we endorsed the United Nations Global Compact (an international initiative for developing a global framework for sustainable worldwide growth). Our aim is to become a truly global company trusted on the world stage as we support ten principles in the areas of human rights, labour, the environment and anti-corruption. Our CSR Committee is convened periodically to discuss issues and policies affecting the effective implementation of CSR activities in the areas of greatest worldwide significance today, such as supply chain CSR, human rights and diversity.



### Corporate philosophy awareness raising




Under “Our Vision” -the company’s long-term vision- our goal is to establish “a company where its corporate philosophy is understood by all employees around the world and where all employees think and act for themselves.” We intend to forge ahead with initiatives to raise awareness of the corporate philosophy. The three main initiatives carried out for the fiscal year ended March 31, 2018 are described below.

1. To improve the sympathy and understanding for the contents of the corporate philosophy, we held the Corporate Philosophy Dialog for the management and division heads who play leading roles in practicing the corporate philosophy.
2. We reviewed the framework of our corporate philosophy, and established “NTN Spirit” (described on P.4) by incorporating some of the language, principles and motto relied on by local business units and subsidiaries. NTN Spirit is our corporate philosophy code of conduct that specifies the attitudes and actions all group employees should emulate. These activities were designed to give employees a better understanding of the corporate philosophy and help them implement it by relating it to their own work as they carry out their routine work.
3. We carried out the “NTN PROUD AWARD” to promote implementation of the corporate philosophy. This challenging project called for employees to set and work on achieving topics and targets linking the corporate philosophy to their routine work. Our corporate philosophy

consists of MISSION (Reason for being) and VALUES (four basic values), and we set four categories corresponding to these basic values. 1,711 employees took part in 164 teams from domestic and overseas business sites. Both achievements and activity processes were considered when selecting the award winner.

We will continuously implement various activities for instilling the corporate philosophy.

#### Awards in each category

-  **Field of Creation**  
“Development of High-speed Parts Inspection Robots to Replace Human Eyes”
-  **Field of Service Solution**  
“Enhancing NTN Brand Awareness through Collaboration with Professional Baseball Team by using Hand Spinner”
-  **Field of Contribution to the Society** Grand Prix  
“Support Integration of Young People in State Welfare Institutions” (described on P.90)
-  **Field of Globalization**  
“Improving Communication Skills by Learning Japanese Language and Culture”

## Stakeholder Dialog

To incorporate stakeholder input into our corporate activities, we have annually held our Stakeholder Dialog since 2015 with experts representing a number of CSR-related fields. The fourth dialog was held in June 2018, and provided some valuable input.

### Experts



**Katsuhiko Kokubu**  
Professor, Graduate School of Business Administration  
Kobe University



**Yoko Hiyama**  
Lawyer admitted in Japan and New York,  
Hiyama & Kubota Law Offices



**Masaru Kaizaki**  
General Manager of Planning Department, Sustainability Office  
OMRON Corporation



**Eriko Nashioka** (Facilitator)  
Certified Public Accountant and Representative Director at Institute for Environmental Management Accounting

### NTN

Corporate General Manager of CSR Headquarters .....Hiroshi Nakano  
 Personnel Department Manager ..... Kenji Nono  
 Corporate Planning Department Manager..... Takanobu Ozawa

Corporate General Manager of Procurement Headquarters ...Kunio Kamo  
 General Affairs & Environmental Management  
 Department Manager..... Masahiro Kusunose  
 Corporate Value Promotion Department Manager..... Kouhei Iguchi

### TOPIC 1 Corporate philosophy

Creating methods of concretization such as the award system and the creation of a continuous project structure which employees voluntarily participate in, will be an important requirement for raising corporate philosophy awareness. It will be necessary for employees to think about the corporate philosophy code of conduct (NTN Spirit) and work on their own initiative to encourage actions inspired by the corporate philosophy. Continuing ongoing activities will also be effective, such as by having top management make personal visits to domestic and overseas business sites and convey the dialogs on the spirit of the corporate philosophy. In addition to organizing the NTN PROUD AWARD, we also recommend activities designed to make the corporate philosophy more relatable. For example, the results or processes of implementing the NTN PROUD AWARD could be illustrated in videos shown to all employees.

### TOPIC 2 Materiality

NTN engages in a comprehensive set of CSR activities, but these activities could be improved by deciding on their materiality to indicate which way the company is heading. It is important to hold ample discussions with units such as business divisions and technical divisions in addition to head office divisions. It is also important for management to make decisions on the issues discussed. Materiality selection procedures are something the company decides on autonomously. Materiality should be determined by scoring and mapping analysis, consistently ensured to adhere to the Medium-term Management Plan. The company should ultimately consider SDGs and other issues of public concern while keeping strategic assessments of materiality in mind.

### TOPIC 3 Environmental issues

Producing environmentally friendly products is a very good thing. But quantifying the amount of CO<sub>2</sub> reductions of certain products may cause a risk of greenwashing<sup>1</sup> in overseas business sites, so enough care is needed when disseminating information from Japan and overseas. Even for quantification done in conformance with the SBT (Science Based Target)<sup>2</sup> initiative, measurement accuracy and improvement levels should be prioritized instead of just releasing indicators. Scope 3 work also needs to cover approaches to improvements as well as just measurements. If possible, the ideal procedure would be to focus on key processes for CO<sub>2</sub> reductions, and to include disclosure of reduction effects.

<sup>1</sup>1: Fraudulently making a product appear to be environmentally friendly <sup>2</sup>2: Setting targets for companies that are consistent with scientific findings

### TOPIC 4 Supply chain CSR, human rights and governance

Key suppliers should be designated and managed instead of just setting the same standards for all suppliers, and we recommend gathering a wide range of information.

Considering global management, local areas should generally be handled by the head office, and ideally not left completely up to local business sites. It is also important to strengthen internal control functions and improve awareness among employees. Especially, in the area of human rights, human rights should be addressed on a global level even when no human rights issues exist in relation to local domestic laws. We recommend working on making human rights effective in overseas locations with different laws and cultures.

# HUMAN RESOURCES

## Special Feature 3

### “HITZUKURI” behind our “MONOZUKURI”

#### -Developing the Human Resources behind our Manufacturing-

To produce the workforce needed to make us more competitive in the marketplace, we provide training designed to produce globally oriented employees who can work in countries and regions throughout the world. Our Monozukuri workforce is the prime driver of our value-creation activities. This special feature looks at how we train this workforce to reliably replicate NTN's original skills and technologies at manufacturing bases throughout the world.

### Training our Monozukuri workforce

#### The three pillars of NTN's production technology training

##### Global Human Resource Development Department

Our training policy is based on the concept of using local sites, local materials and local personnel. Based on this policy, in addition to promote our efforts to increase the overseas production ratio, we provide training designed to develop employees who can play an active role in different countries or regions.

##### Production Engineering R&D Center

Researches high-precision/higher-efficiency production, and works on creating more advanced and intelligent NTN machine tools. Also works on training young production engineers.

##### Main production bases

Serve as venues for learning all the elements required for production activities, such as quality, safety, the environment, 5S/3D\* and transparency. Provide skills training and teaching in a systematic and efficient manner.

#### Programs and initiatives for human resources development

##### NTN Technical Skills Competition

Every year since 2014, the NTN Technical Skills Competition has given young technicians around the world an opportunity to pit their outstanding skills against each other and learn the importance and necessity of these skills. By spreading NTN's original skills and technologies, the event helps make our technologies more advanced while raising their standard.



##### NTN production engineer training course

A program providing planned training schemes for employees in their first year at the company. The program is designed to produce production engineers and project leaders who can work throughout the world. Production technology specialists are trained by gaining experience at manufacturing sites and the Production Engineering R&D Center starting early in their career.



##### NTN technical workshop

A program that teaches bearing production knowledge and basic manufacturing skills to young engineers to prepare them for future roles as workplace leaders. The program started in 2012, and is currently offered at our Kuwana, Iwata and Okayama business sites.



\*5S: A workplace methodology used in the Japanese manufacturing and service industries. An initialism for the words seiri, seiton, seiketsu, seiso and shitsuke (often translated as sorting, setting in order, shining, standardizing and sustaining/discipline). The words describe how to organize a work space for efficiency and effectiveness by identifying and storing the items used, maintaining the area and items, and sustaining the new order.  
3D: An extension of the 5S methodology. The three Ds are teichi, teihin and teiryō (define area, define product and determine quantities).

## Meisters with advanced special abilities are the key to pass on skills at NTN

### Meister program

Our Meister program began in 2005 as a way to raise the standard of manufacturing skills and techniques and ensure they are passed on to the next generation of employees.

Worker skill has a direct effect on product quality for manufacturing processes such as heat treatment and forging, making ongoing worker skill training crucial for these processes. Meisters specialize in heat treatment, forging/pressing, facility maintenance and other skill areas that need to be taught to the next generation. Meisters for these areas are certified by the Meister Certification Committee that is held once per year to make the final selection from among candidates meeting a demanding set of requirements. Meister candidates are selected from among the high skill-level employees at each business site by certifying Junior Meisters. There are 5 Meisters and 77 Junior Meisters working at our business sites as of April 2018.

Meisters leave their line work to train junior employees in the knowledge, skills and techniques they possess. They also work actively on solving technical issues facing manufacturing departments such as by advising on technical assistance for overseas business areas and on new product development.



##### Meisters

Employees with extensive practical experience and advanced knowledge and skills recognized throughout the company. Their work ethic and the guidance they provide to subordinates make Meisters a model for other employees.



##### Junior Meisters

Meister candidate employees recognized as having the capacity for acquiring advanced knowledge and skills.



Employees receiving guidance from a Meister

##### Designated skill areas

Forging/pressing	High-frequency heat treatment	Electrical control
Bonding technology/welding	Grinding	Production technology
Turning	Assembly	Facility maintenance
Controlled atmosphere heat treatment	Inspection/measurement	Injection molding
		Mechanical drawing

## NTN's strategies for human resources: A department head's view



**Tomoko Tanaka**  
Global Human Resource Development Department Manager

We are making business areas increasingly global, expanding manufacturing bases throughout the world. Because of this business expansion, it is becoming increasingly important to instill the NTN's mindset in Monozukuri to employees working all over the world and to build the system to pass on skills and technologies we have developed so far to the next generation. Moreover, in Japan, as the role of mother function of Monozukuri is more demanded, we are striving to strengthen the role through various activities such as NTN Technical Skills Competition, Global QC Circle Convention, etc.

We have hired a diverse range of employees, who differ by gender, race, nation and work style. We therefore believe it is necessary to foster a workplace environment where all our employees can deepen mutual understanding and fully demonstrate their abilities. In Japan, we also make efforts to build the system for child and elder's care as well as introduction of telecommuting.

We contribute to development of a smooth society by implementing various activities in collaboration among the entire NTN Group based on the recognition of "the human resources are the most important asset driving our business."



Information on careers and training at NTN can be viewed on our website.  
<https://www.ntnglobal.com/en/csr/sc/employee.html>

# Human Resources



Relationship to SDGs

## Basic Approach

We feel that a diverse workforce is a crucial requirement for remaining competitive and producing innovation, so promoting diversity\* is one of our management strategies.

We aim to create a workplace environment that lets all employees reach their full potential while maintaining a good work-life balance. To do so, we implement a range of different policies and work to ensure a safe work environment that protects employees from health or other concerns.

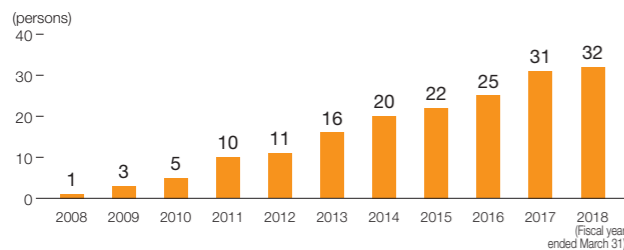
\* NTN's diversity objectives:  
To create a work environment that lets everyone reach their full potential, and to grow our organization by harnessing the personal growth achieved by our employees through job fulfillment. These objectives will be attained by understanding and recognizing the various differences among all our employees in attributes such as gender, age, career and work style.

### Diversity

#### 1 Encouraging women in the workplace

We make ongoing and proactive efforts to hire women. We are also active in awareness-raising to encourage women in the workplace such as holding seminars for executive and managerial-level positions. As shown below, the number of female managerial-level employees has been steadily increasing in recent years.

##### Rise in women in management positions at NTN\*



\* Includes three consolidated subsidiaries to be merged in October 2018: NTN KONGO CORP., NTN MIKUMO COMPANY LTD. and NTN ENGINEERING PLASTICS CORP.

We are also working on expanding our Bear Kids Land intra-company child daycare centers to enable employees to balance their work and childcare needs. We opened the first one at our Iwata (Shizuoka Prefecture) business site in April 2009, and followed it with a second one at our Kuwana (Mie Prefecture) business site in April 2018.



Exterior of Bear Kids Land Kuwana and some of the children in its care (inset)

#### 2 Hiring persons with disabilities and seniors

Regarding the employment of persons with disabilities, we have established three "Dream Workshops" at Kuwana, Iwata and Okayama Works. This initiative, implemented in cooperation with special needs schools, provides a work environment in which persons with intellectual disabilities can fill an important role. We have achieved an employment rate of persons with disabilities of 2.06% in the fiscal year ended March 31, 2018.

To help experienced workers teach young employees their knowledge and skills, we actively encourage the rehiring of retired seniors, attaining a 62% rehiring rate in the fiscal year ended March 31, 2018.



Employees with intellectual disabilities in a Dream Workshop

#### 3 Initiatives for a fulfilling working life

We promote several different initiatives to accommodate a diverse range of work styles. (Example)

##### NTN Job Return scheme

A rehiring system for employees who left their jobs due to life events. Covers employees who leave work for reasons of marriage, childbirth, childcare and even long-term care.

##### Maternity leave system

##### Childcare leave system

##### Long-term care leave system

##### Leave for partner's childbirth

##### Shortened working hours for childcare

##### Shortened working hours for long-term care

##### Telecommuting system

## Activities: Key Points and Achievements

Number of women in management positions 1 (FY ended March 31, 2008) ▶ 32 (FY ended March 31, 2018) ...	1	Employment rate of persons with disabilities 2.06% .....	2
Number of intra-company child daycare centers 1 ▶ 2 .....	1	Number of workplace incidents causing lost work time 5 ▶ 1 .....	6
Post-retirement rehiring rate 62% .....	2	Rate of workplace incidents causing lost work time 0.41 ▶ 0.08 .....	6

### Creating a secure workplace environment

#### 4 Respect for human rights

Supporting and respecting the protection of internationally proclaimed human rights, and ensuring non-complicity in human rights abuses are the two human rights principles contained in the United Nations Global Compact that we have endorsed since 2015. We provide group employees with training in these principles to improve their awareness of them. We also use reporting systems such as our Helpline (whistle-blower system) to check on human rights violations.

#### 5 Employee health

We provide 100% of the designated health checks for employees engaged in work applicable to the provisions of Article 13-1-2 of Japan's Ordinance on Industrial Safety and Health. (In our case, the applicable work types include work in significantly hot locations and late-night work.) We also provide a wide range of mental health accommodations at opportunities such as induction training for new employees or when promoting managerial-level employees. These accommodations include mental health training, and occupational medical referrals for high-stress individuals identified by stress checks.

#### 6 Occupational safety and health

We are working on improving danger sensitivity by providing ongoing safety education using 3D virtual hazard simulators and education from workplace safety consultants. We also succeeded in reducing the number of workplace incidents causing lost work time in the fiscal year ended March 31, 2018 by using past workplace incidents at business sites to set fixed standards and subjecting them to external audits by other business sites.

Nine business sites have acquired Occupational Safety and Health Management System (OSHMS) certifications. The Kuwana Works acquired certification for the ISO 45001 international occupational safety and health standard in January 2018. We are working on establishing safety management systems that meet global standards, and will progressively increase the number of certified business sites in the years ahead.

Occupational safety and health also has been a priority for our overseas business sites, where hazard simulation centers called "SAFETY DOJO" have been set up. We have started working on worldwide efforts to spread awareness for the importance of occupational safety and health. For example, the NTN PROUD AWARD (described on P.71) gave the employees of NTN DRIVESHAFT ANDERSON, INC. (NDA) an opportunity to voluntarily present their work on raising workplace safety awareness.

Improving occupational safety and health awareness will continue to be a focus in the years ahead.



3D virtual hazard simulator



Working on occupational safety and health at NDA



NDA employees who participated in the NTN PROUD AWARD

Detailed information on initiatives for a fulfilling working life and other HR development initiatives can be viewed on our website.  
<https://www.ntnglobal.com/en/csr/sc/employee.html>

# Procurement



Relationship to SDGs

## Basic Approach

The Basic Procurement Policy clarifies our direction with the concept of: globalization, fairness/impartiality, and environmental preservation. These principles are intended to build up relationships of trust with business partners and NTN Procurement Departments, as well as its related departments.

We work to conserve the environment through our activities as defined in the NTN Group Green Procurement Standards, giving priority to our business partners with outstanding performance for environmental conservation and environmental quality. We also encourage our partners to take proactive CSR actions positively and proclaim that in the NTN CSR Procurement Guidelines. Our domestic and overseas production bases work to ensure that supplies are procured locally or from the optimal locations.



Basic Procurement Policy, NTN Group Green Procurement Standards and NTN CSR Procurement Guidelines can be viewed on our website. <https://www.ntnglobal.com/en/csr/sc/client.html>

## 1 Questionnaire survey for business partners

To raise recognition for the NTN CSR Procurement Guidelines and check compliance with them, we conducted a survey for our 293 business partners.

The questionnaire consisted of seven topics on the work being done by business partners for various issues. More than 87% of the respondents answered 'completed' or 'on the way to accomplish' for five topics such as the environment, the human rights and the labor issues, while fewer than 80% gave positive responses for the questions about business continuity management and social contributions.

The result of the survey is being used to provide the agenda for discussions to tackle problems for CSR activities. Through discussion and sharing examples of successful work, we support our business partner activities and ensure our supply chain management is robust.

### Survey results



## 2 Supplier Meeting

We held "Supplier Meeting" for the first time this year. The purpose of this event was to share a better understanding for our business activities with business partners, and to build up a teamwork. Representatives from 71 business partners attended. Summary of our business circumstances and our global business promotion were presented, and a lecture was given by outside instructor. The officers in charge of the Procurement requested the attendees to step up their CSR procurement activities on their activities. This event also included a social meeting between business partners and NTN, at top management level to get closer each other.

We will continue to hold the Supplier Meeting in the fiscal year ended March 31, 2019, the first year of our new Midterm Management Plan (DRIVE NTN 100). We will continue to reinforce the partnership between business partners with mutual trust.



Calling on business partners to step up their CSR procurement activities

## Activities: Key Points and Achievements

Promoting supply chain management.....	1	Establishing new subcontracting self-auditor system .....	4
Supplier Meeting .....	2	Subcontracting self-auditing rate <b>95%</b> .....	4
Business partner response rate for conflict minerals survey <b>92%</b> .....	3	Procurement locally and from the most appropriate regions.....	5

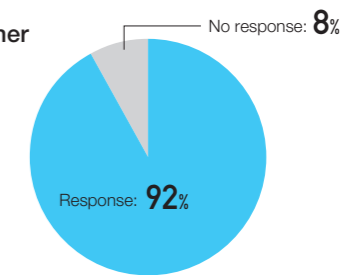
## 3 Conflict minerals survey

We conduct a survey periodically, to ensure that certain materials and our finished products do not contain particular materials that could be a source of funds for armed groups in conflict zones, or misused for immoral issues such as human rights violations, illegal mining and smuggling. We respond to customer's inquiries concerning conflict materials based on the results of this survey.

In the fiscal year ended March 31, 2018, we traced back through the supply chain to identify material refiners through a survey, requested to 293 business partners. More than 90% of partners responded with answers indicating that they do not use any conflict minerals.

We will continue to conduct the survey periodically. We will take appropriate countermeasures when any risk is found, to avoid mineral resource purchase from actual conflict zones or high-risk zones.

### Business partner response rate



## 4 Subcontracting Act compliance work

### Subcontracting self-auditor system

In the fiscal year ended March 31, 2018, we organized a new subcontracting self-auditor system to facilitate business sites to autonomously comply with Subcontracting Act.

The Procurement Headquarters holds a Subcontracting self-auditor training course once a year to provide education for candidates who have basic knowledge of the Subcontracting Act and at least one year of practical experience. The course certified 42 new self-auditors who passed the certification test in the fiscal year ended March 31, 2018.

### Subcontracting self-audits

The subcontracting self-audits are conducted at domestic bases. They were generally conducted in the presence of the Procurement Headquarters. In the fiscal year ended March 31, 2018, we switched to a system of self-audits led by subcontracting self-auditors. Subcontracting self-audits were done at 21 domestic bases (20 production bases and one research base). They were done in the presence of the Procurement Headquarters at seven of these bases to enable checks of the self-audit processes.

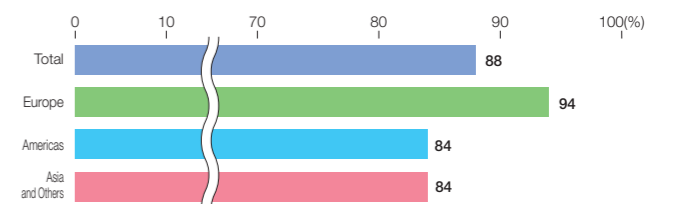
## 5 Procurement locally and from the most appropriate regions

Both in Japan and overseas, our worldwide production bases work to ensure that supplies are procured locally or from optimal suppliers in any location.

We work under the bases to maximize local procurement even under different business customs and

other difficulties. Along with economic factors, the benefit to the local job market will be considered when making procurement decisions, as well.

### Ratio of Local Procurement (by region)



Exchanging opinions between Japan and overseas



# Production



Relationship to SDGs

## Basic Approach

In addition to producing worldwide, we provide our products to customers with the same outstanding quality, cost and delivery time regardless of their place of origin. We have the top share of the hub bearing market and second-highest share of the driveshaft market worldwide.

"On local sites with local materials by local personnel" is a cornerstone of our production approach. We have used this approach to establish and maintain a global production system composed of local production bases managed by local employees and using local materials and equipment.



Hub bearing Driveshaft

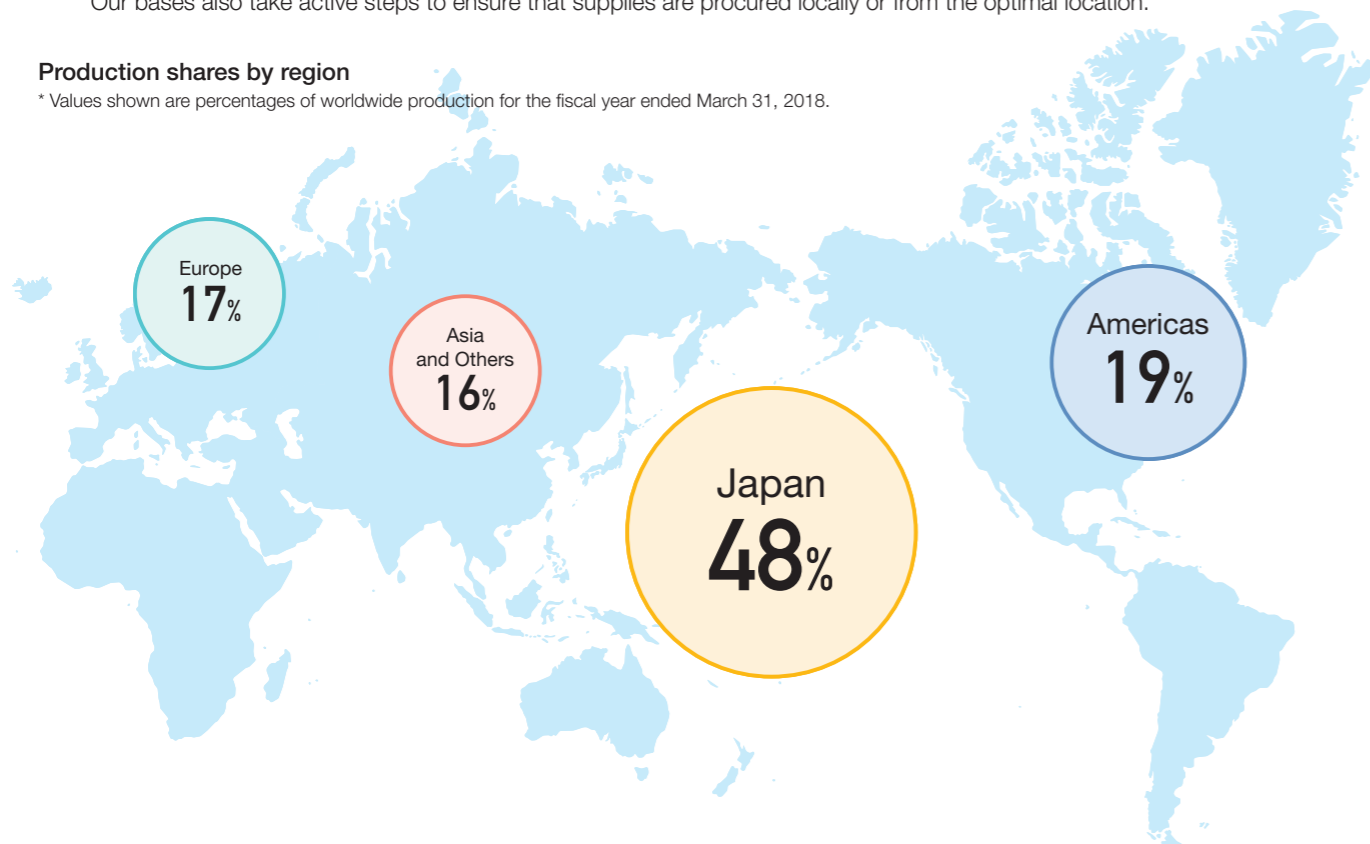
## 1 Global production network

Our production bases in Japan, the Americas, Europe and Asia proactively locate their production activities in the customer regions or the optimal region as required to meet customer needs. Demand is expected to continue increasing overseas, and we will continue expanding our local production activities overseas to meet them.

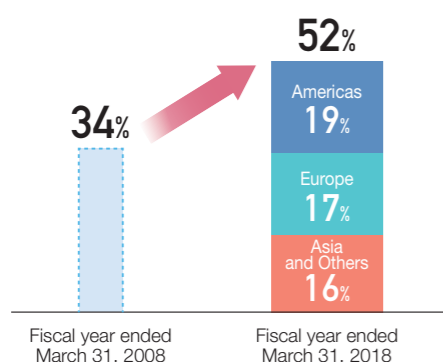
Our bases also take active steps to ensure that supplies are procured locally or from the optimal location.

### Production shares by region

\* Values shown are percentages of worldwide production for the fiscal year ended March 31, 2018.



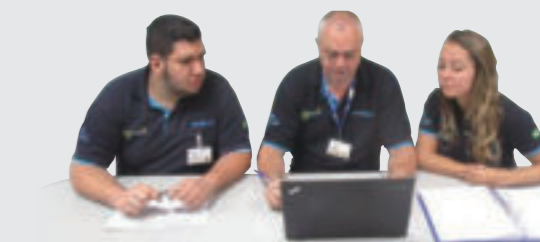
### Growth of overseas production rate



New driveshaft plant in U.S.A (2018)

## Activities: Key Points and Achievements

- 1 Production in the customer regions/the optimal regions ...
- 2 In-house manufacturing pre-processes.....
- 3 Next-generation production equipment development....



Meeting to discuss productivity improvement

## 2 In-house manufacturing pre-processes and rolling element production

We are actively working on having the manufacturing pre-processes of forging, turning and heat treatment done in-house. Since they usually require large capital investments, manufacturing pre-processes are often outsourced to suppliers. But by handling key manufacturing pre-processes in-house, our domestic and overseas bases will be able to generate benefits unmatched by competitors.

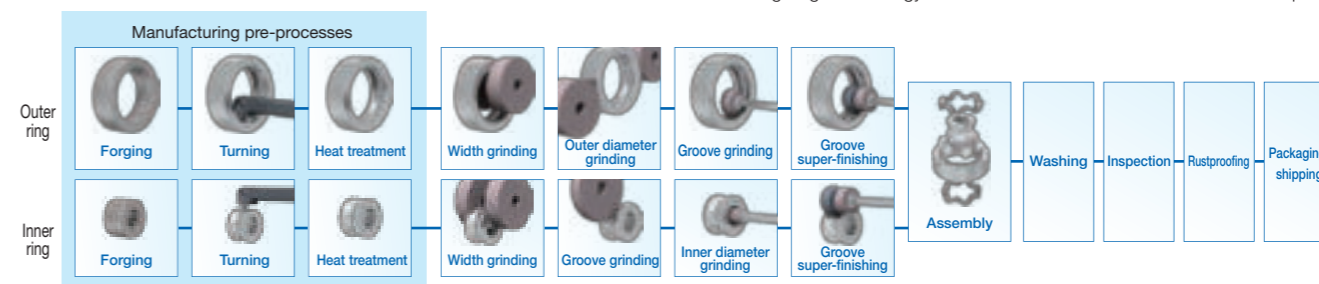
In our forging processes, we are working on improving "Near net shape" which is a shaping technique that produces initial shapes closely resembling the finished product. The technique increases post-processing efficiency and environmental benefits by reducing the amount of material discarded and processing time during the subsequent turning process. Heat treatment process greatly affects product performance and life, and it is done in-house. We are accumulating a portfolio of in-house material composition research and production technologies, working to

develop cutting-edge heat treatment technologies such as induction hardening. These efforts will help improve bearing performance and make us more competitive. The rolling elements (balls and rollers) used in bearings are also being produced in-house.



Cutting-edge technology in use at NTN NOTO CORP.'s heat treatment plant

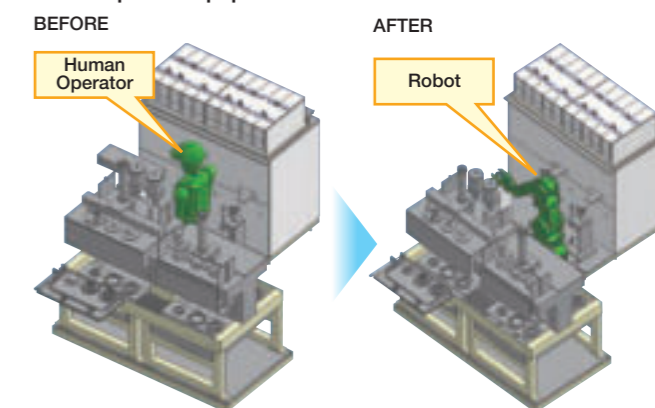
### Main manufacturing processes of bearings



## 3 Developing manufacturing technology/equipment

Our manufacturing equipment has been produced (designed/ manufactured) in-house since our founding. Our in-house Production Engineering R&D Center researches and develops manufacturing technologies, and designs and manufactures manufacturing equipment. It is now also working on developing next-generation equipment incorporating IoT and AI functions. Examples include our Grow Up series of line equipment\* enabling labor-saving adapted to the economic growth of emerging nations, and electron-beam welding (EBW) equipment helping driveshaft component standardization. We are also augmenting our overseas facility maintenance departments, creating a system for local equipment overhauls and renovations.

### Grow Up line equipment



\* Grow Up line equipment:  
A series of semiautomatic equipment supporting later addition of robots and conveyor units to adapt to the labor cost structure of emerging nations.

# Quality



Relationship to SDGs

## Basic Approach

NTN's Basic Quality Policy specifies all the basic principles that shape our manufacturing approach. We use it to work on maintaining and improving product quality throughout the world, aiming for high quality that satisfies all our customers.

To help increase customer satisfaction, our domestic and overseas sales bases have a representative for each customer and sales distributor. The use of dedicated representatives lets us suggest the best solutions in the minimum response time when customer issues arise.

**Basic Quality Policy**  
Pursuing right quality to meet functions and specifications requested by our customers.

- Applicable quality
- Our quality should immediately respond to the change of our customer's requirements.
- Competitive quality
- We have to win quality competition.
- Quality for economy
- Quality should benefit our company.

**Quality Slogan**  
Quality is our future  
—Quality paves the way for our future.—

## Activities: Key Points and Achievements

Quality information acquired using G-QUICK .....	<b>1</b>	Quality management system certification rate	<b>4</b>
Specialized quality education program.....	<b>2</b>	Sales TQM activities .....	<b>5</b>
Global QC Circle Convention .....	<b>3</b>	Technical Service Units throughout the world.....	<b>6</b>

## 1 Strengthening our global quality assurance system

To meet global market demand, we promote local production and have created a global production network. The smooth and reliable transfer of mother plant production systems is a key requirement for ensuring uniform worldwide quality and providing a quality assurance system. Creating more robust rules for production transfers and process changes is one area of focus. By comparing the quality standards from different production plants, we defined higher-level requirements to ensure stable quality from the very start of production, and we are working to ensure compliance with these rules.

To strengthen the quality of steel material worldwide, we created a Material Management Group, within the Quality Assurance Division, to strictly control the inspection method and acceptance criteria of steel materials used worldwide and centralize management. We are grasping variations of quality and change points of the steel manufacturer at an early stage to prevent market defects caused by materials.

In addition, by using G-QUICK, which centrally manages quality survey requests from customers around the world and quality information such as product investigation and complaints, we can promptly deploy the information to relevant departments and solve problems in early stages.

## 4 IATF 16949 certification

We are proactively acquiring ISO 9001 certification (international standard for quality management systems) at domestic and overseas production bases, as well as IATF 16949 certification (additional standard for the automobile industry). The main certification acquisition in the fiscal year ended March 31, 2018 is as shown on the right.

In addition, JIS Q9100 and Nadcap which are standards for the aerospace industry, and certification for the railway industry standards IRIS (Europe) and CRCC (China) are also obtained.

**Major certification achievements** (Fiscal year ended March 31, 2018)

**ISO 9001: 39 production bases certified**

Japan	ELECTRIC MODULE PRODUCTS DIVISION	Fiscal year ended March 31, 2018
Germany	NTN Mettman (Deutschland) G.m.b.H.	Fiscal year ended March 31, 2018
Japan	GREEN ENERGY PRODUCTS DIVISION	Fiscal year ending March 31, 2019 (achieved)

**IATF 16949: 36 production bases certified**

Japan	NTN ENGINEERING PLASTICS CORP.	Fiscal year ended March 31, 2018
Japan	NTN ADVANCED MATERIALS CORP. (Kanbe Plant)	Fiscal year ended March 31, 2018
Japan	NTN ADVANCED MATERIALS CORP. (Kameyama Plant)	Fiscal year ended March 31, 2018
Japan	ELECTRIC MODULE PRODUCTS DIVISION	Fiscal year ended March 31, 2018
Mexico	NTN MANUFACTURING DE MEXICO.S.A.D.E.C.V.	Fiscal year ended March 31, 2018
U.S.A	NTN DRIVESHAFT ANDERSON, INC.	Fiscal year ending March 31, 2019 (anticipated)

- Includes bases for which switch from ISO/TS 16949 is under review.
- Applies to domestic and overseas consolidated manufacturing subsidiaries (excluding bases that have not started mass production)

## 2 Personnel training to improve Quality skills

To improve employee quality awareness and knowledge, we provided a specialized quality education program to 112 employees during the fiscal year ended March 31, 2018, including topics such as "QC Basic Course," "QC Management Course" and "QC Advanced Course." Quality education courses were also incorporated into training for assistants and leaders of QC Circle activities for the first time.



Group work at QC Basic Course

By reviewing recent quality issues and understanding the importance of quality, we are improving quality at each plant through QC Circle activities to increase quality level.

## 3 Global QC Circle Convention

Our Global QC Circle Convention has been held annually since 2011 as a way to let representatives from domestic and overseas QC Circles share and present their activity results and improvement examples. The event was designed to help improve worldwide safety, quality and productivity. Features such as a space for international interaction set up during the event gave the employees in attendance the chance to interact with each other while learning and appreciating the variety of different approaches and mindsets they possess.



A presentation being given at the Global QC Circle Convention

## 5 Sales TQM activities

We are working on improving customer satisfaction through on-the-job training and a number of other education and training programs at domestic sales bases.

One program held during the fiscal year ended March 31, 2018 was a customer strategy training program designed to investigate whether customer-oriented strategic approaches have been implemented by using Cross-SWOT analysis\* to identify each customer's strategies and tactics.

We also have a Sales TQM (Total Quality Management) program consisting of meetings and educational seminars held to review weekly activities. The program is a platform for business education, and is designed to foster the ability to think and act from the customer's perspective. Our group training is designed to produce sales reps who can think and act with initiative. The Change Leader Training program was created to produce leaders in improving negotiation skills and reforming attitudes and actions. The Basic Training for Creating Better Strategy Pitches is a program for young employees.

We will continue to focus on training programs designed to accommodate changing customer needs.

\* Cross-SWOT analysis:  
A methodology that classifies elements of business activities across the four categories of strengths, weaknesses, opportunities and threats, and evaluates and analyzes each category. Its aim is to derive strategies and tactics by crossing these categories with each other.

## 6 Technical Service Units

NTN's technical service units are completely custom-made multifunctional vans being operated throughout the world. They contain teaching and presentation materials showcasing our products, and are used to hold bearing technology workshops for customers. Since bearings are delicate products, the workshops cover the techniques and procedures needed when customers perform mounting or replacing work themselves.

Interacting with customers around the world in person gives us direct insights into their individual problems and needs.



A technical service unit and bearing technology workshop (inset)

Our other quality activities can be viewed on our website. <https://www.ntnglobal.com/en/csr/sc/customer.html>

# Environment



Relationship to SDGs

## Environment Policy and Implementation System

NTN Environment Policy has been created by the Group to reduce environmental impact and help ensure the sustainable development of society.

To implement the Policy, we have established a Company-wide Environmental Management Committee that governs Group members and subsidiaries in Japan. The Committee sets environmental targets for CO<sub>2</sub> emissions and waste reduction at individual business sites and for the Company as a whole. We are strengthening our environmental management system at individual workplaces, creating committees at our manufacturing divisions, head office and sales divisions to work on issues such as saving energy, saving resources and improving office environments.

### NTN Environment Policy

Coexistence with the global environment is a top priority for the NTN Group. Our business activities are designed to prevent environmental pollution and preserve natural capital, while our technologies reflect our unwavering efforts to help ensure the sustainable development of society.

#### 1. Technologies to help prevent global warming

The NTN Group will help prevent global warming by developing and releasing new technologies and products that help save and create energy worldwide.

#### 2. Compliance

The NTN Group will comply with all applicable environmental laws and regulations, while proactively addressing concerns expressed by customers, local communities and other stakeholders.

#### 3. Reducing environmental impact from business activities

The NTN Group will minimize environmental impacts such as emissions of CO<sub>2</sub> and regulated substances from all NTN Group business operations, while working to identify and reduce environmental impact from both upstream and downstream supply chain processes (from suppliers to customers).

#### 4. Sustainable resource use

The NTN Group will adhere closely to the three Rs approach (Reduce, Reuse, Recycle) as we work on reducing waste and resource inputs such as water and raw materials and other resources.

#### 5. Rigorously managing environmentally hazardous substances

The NTN Group will practice green procurement, rigorously manage environmentally hazardous substances used in products and manufacturing processes, and work actively to replace highly hazardous substances with alternatives.

#### 6. Protecting biodiversity

The NTN Group will work on protecting biodiversity, playing an active role in forest preservation and other environmental protection projects in partnership with local communities.

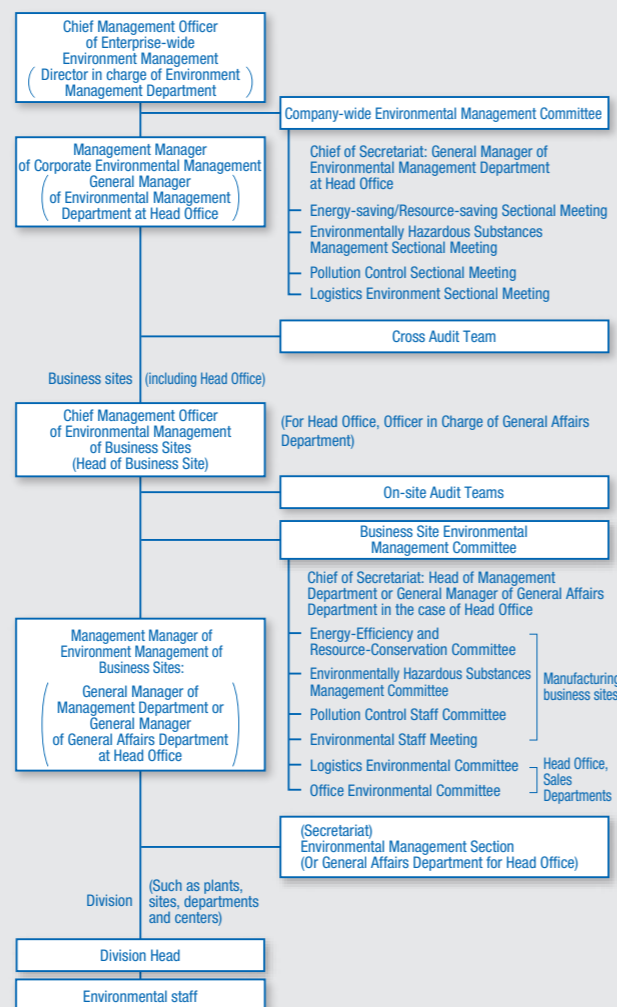
#### 7. Communication

The NTN Group will inform all NTN Group employees about the NTN Environment Policy to raise environmental awareness. We will disseminate information on environmental initiatives widely to the general public to promote active communication with the general public.

#### 8. Continually improving environmental management system

The NTN Group will improve our environmental performance by implementing and continually improving our environmental management system.

### Environmental management organization chart



A list of our ISO 14001 certified business sites can be viewed on our website.  
<https://www.ntnglobal.com/en/csr/environment/sitereport/iso14001.html>

## Activities: Key Points and Achievements

Targets for 8 goals of Environment Policy: **14** of 16 achieved

### Company-wide environmental performance for the fiscal year ended March 31, 2018

☺ Achieved ☹ Not achieved

NTN Environment Policy	Environmental Targets				Results	Self-evaluation
Technologies to help prevent global warming	Developing and releasing new technologies and products that help save and create energy				eHUB development NTN Micro Hydro Turbine development	☺
Compliance	Ongoing rigorous management of hazardous materials				Rigorous storage access management, monthly self-auditing	☺
Reducing environmental impact from business activities	Reducing CO <sub>2</sub> emissions	Reducing CO <sub>2</sub> emissions	Japan	282,000 metric tons/year max.*1	286,000 metric tons/year	☹
		Overseas	372,000 metric tons/year max.*2	355,000 metric tons/year	☺	
	Reducing CO <sub>2</sub> emissions intensity	Japan	21.2% reduction compared to fiscal year ended March 31, 1998*1	23.6% reduction compared to fiscal year ended March 31, 1998	☺	
		Overseas	5.0% reduction compared to fiscal year ended March 31, 2007*2	10.4% reduction compared to fiscal year ended March 31, 2007	☺	
Sustainable resource use	Reducing water consumption	Reducing water consumption intensity	Japan	16.8% reduction compared to fiscal year ended March 31, 2011	21.6% reduction compared to fiscal year ended March 31, 2011	☺
		Overseas	1.2% reduction compared to fiscal year ended March 31, 2015*3	12.5% reduction compared to fiscal year ended March 31, 2015	☺	
	Reducing waste, maintaining high recycling rates	Raising recycling rates	Japan	99.8% min.	99.9%	☺
		Overseas	97% min.	96.7%	☹	
	Reducing waste intensity	Japan	1.6% reduction compared to fiscal year ended March 31, 2011	3.2% reduction compared to fiscal year ended March 31, 2011	☺	
		Overseas	14.0% increase compared to fiscal year ended March 31, 2011	10.2% increase compared to fiscal year ended March 31, 2011	☺	
Reducing paper and Styrofoam	Reducing Styrofoam	Japan	Maintaining 99% reduction compared to fiscal year ended March 31, 2000	99.7% decrease compared to fiscal year ended March 31, 2000	☺	
Rigorously managing environmentally hazardous substances	Managing and reducing PRTR substance				6% decrease compared to fiscal year ended March 31, 2017	☺
Protecting biodiversity	"Kigyo no Mori" and other biodiversity protection activities		Japan	16 or more participating business sites	19 participating business sites	☺
			Overseas	7 or more participating business sites	11 participating business sites	☺
Continually improving environmental management system	Acquiring revised ISO 14001 (ISO 14001:2015) certification				Certified in November 2017	☺

\*1: Calculated using a fixed CO<sub>2</sub> emissions factor of 0.381 for electricity.  
 \*2: Includes 5 additional business sites (NTN-AT, NDB, NTPT, NNMI Chennai and Nanjing NTN).  
 \*3: Includes 4 additional business sites (NDB, NTPT, NNMI Chennai and Nanjing NTN).

### Company-wide environmental targets for the fiscal year ending March 31, 2019

NTN Environmental Policy	Environmental Targets				
Technologies to help prevent global warming	Developing and releasing new technologies and products that help save and create energy				
Compliance	Ongoing rigorous management of hazardous materials				
Reducing environmental impact from business activities	Reducing CO <sub>2</sub> emissions	Japan	296,000 metric tons/year		
		Overseas	370,000 metric tons/year max.*1		
	Reducing CO <sub>2</sub> emissions intensity	Japan	26.4% decrease compared to fiscal year ended March 31, 1998		
		Overseas	10.9% decrease compared to fiscal year ended March 31, 2007*1		
Awareness-raising and compliance enforcement for revised version of Green Procurement Standards	Green Procurement Standards form collection rate	Japan	100% collection rate		
Sustainable resource use	Reducing water consumption	Reducing water consumption intensity	Japan	24.1% decrease compared to fiscal year ended March 31, 2011	
		Overseas	13.9% decrease compared to fiscal year ended March 31, 2015*2		
	Reducing waste, maintaining high recycling rates	Raising recycling rates	Japan	99.8% min.	
		Overseas	97% min.*1	99.8% min.	
	Reducing waste intensity	Japan	3.8% decrease compared to fiscal year ended March 31, 2011		
		Overseas	5.4% increase compared to fiscal year ended March 31, 2011		
Reducing paper and Styrofoam	Reducing Styrofoam	Japan	Maintaining 99% reduction compared to fiscal year ended March 31, 2000		
Rigorously managing environmentally hazardous substances	Managing and reducing PRTR substance	PRTR substance intensities	Japan	1% decrease compared to fiscal year ended March 31, 2018	
Protecting biodiversity	"Kigyo no Mori" and other biodiversity protection activities		Increase in number of participating business sites		

\*1: Includes one additional business site (Xiangyang NTN).  
 \*2: Includes two additional business sites (NTN-AT and Xiangyang NTN).

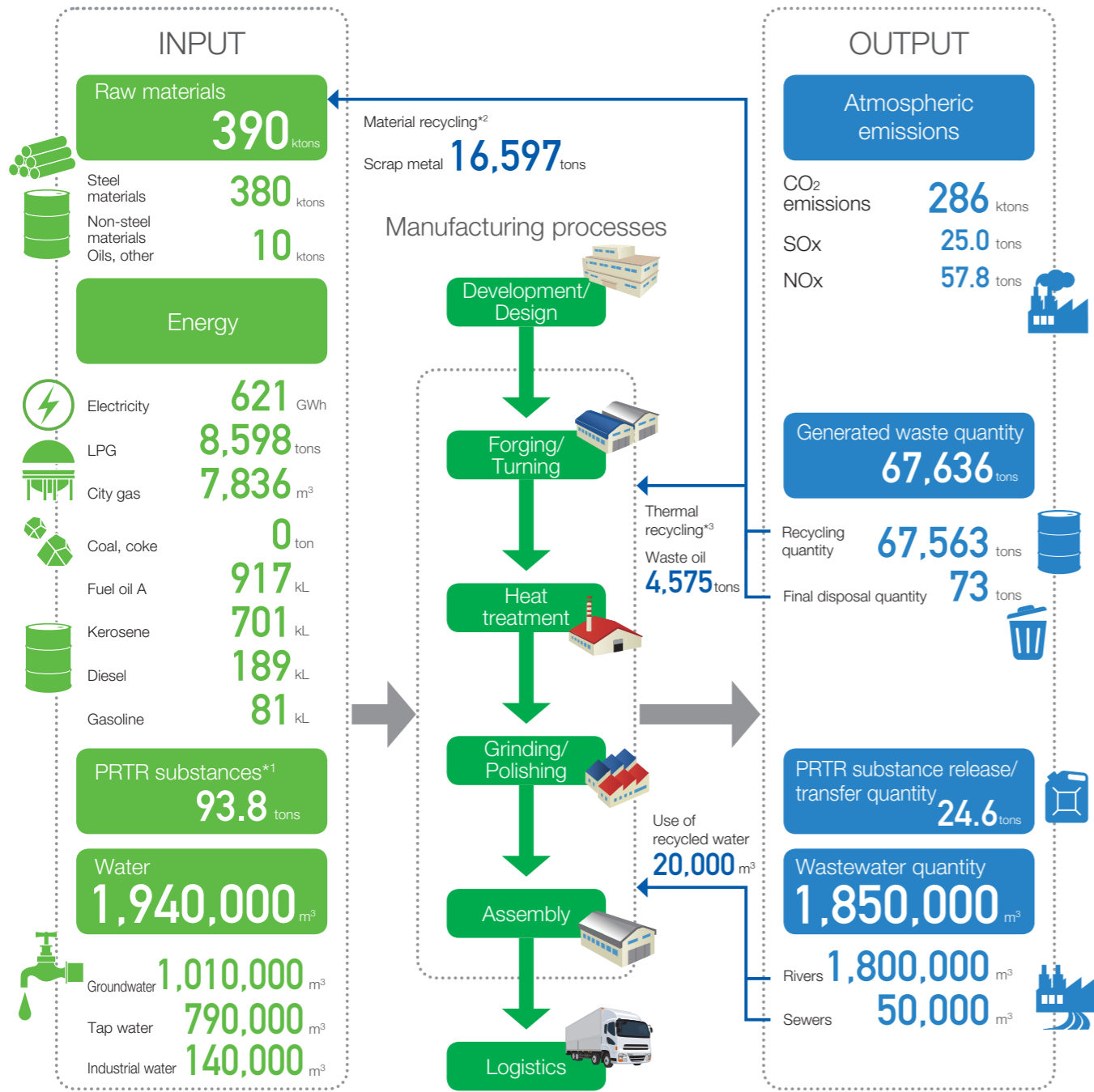
## Environment

### Business activities and environmental impact

The NTN Group works on reducing environmental impact in all processes ranging from design and development to logistics. Part of these efforts involves quantifying and working to reduce all of the inputs to manufacturing processes (raw materials, energy, chemical (PRTR) substances and water) and outputs from manufacturing processes (atmospheric emissions, waste products, chemical (PRTR) substances and wastewater).

#### Environmental impact from production activities in Japan (Fiscal year ended March 31, 2018)

The NTN Group in Japan



\*1 PRTR substances: Substances regulated under Japan's PRTR (Pollutant Release and Transfer Register) Act.

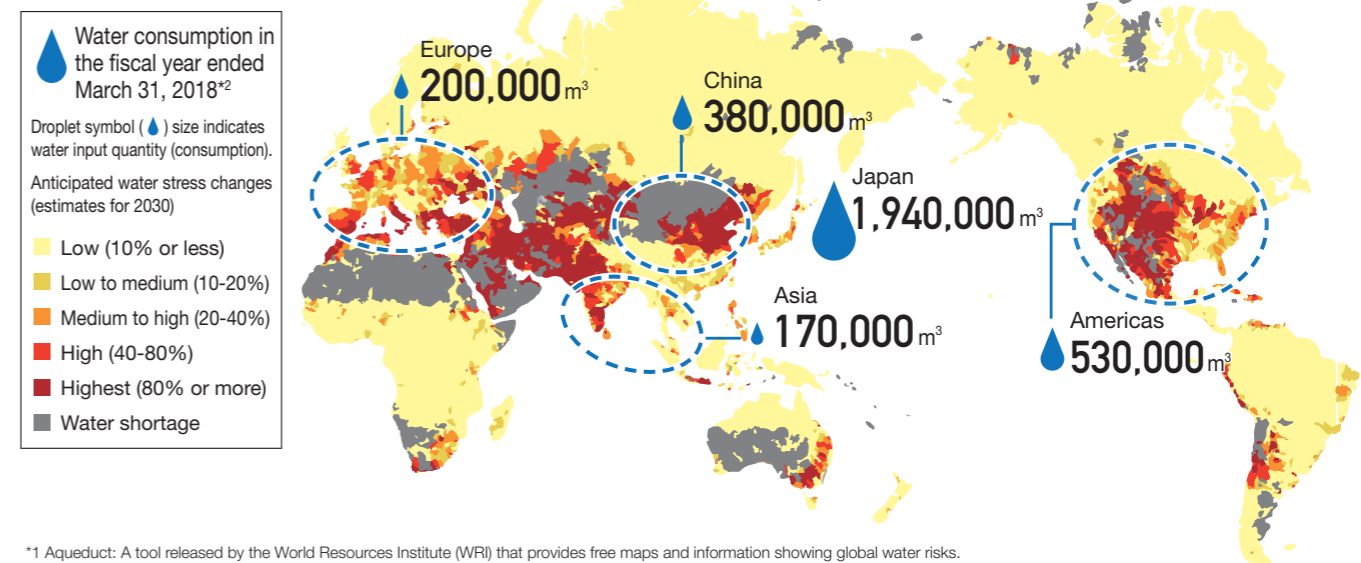
\*2 Material recycling: Recycling into raw materials.  
\*3 Thermal recycling: Recycling into fuel.

Our environmental accounting data can be viewed on our website.  
<https://www.ntnglobal.com/en/csr/environment/operation.html>

### Resource protection

As well as continuing ongoing efforts to reduce water consumption and improve water consumption intensity, the NTN Group responded to the recent rise in concern over water risks by using Aqeduct\*1 to assess these risks for individual business sites in 2017. Current and forecast quantity and quality were assessed. We will continue working to reduce water consumption and recycle water, with activities tailored to water risks and production volumes at each business site.

#### Water stress (2030 projection) and current water consumption



\*1 Aqeduct: A tool released by the World Resources Institute (WRI) that provides free maps and information showing global water risks.  
\*2 Includes 4 additional business sites (NDB, NTPT, NNMI Chennai and Nanjing NTN).

#### Combating water risks in India

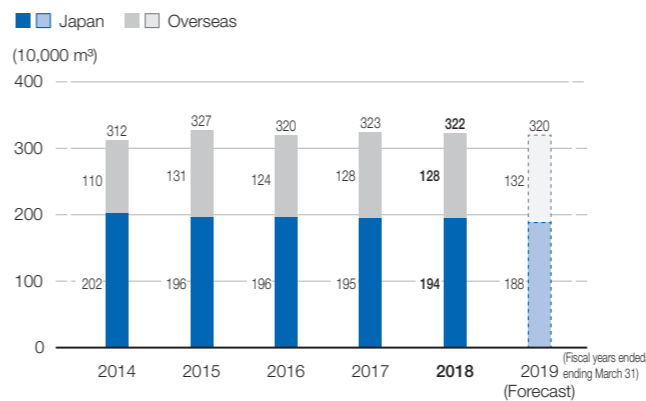
Using Aqeduct to assess water risks, we found that the Bawal plant and Chennai plant of NTN NEI Manufacturing India had the highest water risks among all the NTN business sites worldwide. The Chennai plant experiences water shortages in summer, and buys water shipped by tanker trucks as needed to handle water intake restrictions and tap water supply cuts. Since tap water quality is poor, the plant combats water risks by making planned purchases of RO\*1 and DMF\*2 treated water. As a way to reduce water consumption, the plant has installed fixed-quantity shutoff valves on all water taps.

\*1 RO: Reverse osmosis  
\*2 DMF: Dual-media filtration

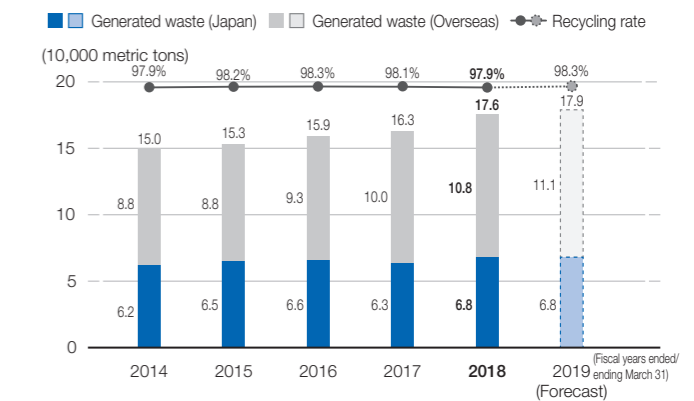


DMF water treatment tank and RO treatment facility

#### Water Consumption (Japan/Overseas)



#### Waste Quantities and Recycling Rates (Japan/Overseas)



## Environment

### Preventing global warming

The NTN Group works on reducing CO<sub>2</sub> emissions throughout all business activities. To guarantee its reliability, our emissions data is subjected to third-party verification by inspection and certification authority SGS Japan. We plan to increase the range of business activities certified under the Scope 3 (supply chain emissions) category.

#### NTN Noto Corporation installs energy-saving heat treatment equipment

NTN Noto Corporation has succeeded in saving energy by installing cutting-edge heat treatment equipment in October 2017. The equipment was installed to accommodate the creation of a comprehensive production system for the Hokuriku area along with an increase in the volume of spherical bearings currently being produced. The equipment reduces heating energy by using a high-performance insulation material and a heating furnace with a built-in atmosphere gas generator. Design features such as a timer-controlled pilot burner igniter reduce annual power consumption by about 1.1 million kWh/year relative to previous equipment (equivalent to an annual CO<sub>2</sub> emissions reduction of 421 metric tons/year). The equipment improves product quality by having a structure that keeps air away from the products during each process from heating through cooling. It also uses a new heat treatment process technology to double productivity.

#### Okayama Works switches to city gas

The Okayama Works uses butane, kerosene and fuel oil A for heat treatment and boiler fuel, but is now switching to city gas under a 5 year plan begun in 2017.

The many benefits of using city gas include lower fuel costs, simplified fuel management enabled by pipeline supply, improved safety and lower CO<sub>2</sub> emissions (annual reduction of 2,384 metric tons).

#### Kuwana Works installs VPF\* tank

By installing a suction filter coolant tank, the Kuwana Works has succeeded in extending its coolant replacement frequency from 6 months to 1 year. The new tank reduces the quantity of disposed waste fluid by 40 metric tons per year. The tank's cellulose filter aid enables grinding sludge to be remelted in an electric furnace. It can be reused as iron without the need for a separation process. The equipment uses an energy-saving pump and chiller compressor with inverter control.

\*VPF: Vacuum precoat filter

#### NTN Kongo Corporation recycles water-soluble coolant

The water soluble coolant NTN Kongo Corporation uses for its grinders previously needed a full replacement about twice per year. The company has now installed a coolant recycling system that recycles all used coolant. Although new coolant still needs to be added to make up for natural depletion from evaporation and other losses, the company has reduced its coolant consumption by 70% and completely eliminated the disposal of 10,000 liters of used coolant per year.



Grinding sludge conveyor

#### NTN-SNR Cevennes plant installs solar panels

The NTN-SNR Cevennes plant in France has renovated its parking lot with the addition of a 5,000 m<sup>2</sup> solar paneled roof containing 3,049 solar panels. The parking lot holds 360 four-wheel and 22 two-wheel vehicles. The panels went into operation in October 2017. They have a rated output of 842 kW, and are expected to generate about 1.01 million kWh/year of electricity. The panels should be able to provide about 3.5% of the plant's power demand, reducing annual CO<sub>2</sub> emissions by about 500 metric tons. The plant has also added charging stations for EVs in the parking lot and is planning to add more to accommodate the coming EV era.



Solar panels installed in the Cevennes plant parking lot

#### Energy-saving "Warashibe" budget for reducing environmental impact

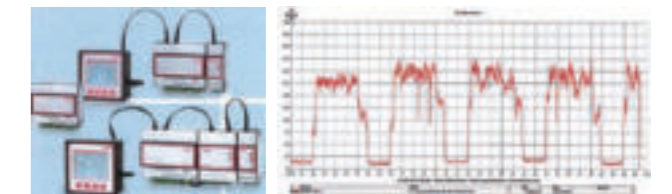
The NTN Group has created an original "Warashibe" budgeting method for promoting investment in energy-saving initiatives to reduce environmental impact. A special budget has been created to account energy costs saved by energy-saving initiatives. The costs accrued in the budget are added to the following year's budget. This budgeting method is being used at all business sites in Japan.

The Iwata Works Needle Roller Bearing Plant has reduced power consumption by installing energy saving system which connected to 80 air conditioning outside units. The system is composed of a master unit and slave units and P.C. and centrally controls air conditioning power. Six business sites (Kuwana Works, Okayama Works, Nagano Works, NTN Mie Corporation, NTN Kinan Corporation and NTN Noto Corporation) have saved energy by upgrading about 540 fluorescent, mercury and other conventional lights to LED models. These activities reduced power consumption by 990,000 kWh in the fiscal year ended March 31, 2018 (equivalent to a CO<sub>2</sub> emissions reduction of 377 metric tons/year). We are making further energy-saving efforts, and expect the new energy-saving budget for the fiscal year ending March 31, 2019 to grow 80% from the previous year.

#### Power monitoring/management equipment and inverter-controlled air compressors at NTN-Antriebstechnik

The NTN Group is working on cutting power consumption worldwide. German subsidiary NTN-Antriebstechnik (NTN-AT) installed inverter-controlled air compressors in the fiscal year ended March 31, 2018, succeeding in reducing its power consumption by about 380,000 kWh/year (equivalent to a CO<sub>2</sub> emissions reduction of about 180 metric tons/year). The planning and implementation of this power-reduction initiative was assisted by a system installed in 2015 that provides constant monitoring and management of each process specific power consumption quantities. This system was also utilized in planning and implementing

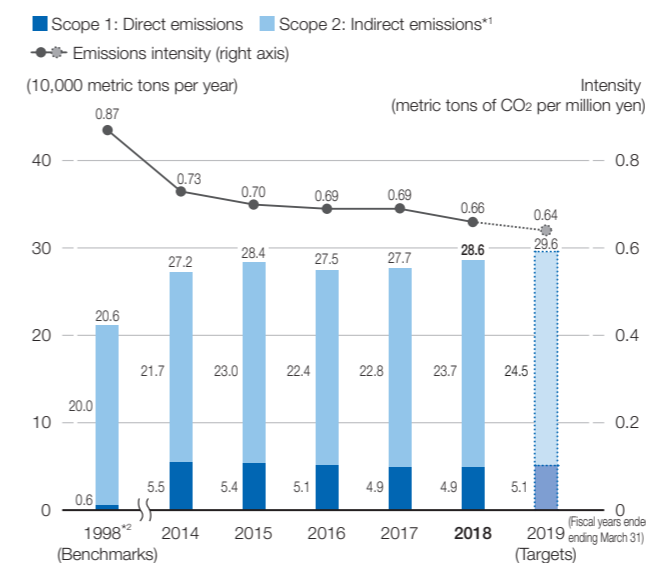
initiatives to reduce power consumption as well as verifying the effects thereof.



Power monitoring/management equipment

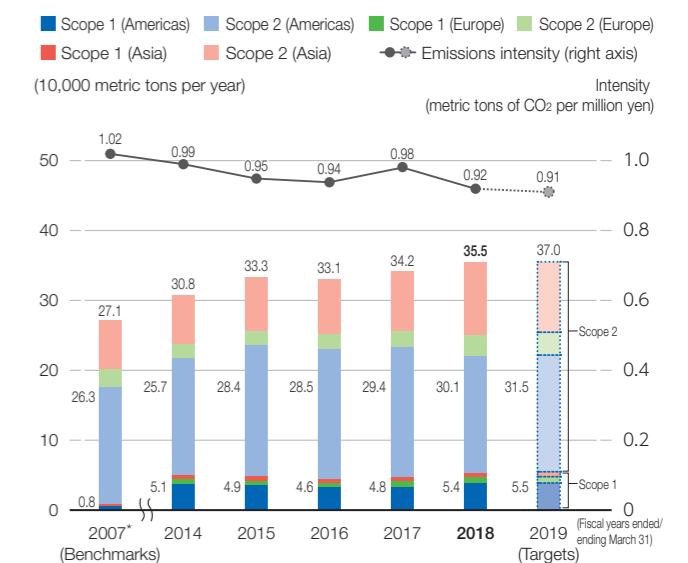
Power consumption transition chart

#### CO<sub>2</sub> Emissions/Emissions Intensities (Japan)



\*1: Japan figures are calculated using a fixed emissions factor of 0.381 for electricity.  
\*2: The first year of production is used as the benchmark for business sites established after the fiscal year ended March 31, 1998.

#### CO<sub>2</sub> Emissions/Emissions Intensities(Overseas)



\*3: The first year of production is used as the benchmark for business sites established after the fiscal year ended March 31, 2007.

### Protecting biodiversity

#### Osaka Prefecture recognizes NTN for "Kigyo no Mori" activities

NTN Kongo Corporation and the NTN head office received a certificate of appreciation from Osaka's Deputy Governor in a presentation ceremony held at the Osaka Prefectural Government Building in December 2017. The certificate was presented in recognition of the 5th year of the NTN Okukawachi Lakeside Forest conservation activities. These activities have been held through Osaka Prefecture's Adopt-a-Forest program that brings together companies and forest owners. The ceremony gave us the opportunity to reaffirm our commitment to forest conservation while presenting our past achievements and policies for the future along with the other companies recognized.

Forest conservation activities will continue to be an area of focus as we work on protecting the global environment and raising employee environmental awareness.



Certificate of appreciation for taking part in Adopt-a-Forest activities; presentation ceremony

# Contribution to Local Communities

## Basic Approach

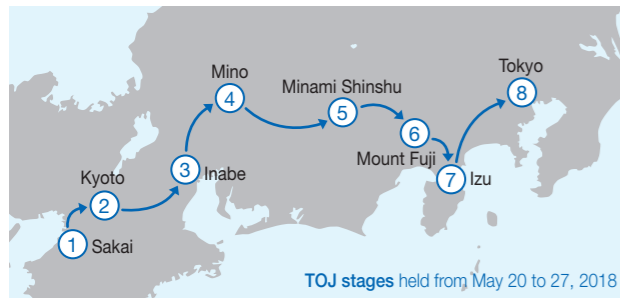
Our Group's CSR policy states that, in addition to developing a variety of initiatives around the world, "We shall make every effort to interact meaningfully with society on a local level and to engage in activities that contribute to society." We benefit the world through more than just our business activities. We also work on achieving the UN's Sustainable Development Goals (SDGs) through various activities tied closely to local communities around the world.

## Japan

### NTN Rotating School

As one of our centennial activities, we assumed title sponsorship of "Tour of Japan (TOJ)," Japan's largest bicycle road race. We also organized the "NTN Rotating School," an event designed to provide hands-on experience of our technologies at each TOJ stage.

It was organized to promote harmonious coexistence with local communities. The contents of NTN Rotating School are a workshop during which children enjoy learning what bearings are, hands-on instruction in bearing assembly, etc. The events were also a way to let our employees interact with community members and teach the children who will shape the next generation. About 3,000 visitors came to our activity booth during the eight days of the race in 2018.



The workshop teaching children about bearings through original stories



Hands-on instruction in bearing assembly

## Americas

### Sensory boards donation

NTN-Bower Corporation (Macomb Plant) in west central in Illinois, U.S.A has designed and created original sensory boards that let students experience the function of various parts including bearings. The boards were donated as teaching materials to five elementary, junior high and high schools in the local school district. Devised to assist the functional rehabilitation of students with mental or physical impairments, the boards are being used effectively in classes at the schools.



The donated sensory board



Relationship to SDGs

## Main Activities

Number of social contribution activities

685 (Fiscal year ended March 31, 2017) ▶ 705 (Fiscal year ended March 31, 2018)

Japan 496 Europe 43  
Americas 109 Asia 57

## Europe

### Support Integration of Young People in State Welfare Institutions

NTN-SNR ROULMENTI S.R.L (Romanian subsidiary) teamed with volunteer organizations to hold an event for local children in specialized care facilities. The children painted pictures on a large canvas depicting the themes of friendship and their future ambitions. It also provided support for renovation work on the children's living spaces. Other activities closely tied to the community were held, including a plant tour and giveaway of NTN goods for the children.



The employees who planned the activities



The children who participated in



The children painting themes of friendship and their future ambitions



The plant tour

## Asia

### Mangrove planting

The employees in the ASEAN/India region took part in one of our centennial events with NTN distributors by donning matching polo shirts to plant 100 mangroves. The event served to express our gratitude for past service received, and as a symbol of collaboration for the next 100 years.



The employees and distributors who participated in



Planting mangroves



Other social contribution activities can be viewed on our website. <https://www.ntnglobal.com/en/csr/sc/community.html>

# Consolidated Financial Indicators (Past 11 Years)

Fiscal years ended March 31

Thousands of US dollars<sup>1</sup>  
(Excluding per-share values)

		2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2018
For THE YEAR DATA													
Net Sales	(Millions of yen)	533,985	527,100	452,746	530,056	543,468	539,595	638,971	701,900	716,997	683,329	744,373	6,990,402
Operating Income	(Millions of yen)	49,612	9,479	1,399	24,560	20,724	7,278	33,004	43,851	47,770	35,623	39,609	371,968
Operating Margin	(%)	9.3	1.8	0.3	4.6	3.8	1.3	5.2	6.2	6.7	5.2	5.3	5.3
Income (loss) before Income Taxes	(Millions of yen)	44,313	(10,104)	(1,838)	22,855	16,357	(13,898)	(2,451)	37,063	26,943	14,890	26,906	252,674
Net Income (loss) attributable to Shareholders (parent company)	(Millions of yen)	27,431	(8,985)	(2,015)	14,399	5,993	(14,196)	(14,648)	23,353	15,037	2,831	20,374	191,332
Capital Expenditures	(Millions of yen)	59,504	49,594	21,504	29,700	54,440	48,979	33,162	31,266	36,300	35,398	37,589	352,998
Depreciation and Amortization	(Millions of yen)	39,547	45,759	40,702	35,936	34,175	34,841	39,315	40,392	38,278	36,629	37,506	352,219
R&D Expenditures	(Millions of yen)	15,006	17,402	14,687	15,697	17,157	16,174	17,821	18,088	18,481	19,196	21,007	197,277
YEAR-END DATA													
Total Assets	(Millions of yen)	629,464	627,613	618,802	632,001	693,258	768,462	848,037	856,277	794,651	798,891	840,052	7,888,923
Net Assets	(Millions of yen)	216,401	192,223	214,551	210,353	212,126	211,743	213,369	262,559	248,505	245,050	269,760	2,533,315
Inventories	(Millions of yen)	109,969	140,466	126,663	136,985	155,107	163,287	166,484	184,128	178,220	171,482	179,738	1,687,918
Interest-bearing Debt	(Millions of yen)	212,874	275,996	231,638	223,284	271,978	360,802	381,767	359,105	325,174	320,170	320,832	3,012,932
Number of Employees		18,960	20,679	17,959	19,172	20,789	21,398	22,156	23,360	24,109	24,665	25,493	25,493
PER-SHARE DATA													
Net Assets	(Yen)	445.98	376.77	374.19	376.05	370.19	375.84	374.68	461.21	436.97	431.66	477.17	4.48
Net Income (loss):													
Basic	(Yen)	58.43	(19.14)	(4.00)	27.08	11.27	(26.69)	(27.54)	43.91	28.28	5.33	38.36	0.36
Diluted	(Yen)	54.59	—	—	—	—	—	—	—	—	—	—	—
Cash Dividends	(Yen)	19.00	13.00	8.00	10.00	10.00	0	2.00	6.00	10.00	10.00	15.00	0.14
OTHER INFORMATION													
Inventory Turnover Ratio	(times)	4.9	3.8	3.6	3.9	3.5	3.3	3.8	3.8	4.0	4.0	4.1	
Net D/E Ratio	(times)	0.86	1.38	1.00	0.92	1.11	1.37	1.27	1.11	1.11	1.05	0.93	
Net Income (loss)/Average Total Assets (ROA)	(%)	4.4	(1.3)	(0.3)	2.3	0.9	(1.9)	(1.8)	2.7	1.8	0.4	2.5	
Net Income (loss)/Average Shareholders' Equity (ROE)	(%)	13.1	(4.3)	(1.1)	7.2	3.0	(7.2)	(7.3)	10.5	6.3	1.2	8.4	
NTN-ROI <sup>2</sup>	(%)	8.6	1.5	0.2	4.2	3.4	1.1	4.6	6.3	6.5	5.1	5.7	
Shareholders' Equity Ratio	(%)	33.3	28.2	32.2	31.6	28.4	26.0	23.5	28.6	29.2	28.7	30.2	

<sup>1</sup>: The translation of yen amounts into U.S. dollar amounts is included solely for the convenience of readers outside Japan and has been made at ¥106.485 = U.S. \$1.00, the exchange rate prevailing on March 31, 2018. This translation should not be construed as a representation that yen can be converted into U.S. dollars at the above or any other rate.

<sup>2</sup>: NTN-ROI = Net operating income after tax/(inventories + tangible fixed assets)

# Non-Financial Data (ESG Factors)

Other non-financial data can be viewed on our website. <https://www.ntnglobal.com/en/csr/nonfinance.html>

## Governance (G) Factors

● NTN only ● Domestic subsidiaries ● Overseas subsidiaries

Item	Applicable Scope	Fiscal year ended		See page:
		March 31, 2017	March 31, 2018	
		Achievements	Achievements	
Number of directors Total	●	14	14	61
Male	●	14	14	61
Female	●	0	0	61
Number of directors not serving as executive officers	●	14	14	—
Number of outside directors	●	2	2	59
Percentage of outside directors	●	14%	14%	—
Number of outside Audit & Supervisory Board Members	●	3	3	57
Board of Directors				
Number of meetings per year	●	17	18	57
Director (outside) attendance rate	●	97%	100%	59
Director (inside) attendance rate	●	99%	99%	—
Audit & Supervisory Board Members (outside) attendance rate	●	96%	100%	59
Audit & Supervisory Board Members (inside) attendance rate	●	100%	100%	—
Audit & Supervisory Board				
Number of meetings per year	●	14	15	57
Audit & Supervisory Board Members (outside) attendance rate	●	95%	100%	59
Audit & Supervisory Board Members (inside) attendance rate	●	100%	100%	—
Compensation Advisory Committee				
Number of meetings per year	● ● ●	3	5	57
Director (outside) attendance rate	●	100%	100%	58
Director (inside) attendance rate	●	83%	100%	—
Audit & Supervisory Board Members (outside) attendance rate	●	100%	100%	58
Number of sites subject to internal control assessments	● ● ●	49	51	67
Number of SRI indexes included in	●	6*	6*	60
Number of shareholders at the General Meeting of Shareholders	●	133	213	60
Percentage of votes cast	●	84.2%	82.6%	60
Total annual cash dividends per share	●	10 yen	15 yen	91
Number of Stakeholder Dialog held with CSR experts	●	1	1	72
Number of CSR Committee held per year	●	2	2	57
Number of Risk Management Committee held per year	● ● ●	2	3	57
Number of Compliance Committee meetings held per year	●	4	4	57
Number of Fair Trade Monitoring Committee meetings held per year	●	2	2	57
Compliance awareness survey response rate	● ●	78%	76%	70
Helpline Recognition level	● ●	79%	81%	70
Number of reports from whistle-blower	● ●	15	17	70
Report response rate	● ●	100%	100%	70

\* As of June 30

## Environment (E) Factors

● NTN only ● Domestic subsidiaries ● Overseas subsidiaries

Item	Applicable Scope	Fiscal year ended		See page:
		March 31, 2017	March 31, 2018	
		Achievements	Achievements	
CO <sub>2</sub> emissions Total	● ● ●	619,000 metric tons	641,000 metric tons	88
Domestic				
Scope 1	● ●	49,000 metric tons	49,000 metric tons	88
Scope 2	● ●	228,000 metric tons	237,000 metric tons	88
Overseas				
Scope 1	● ● ●	48,000 metric tons	54,000 metric tons	88
Scope 2	● ● ●	294,000 metric tons	301,000 metric tons	88
Water usage Total	● ● ●	3.23 million m <sup>3</sup>	3.22 million m <sup>3</sup>	86
Domestic	● ●	1.95 million m <sup>3</sup>	1.94 million m <sup>3</sup>	86
Overseas	● ● ●	1.28 million m <sup>3</sup>	1.28 million m <sup>3</sup>	86
Generated waste Total	● ● ●	163,000 metric tons	176,000 metric tons	86
Domestic	● ● ●	63,000 metric tons	68,000 metric tons	86
Overseas	● ● ●	100,000 metric tons	108,000 metric tons	86
Recycling rate Total	● ● ●	98.1%	97.9%	86
Domestic	● ● ●	99.9%	99.9%	84
Overseas	● ● ●	96.9%	96.7%	84

## Social (S) Factors

● NTN only ● Domestic subsidiaries ● Overseas subsidiaries

Item	Applicable Scope	Fiscal year ended		See page:
		March 31, 2017	March 31, 2018	
		Achievements	Achievements	
R&D expenditures	● ● ●	19.2 billion yen	21.0 billion yen	47
Ratio of R&D expenditures to sales	● ● ●	2.8%	2.8%	47
Number of outside awards received for product development	● ● ●	3	3	48
Number of patents reward being paid	● ●	191	129	47
Ratio of local procurement (Total)	● ● ●	88%	88%	78
(Americas)	● ● ●	84%	84%	78
(Europe)	● ● ●	94%	94%	78
(Asia and Others)	● ● ●	85%	84%	78
Subcontracting self-auditing rate	● ●	100%	95%	78
Conflict minerals survey response rate from business partners	●	—	92%	78
Overseas production rate (Total)	● ● ●	51%	52%	79
(Americas)	● ● ●	22%	19%	79
(Europe)	● ● ●	14%	17%	79
(Asia and Others)	● ● ●	14%	16%	79
Number of participants in specialized quality education courses	● ●	145	112	81
Quality management system certification rate <sup>*1</sup>	● ● ●	100%	100%	82
Number of Sales TQM (Total Quality Management) activities	●	228	205	82
Number of customer visits by Technical Service Units	● ● ●	858	727	82
Number of employees	● ● ●	24,665	25,493	—
Percentage of female employees	● ● ●	11%	11%	—
Overseas employee ratio	● ● ●	66%	67%	16
Average age				
Total	●	40	41	—
Male	●	41	41	—
Female	●	38	39	—
Average years of continuous employment				
Total	●	17	19	—
Male	●	18	19	—
Female	●	16	17	—
Percentage of hired female graduates	●	19%	14%	16
Employment rate of persons with disabilities	●	2.08%	2.06%	75
Number of women in management positions (NTN only) <sup>*2</sup>	●	31	32	75
Percentage of women in management positions (NTN + domestic subsidiaries) <sup>*2</sup>	● ● ●	3.7%	3.6%	75
(NTN Group) <sup>*2</sup>	● ● ●	10.9%	12.2%	75
Post-retirement rehiring rate (NTN only)	●	63%	62%	75
(NTN + domestic subsidiaries)	● ●	81%	81%	75
Number of employees taking leave for partner's childbirth	●	55	178	75
Number of employees taking childcare leave				
Total	●	40	44	75
Male	●	2	3	75
Female	●	38	41	75
Number of employees returning after childcare leave				
Total	●	20	18	75
Male	●	1	3	75
Female	●	19	15	75
Percentage of employees returning after childcare leave	●	100%	100%	75
Number of employees on shortened working hours for childcare				
Total	●	29	31	75
Male	●	0	0	75
Female	●	29	31	75
Number of employees taking long-term care leave	●	1	1	75
Number of employees using NTN Job Return scheme	●	—	2	75
Number of employees using intra-company child daycare center (Bear Kids Land)	●	23	34	75
Number of employees using the facility supporting persons with intellectual disabilities (Dream Workshop)	●	14	15	75
Number of employees taking mental health leave	●	23	26	76
Percentage of returning employees taking mental health leave	●	56%	50%	76
Number of counseling service consultations per month	●	76	69	76
Percentage of high-stress employees <sup>*3</sup>	●	8%	8%	76
Rate of workplace incidents causing lost work time	●	0.41 <sup>*4</sup>	0.08 <sup>*5</sup>	76
Number of workplace incidents causing lost work time	●	5 <sup>*4</sup>	1 <sup>*5</sup>	76
Number of law-related training sessions held by safety and health consultants	●	7	8	76
Percentage of designated health checks provided	●	100%	100%	76
Number of OSHMS-certified sites	● ●	9	9	76
Number of hazard simulation classes provided	● ●	60	95	76
Number of social contribution activities	● ● ●	685	705	89

\*1: ISO 9001, IATF 16949 (and other standards for which switching is under review)

Applies to domestic and overseas consolidated manufacturing subsidiaries (excluding bases that have not started mass production).

\*2: Includes three consolidated subsidiaries to be merged in October 2018: NTN KONGO CORP., NTN MIKUMO COMPANY LTD., and NTN ENGINEERING PLASTICS CORP.

\*3: As determined by NTN stress check program.

\*4: From December 16, 2015 to December 15, 2016

\*5: From December 16, 2016 to December 15, 2017



# Management Performance/Financial Analysis

## Net Sales and Incomes

### Sales Performance

Consolidated net sales for the fiscal year ended March 31, 2018, were 774,373 million yen, an increase of 61,044 million yen (8.9%) from the previous fiscal year. Due to the effects of exchange-rates, a decrease of 27,585 million yen represented an increase of 33,459 million yen. Overseas sales were 540,048 million yen, an increase of 48,185 million yen (9.8%) from the previous fiscal year. Overseas sales accounted for 72.6% of net sales overall (Americas 27.1%, Europe 23.6%, Asia and others 21.9%), an increase of 0.6 percentage points from the previous fiscal year.

### Net Sales and Incomes by Business Sector

In aftermarket applications, sales were 116,695 million yen due to an increase in sales from both industrial machinery aftermarket and automotive aftermarket, and the effects of exchange-rates. Operating income was 15,009 million yen, due to the increased sales and the effects of exchange-rates and other factors.

In industrial machinery applications, net sales were 119,085 million yen due to the increased sales for construction machinery and gearboxes and other applications, and the effect of exchange-rates and other factors. Operating income was 2,796 million yen, due to the increased sales and the effects of exchange-rates and other factors.

In automotive applications, net sales were 508,593 million yen due to the increased customer demand and the effect of exchange-rates and other factors. Operating income was 21,804 million yen, due to the increased sales and the effects of exchange-rates and other factors.

### Net Sales and Incomes by Region

In terms of sales in Japan, looking at aftermarket applications, there was an increase in industrial machinery aftermarket applications. As for sales of industrial machinery applications, construction machinery and gearbox, other applications increased. In automotive applications grew thanks to expanded customers' demands. As a whole, net sales were 204,325 million yen (up 6.7% from the previous fiscal year).

In terms of sales in Americas, looking at aftermarket applications, there was an increase in industrial machinery aftermarket applications. In industrial machinery applications, sales increased in construction machinery applications and others. Sales of automotive applications decreased due to the decreased customer demands and other factors. As a whole, net sales were 201,677 million yen (up 3.5% from the previous fiscal year).

In terms of sales in Europe, looking at aftermarket applications, there was an increase in both industrial machinery aftermarket applications and automotive aftermarket applications. In industrial machinery applications, sales increased in agricultural machinery and gearbox, other applications. In automotive applications grew thanks to expanded customers' demands. As a whole, net sales were 175,599 million yen (up 13.3% from the previous fiscal year).

In terms of sales in Asia and other areas, a looking at aftermarket applications, there was an increase in industrial machinery aftermarket applications. For industrial machinery applications, sales increased in construction machinery and machine tool, other applications. In automotive applications

grew thanks to expanded customers' demands. As a whole, net sales were 162,772 million yen (up 14.5% from the previous fiscal year)

### Cost of Sales and Selling, General and Administrative Expenses

The cost of sales was 603,613 million yen, down 0.2 percentage points and representing 81.1% of consolidated net sales. This was mainly effects of increased sales.

Selling, general and administrative expenses were 101,151 million yen, representing 13.6% of consolidated net sales, or up 0.1 percentage points compared to the previous fiscal year.

### Income

Regarding profit for the fiscal year under review, factors contributing to increased earnings included the effects of scale and the exchange-rates effects. Meanwhile, factors contributing to decreased earnings included increased personal expenses and lower sales price level, increase valuable cost. As a result, the operating income for the term was 39,609 million yen, up 3,986 million yen from the previous fiscal year.

Other expenses amounted to a net expense of 12,703 million yen. The major contributing factors were income of 2,154 million yen, including interest and dividend income of 1,698 million yen, and expenses of 14,857 million yen, including interest expenses of 3,884 million yen and loss related to Anti-Monopoly Act 3,710 million yen, product compensation expense of 2,312 million yen.

As a result, net income before income taxes and equity in earnings was 26,906 million yen for the fiscal year under review, an increase of 12,016 million yen compared with the preceding fiscal year. Net income per share was 38.36 yen for the year under review.

Regarding annual dividends for the fiscal year under review, we plan to pay a year-end dividend of 7.5 yen per share, which, when added to our interim dividend of 7.5 yen per share, totals 15 yen per share for the full year.

## R&D and Capital Expenditures

Groupwide R&D expenditures for the year were 21,007 million yen (up 1,811 million yen from the previous year), accounting for 2.8% of sales.

In the three-year Medium-term Management Plan "NTN 100" from April 2015 to March 2018, it outlined three basic policies "Manage Growth," "Manage Profitability" and "Manage Foundation". We continued to work on bringing these policies to life by augmenting our core business areas and creating new business areas. Our efforts resulted in the creation of new business structures and the release of advanced bearings attaining higher levels of customer satisfaction and we have succeeded in creating a technology and business foundation that will support the Company over the next hundred years.

In September 2017, we established the NTN Next Generation Research Alliance Laboratory at Osaka University as a way to develop new cutting-edge technologies and augment the elemental technology development expertise that supports our core and new business areas. The Laboratory is a new initiative that should result in business expansion 5 or 10 years in the future. To create a more global R&D organization, we organized exchanges of technology and human resources among R&D bases in Japan, Europe and U.S. These efforts are

helping speed up the creation of new technologies and products. We are working on creating manufacturing organizations worthy of a global manufacturer and able to meet the needs of customers in countries around the world.

Having recently celebrated 100th year, we are now looking at the research and technology development that will fuel our success over the next hundred years. We are focusing on two approaches positioned to produce sustainable growth based on the corporate philosophy behind our business activities.

One is augmenting the core business areas that leverage our unique advantages; the other is utilizing our core competencies to create new business areas.

### Capital Expenditures

For NTN Corporation and its consolidated subsidiaries, the main focus of capital expenditures was on increasing production capacity, labor savings, and rationalization, maintaining and upgrading existing facilities, improving safety, and conducting R&D for new products.

In Japan, capital expenditures totaled 15,751 million yen for capital projects that included the expansion of bearing production equipment and expansion of buildings at NTN Noto Corporation, as well as additions to bearing production equipment at Okayama Works.

In the Americas, capital expenditures totaled 10,270 million yen on projects that included the expansion of buildings and expansion of CVJ production equipment at NTK PRECISION AXLE CORP. and the expansion of production equipment for CVJ parts at NTN-Bower Corporation.

In Europe, capital expenditures were 7,638 million yen, with projects including the expansion of bearing production equipment at NTN-SNR ROULEMENTS and expansion of CVJ production equipment at NTN TRANSMISSIONS EUROPE.

In Asia and other areas, capital expenditures amounted to 4,129 million yen on projects that included expansion of CVJ production equipment at NTN Manufacturing (Thailand) Co., Ltd. and NTPT Co., Ltd.

After adjusting for -200 million yen in equipment transfers between segments, total capital expenditures for the fiscal year were 37,589 million yen.

All expenditures were funded from internal funds and short-term loans. Depreciation and amortization for the fiscal year under review amounted to 37,506 million yen (up 877 million yen from the previous fiscal year).

## Financial Position and Cash Flows

Interest-bearing debt increased by 0.7 billion yen compared with the preceding fiscal year. Free cash flow came to 13.4 billion yen.

Total current assets at March 31, 2018 amounted to 460,102 million yen, a year-on year increase of 25,173 million yen (or 5.8%). Major factors included 8,256 million yen increase in inventories, 6,804 million yen increase in cash and cash equivalents, 5,386 million yen increase in accounts receivable. Total fixed assets at the fiscal year-end amounted to 288,059 million yen, an increase of 3,447 million yen (or 1.2%) against the end of the previous fiscal year. Investments and other assets amounted to 91,891 million yen, an increase of 12,541 million yen (or 15.8%) against the result for the previous fiscal year. Major factors included 8,715 million yen increase in other assets, 4,104 million yen increase in investment securities. As a

result, total assets amounted to 840,052 million yen, a year-on-year increase of 41,161 million yen (or 5.2%).

Current liabilities were 316,512 million yen, a year-on-year increase of 1,484 million yen (or 0.5%). This was due mainly to 10,519 million yen increase in accounts payable and 5,980 million yen increase in electronically-recorded monetary claims, 8,653 million yen decrease in short-term loans, 5,822 million yen decrease in current portion of long-term debt and lease obligations. Total long-term liabilities amounted to 253,780 million yen, a year-on-year increase of 14,967 million yen (or 6.3%). This is mainly due to 14,919 million yen increase in long-term debt and lease obligations. As a result, total liabilities amounted to 570,292 million yen, a year-on-year increase of 16,451 million yen (or 3.0%).

Total net assets were 269,760 million yen, a year-on-year increase of 24,710 million yen (or 10.1%). This was mainly due to 13,729 million yen increase in retained earnings, 5,325 million yen increase in translation adjustments, 2,873 million yen increase in net unrealized holding gain on other securities.

The equity to capital ratio was 30.2%, up 1.5 percentage points. Total net assets per share, based on the number of shares outstanding over the end of the previous fiscal year, were 477.17 yen per share (an increase of 45.51 yen per share over the previous fiscal year). Interest-bearing debt amounted to 320,832 million yen, a increase of 662 million yen (0.2%) from the end of the previous fiscal year. Factoring in the 525 million yen increase from effects of exchange-rates, the actual increase was 137 million yen. The ratio of interest-bearing debt to total assets was 38.2% (down 1.9 percentage points compared to the end of the previous fiscal year).

Net working capital was 143,590 million yen, a increase of 23,689 million yen from the end of the previous fiscal year. The current ratio was 145.4% (up 7.3 percentage points over the end of the previous fiscal year).

The inventory turnover ratio was 4.14 times (up 0.16 times compared with the end of the previous fiscal year), the turnover ratio of total assets was 0.89 times (up 0.03 times).

Net cash from operating activities was 61,799 million yen (a year-on-year decrease of 589 million yen, or 0.9%). This was mainly due to proceeds of 37,506 million yen from depreciation and amortization, 26,906 million yen from net income before taxes and equity in earnings of affiliated companies.

Net cash from investing activities was 48,359 million yen (a year-on-year increase of 7,140 million yen, or 17.3%). This was mainly due to expenditures of 36,458 million yen for the purchase of property, plant, and equipment, and 9,645 million yen for the purchase of other assets.

Net cash from financing activities was 7,521 million yen (a year-on-year decrease of 697 million yen, or 8.5%). This was mainly due to expenditures of 68,858 million yen for repayment of long-term loans, 10,030 million yen in decrease in short-term bank loans, net, 6,645 million yen in dividend payment, proceeds from 68,998 million yen in long-term debt, 10,000 million yen in issuance of corporate bonds.

After including an increase of 885 million yen in translation adjustments, cash and cash equivalents as of the end of the fiscal year under review totaled 86,088 million yen, representing an increase of 6,804 million yen (8.6%) compared with the previous consolidated fiscal year end.

Free cash flow, the difference between net cash provided by operating activities and net cash used in investing activities, amounted to 13,440 million yen. The proportion of net cash provided by operating activities to net sales was 8.3%.

## Risk Factors

Business results and the financial position of the NTN Group are subject to the following risks.

### 1) Economy

The NTN Group operates global production and sales networks, and supplies customers in various industrial sectors. Business results and the financial position of the NTN Group operations may be affected by the economic conditions in specific countries and business conditions in industries to which our customers belong.

### 2) Foreign Exchange Fluctuations

Overseas sales of the NTN Group account for over 50% of consolidated sales. This percentage is expected to increase further due to continued acceleration in the global business development of the NTN Group. Overseas subsidiaries' foreign currency-denominated business results and financial positions are converted to yen for the preparation of consolidated financial statements. Moreover, many export transactions with overseas customers of the Company are conducted in foreign currencies. Although the NTN Group hedges risks through forward foreign exchange contracts and expansion of local procurement, effects of exchange rate fluctuations on business results and financial positions cannot be fully eliminated.

### 3) Declines in Market Prices

The competitive environment surrounding production and sales activities of the NTN Group is becoming harsher worldwide. As products from China and other emerging countries are gaining ground, bearings have been partially affected by falling market prices. At the same time, against a backdrop of global price competition, calls for price reductions are mounting in the automotive industry, which accounts for over half of the NTN Group sales. Although the NTN Group works continuously to reduce costs while developing new products of high quality and high added value, business results and the NTN Group's financial position may be affected by downward pressure on market prices.

### 4) Rise in Raw Materials Prices

The NTN Group procures a wide range of raw materials from outside sources. To deal with cost increases, especially of steel materials, which pose a high weighting in materials costs, measures have been taken such as mark-ups on selling prices to reflect higher materials cost. In addition, the Group is targeting cost reductions through enhanced production yields and VAVE methods. Nevertheless, business results and the NTN Group's financial position may be affected by stronger than expected increases in raw materials costs.

### 5) Disasters and Accidents

Production plants and facilities of the NTN Group and its transaction counterparts are exposed to the risk of damage from natural disasters such as earthquakes, floods, and fires. Although the NTN Group has put into place crisis management systems and stands ready to engage in measures to contain damage as much as possible, risks cannot be completely eliminated. Business performance and the financial status of the NTN Group may be affected by a natural disaster or by accidents.

### 6) Dependence on Specific Industries

The NTN Group's Bearings Division derives approximately half of its sales revenues from the automotive industry, which also accounts for more than half of sales of components that the Constant-velocity Joints Division produces for automotive power transmission to the drive axle. Dependence on the automotive industry is therefore high. Although the NTN Group works to increase sales of bearings and precision equipment products to the industrial machinery sector and

implements policies to achieve a balanced sales structure, a rapid shift in demand in the automotive industry could potentially affect the NTN Group's business results and financial position.

### 7) Product Defects

To ensure product quality, the NTN Group works to satisfy customers' requirements concerning product functions and specifications, and strives to provide appropriate quality and product safety by enforcing quality assurance globally. However, a substantial product defect leading to a serious accident, claim for damages, or product recall could entail huge product warranty costs and potentially affect business performance and the financial position of the NTN Group. Although the NTN Group has taken out global product liability insurance, complete coverage for loss is not possible.

### 8) Intellectual Property

The NTN Group generates a wealth of innovative technologies and know-how in the process of new product development, representing valuable intellectual property for which the NTN Group files patent applications to protect its rights. However, business performance and the financial position of the NTN Group may be affected if a legal challenge is initiated against its intellectual property or if its intellectual property is infringed by a third party.

### 9) Global Operations

The NTN Group develops its business operations worldwide with overseas sales exceeding 50% of consolidated sales. Overseas business development is associated with the following risks:

- Risks from unforeseen change in tax systems of or between individual countries
- Risks from unforeseen change in laws of individual countries
- Difficulty in hiring and retaining appropriate staff
- Evolving technology levels and unstable labor relations in emerging economies
- Political instability in emerging economies

### 10) Statutory Regulations

The NTN Group is subject to the various laws and regulations (tax laws, environmental laws, occupational safety and health laws, economic statutes such as antimonopoly laws and anti-dumping laws, trade and exchange laws, and securities trading regulations) of the countries and regions in which it does business. The NTN Group strives to abide by these laws and regulations and conduct fair business activities. However, if the NTN Group is ever be subject to litigation or involved in legal proceedings because of a violation of a law or regulation, and if the decision of such litigation or legal proceedings goes against the Group, this may have an effect on the business performance or the financial state of the Group. As well, if these laws or regulations change, or if new unforeseen laws or regulations are enacted, these also may have an effect on the business performance or the financial state of the Group. Some of NTN Group companies are subject to the following actions.

- There are ongoing investigations by the competition authorities into our consolidated subsidiaries in Brazil and elsewhere in relation to overseas sale of bearings, etc.
- The Company and its subsidiaries in the U.S. and Canada, etc. are defendants in a number of class action suits for suspected price-fixing of bearing sales with other businesses.
- The NTN Group may be subject to claims for compensation for damages in connection with the violation of competition laws and continue to address these claims. However, it is currently difficult to make reasonable estimates of the future possible effects on the results of operations and financial position of the NTN Group.

## Consolidated Balance Sheet

March 31, 2018

	Millions of yen		Thousands of U.S. dollars (Note 1)	Millions of yen		Thousands of U.S. dollars (Note 1)
	2018	2017	2018	2018	2017	2018
<b>Assets</b>						
<b>Current assets:</b>						
Cash and cash equivalents (Note 13)	¥ 86,088	¥ 79,284	\$ 808,452			
Short-term investments (Note 13)	2,595	718	24,370			
Trade receivables (Note 13):						
Notes	13,308	11,850	124,975			
Accounts	130,384	124,998	1,224,436			
Electronically recorded monetary claims	5,745	5,495	53,951			
Allowance for doubtful accounts	(1,008)	(877)	(9,466)			
	148,429	141,466	1,393,896			
Inventories (Note 5)	179,738	171,482	1,687,918			
Deferred income taxes (Note 19)	8,377	8,405	78,668			
Other current assets (Note 13)	34,875	33,574	327,511			
<b>Total current assets</b>	<b>460,102</b>	<b>434,929</b>	<b>4,320,815</b>			
Property, plant and equipment, at cost (Note 6):						
Land (Note 2(g))	32,656	33,142	306,672			
Buildings and structures (Note 2(g))	205,405	199,673	1,928,957			
Machinery, equipment and vehicles (Note 2(g))	795,942	782,738	7,474,686			
Construction in progress	21,580	16,720	202,658			
	1,055,583	1,032,273	9,912,973			
Less accumulated depreciation	(767,524)	(747,661)	(7,207,813)			
Property, plant and equipment, net (Note 21)	288,059	284,612	2,705,160			
Investments and other assets:						
Investment securities (Notes 7 and 13)	40,499	36,395	380,326			
Investments in unconsolidated subsidiaries and affiliates (Note 13)	18,735	17,992	175,940			
Deferred income taxes (Note 19)	4,129	5,150	38,775			
Other assets	28,528	19,813	267,907			
<b>Total investments and other assets</b>	<b>91,891</b>	<b>79,350</b>	<b>862,948</b>			
<b>Total assets (Note 21)</b>	<b>¥ 840,052</b>	<b>¥ 798,891</b>	<b>\$ 7,888,923</b>			
<b>Liabilities and net assets</b>						
<b>Current liabilities:</b>						
Short-term bank loans (Notes 8 and 13)	¥ 58,080	¥ 66,733	\$ 545,429			
Current portion of long-term debt and lease obligations (Notes 8 and 13)	61,125	66,947	574,025			
Trade payables (Note 13):						
Notes	1,368	1,433	12,847			
Accounts	68,348	57,829	641,856			
Electronically recorded obligations	64,112	58,132	602,075			
	133,828	117,394	1,256,778			
Accrued income taxes (Notes 13 and 19)	3,888	3,057	36,512			
Deferred income taxes (Note 19)	86	1	808			
Provision for loss on support to a related company	–	2,173	–			
Other current liabilities	59,505	58,723	558,810			
<b>Total current liabilities (Note 21)</b>	<b>316,512</b>	<b>315,028</b>	<b>2,972,362</b>			
<b>Long-term liabilities:</b>						
Long-term debt and lease obligations (Notes 8 and 13)	204,029	189,110	1,916,035			
Liability for retirement benefits (Note 9)	40,393	42,149	379,330			
Provision for product defect compensation	1,492	401	14,011			
Deferred income taxes (Note 19)	746	2,272	7,006			
Other long-term liabilities	7,120	4,881	66,864			
<b>Total long-term liabilities (Note 21)</b>	<b>253,780</b>	<b>238,813</b>	<b>2,383,246</b>			
<b>Contingent liabilities (Note 11)</b>						
<b>Net assets:</b>						
Shareholders' equity (Note 10):						
Common stock:						
Authorized – 1,800,000,000 shares	54,347	54,347	510,372			
Issued – 532,463,527 shares in 2018 and 2017						
Capital surplus	67,970	66,943	638,306			
Retained earnings	127,887	114,158	1,200,986			
Treasury stock, at cost: 1,405,959 shares in 2018 and 1,388,394 shares in 2017 (Note 4)	(816)	(807)	(7,663)			
<b>Total shareholders' equity</b>	<b>249,388</b>	<b>234,641</b>	<b>2,342,001</b>			
Accumulated other comprehensive income (loss):						
Net unrealized holding gain on securities (Note 7)	16,380	13,507	153,824			
Translation adjustments	(4,681)	(10,006)	(43,959)			
Retirement benefit liability adjustments (Note 9)	(7,683)	(8,899)	(72,151)			
<b>Total accumulated other comprehensive income (loss), net</b>	<b>4,016</b>	<b>(5,398)</b>	<b>37,714</b>			
<b>Non-controlling interests</b>	<b>16,356</b>	<b>15,807</b>	<b>153,600</b>			
<b>Total net assets</b>	<b>269,760</b>	<b>245,050</b>	<b>2,533,315</b>			
<b>Total liabilities and net assets</b>	<b>¥ 840,052</b>	<b>¥ 798,891</b>	<b>\$ 7,888,923</b>			

See accompanying notes to the consolidated financial statements.

# Consolidated Statement of Income

Year ended March 31, 2018

	Millions of yen		Thousands of U.S. dollars (Note 1)
	2018	2017	2018
Net sales (Note 21)	¥ 744,373	¥ 683,329	\$ 6,990,402
Cost of sales (Note 15)	603,613	555,722	5,668,526
Gross profit	140,760	127,607	1,321,876
Selling, general and administrative expenses (Note 15)	101,151	91,984	949,908
Operating income (Note 21)	39,609	35,623	371,968
Other income (expenses):			
Interest and dividend income	1,698	1,420	15,946
Interest expense	(3,884)	(4,192)	(36,475)
Equity in earnings of affiliates	456	213	4,282
Gain on reversal of prior year customs duties	-	695	-
Gain on valuation of derivatives, net	-	590	-
Product compensation expense	(2,312)	(1,190)	(21,712)
Foreign exchange loss, net	(1,642)	(1,341)	(15,420)
Litigation expenses	(1,492)	(1,956)	(14,011)
Gain on reversal of loss on arbitration ruling (Note 16)	-	2,147	-
Loss on surcharge payments under the Anti-Monopoly Act (Note 17)	(3,710)	(12,129)	(34,841)
Loss on impairment of fixed assets (Notes 6 and 21)	(635)	(4,562)	(5,963)
Loss on sales of property, plant and equipment	-	(171)	-
Other, net	(1,182)	(257)	(11,100)
	(12,703)	(20,733)	(119,294)
Profit before income taxes	26,906	14,890	252,674
Income taxes (Note 19):			
Current	8,056	5,590	75,654
Deferred	(3,439)	4,835	(32,296)
	4,617	10,425	43,358
Profit	22,289	4,465	209,316
Profit attributable to: Non-controlling interests	(1,915)	(1,634)	(17,984)
Owners of parent	¥ 20,374	¥ 2,831	\$ 191,332

See accompanying notes to the consolidated financial statements.

# Consolidated Statement of Comprehensive Income

Year ended March 31, 2018

	Millions of yen		Thousands of U.S. dollars (Note 1)
	2018	2017	2018
Profit	¥ 22,289	¥ 4,465	\$ 209,316
Other comprehensive income (loss) (Note 18):			
Net unrealized holding gain on securities (Note 7)	2,873	4,953	26,980
Translation adjustments	5,269	(8,682)	49,481
Retirement benefit liability adjustments	1,238	3,624	11,626
Share of other comprehensive income (loss) of affiliates accounted for by the equity method	546	(768)	5,128
Other comprehensive income (loss), net	9,926	(873)	93,215
Comprehensive income	¥ 32,215	¥ 3,592	\$ 302,531
Total comprehensive income attributable to:			
Owners of parent	¥ 29,787	¥ 2,836	\$ 279,730
Non-controlling interests	¥ 2,428	¥ 756	\$ 22,801

See accompanying notes to the consolidated financial statements.

# Consolidated Statement of Changes in Net Assets

Year ended March 31, 2018

	Millions of yen									
	Number of shares in issue	Common stock	Capital surplus	Retained earnings	Treasury stock, at cost	Net unrealized holding gain on securities	Translation adjustments	Retirement benefit liability adjustments	Non-controlling interests	Total net assets
Balance at April 1, 2016	532,463,527	¥54,347	¥67,351	¥116,644	¥(616)	¥8,554	¥(1,537)	¥(12,421)	¥16,183	¥248,505
Cash dividends paid	-	-	-	(5,317)	-	-	-	-	-	(5,317)
Profit attributable to owners of parent	-	-	-	2,831	-	-	-	-	-	2,831
Purchases of treasury stock	-	-	-	-	(191)	-	-	-	-	(191)
Change in equity resulting from transactions with non-controlling interests	-	-	(408)	-	-	-	-	-	-	(408)
Other changes	-	-	-	-	-	4,953	(8,469)	3,522	(376)	(370)
Balance at April 1, 2017	532,463,527	54,347	66,943	114,158	(807)	13,507	(10,006)	(8,899)	15,807	245,050
Cash dividends paid	-	-	-	(6,645)	-	-	-	-	-	(6,645)
Profit attributable to owners of parent	-	-	-	20,374	-	-	-	-	-	20,374
Purchases of treasury stock	-	-	-	-	(9)	-	-	-	-	(9)
Sales of treasury stock	-	-	-	-	0	-	-	-	-	0
Change in equity resulting from transactions with non-controlling interests	-	-	1,027	-	-	-	-	-	-	1,027
Other changes	-	-	-	-	-	2,873	5,325	1,216	549	9,963
Balance at March 31, 2018	532,463,527	¥54,347	¥67,970	¥127,887	¥(816)	¥16,380	¥(4,681)	¥(7,683)	¥16,356	¥269,760

	Thousands of U.S. dollars (Note 1)									
	Common stock	Capital surplus	Retained earnings	Treasury stock, at cost	Net unrealized holding gain on securities	Translation adjustments	Retirement benefit liability adjustments	Non-controlling interests	Total net assets	
Balance at April 1, 2017	\$510,372	\$628,661	\$1,072,057	\$(7,579)	\$126,844	\$(93,966)	\$(83,570)	\$148,443	\$2,301,262	
Cash dividends paid	-	-	(62,403)	-	-	-	-	-	(62,403)	
Profit attributable to owners of parent	-	-	191,332	-	-	-	-	-	191,332	
Purchases of treasury stock	-	-	-	(84)	-	-	-	-	(84)	
Sales of treasury stock	-	-	-	0	-	-	-	-	0	
Change in equity resulting from transactions with non-controlling interests	-	9,645	-	-	-	-	-	-	9,645	
Other changes	-	-	-	-	26,980	50,007	11,419	5,157	93,563	
Balance at March 31, 2018	\$510,372	\$638,306	\$1,200,986	\$(7,663)	\$153,824	\$(43,959)	\$(72,151)	\$153,600	\$2,533,315	

See accompanying notes to the consolidated financial statements.

# Consolidated Statement of Cash Flows

Year ended March 31, 2018

	Millions of yen		Thousands of U.S. dollars (Note 1)
	2018	2017	2018
<b>Cash flows from operating activities:</b>			
Profit before income taxes	¥ 26,906	¥ 14,890	\$ 252,674
Adjustments for:			
Depreciation and amortization	37,506	36,629	352,219
Loss on impairment of fixed assets	635	4,562	5,963
Amortization of goodwill	–	47	–
(Decrease) increase in provision for loss on support to a related company	(2,154)	667	(20,228)
Loss on surcharge payments under the Anti-Monopoly Act	3,710	12,129	34,841
Increase in allowance for doubtful accounts	64	89	601
Increase (decrease) in provision for directors' and audit & supervisory board members' bonuses	26	(4)	244
Increase in provision for product defect compensation	1,109	93	10,415
Decrease in liability for retirement benefits	(1,045)	(655)	(9,814)
Payments for loss on arbitration ruling	–	1,114	–
Interest and dividend income	(1,698)	(1,420)	(15,946)
Interest expense	3,884	4,192	36,475
Translation adjustments and foreign exchange loss, net	28	834	263
Equity in earnings of affiliates	(456)	(213)	(4,282)
Loss on sales of property, plant and equipment, net	–	171	–
Increase in trade receivables	(4,459)	(9,282)	(41,874)
(Increase) decrease in inventories	(5,791)	2,468	(54,383)
Increase in trade payables	14,840	7,243	139,362
Other	5,616	1,399	52,738
Subtotal	78,721	74,953	739,268
Interest and dividend income received	2,079	1,988	19,524
Interest paid	(3,969)	(4,314)	(37,273)
Payment for loss on arbitration ruling	–	(1,114)	–
Surcharge payments under the Anti-Monopoly Act	(10,237)	(1,112)	(96,135)
Income taxes paid	(4,795)	(8,013)	(45,030)
Net cash provided by operating activities	¥ 61,799	¥ 62,388	\$ 580,354
<b>Cash flows from investing activities:</b>			
(Increase) decrease in short-term investments, net	(1,874)	200	(17,599)
Purchases of property, plant and equipment	(36,458)	(35,273)	(342,377)
Proceeds from sales of property, plant and equipment	–	472	–
Purchases of other assets	(9,645)	(6,627)	(90,576)
Other	(382)	9	(3,587)
Net cash used in investing activities	(48,359)	(41,219)	(454,139)
<b>Cash flows from financing activities:</b>			
(Decrease) increase in short-term bank loans, net	(10,030)	13,679	(94,192)
Proceeds from long-term debt	68,998	39,481	647,960
Repayment of long-term debt, including current portion	(68,858)	(75,060)	(646,645)
Proceeds from issuance of corporate bonds	10,000	20,000	93,910
Cash dividends paid	(6,645)	(5,317)	(62,403)
Repayment of lease obligations	(348)	(325)	(3,268)
Other	(638)	(676)	(5,992)
Net cash used in financing activities	(7,521)	(8,218)	(70,630)
Effect of exchange rate changes on cash and cash equivalents	885	(978)	8,311
Net increase in cash and cash equivalents	6,804	11,973	63,896
Cash and cash equivalents at beginning of the year	79,284	67,311	744,556
Cash and cash equivalents at end of the year	¥ 86,088	¥ 79,284	\$ 808,452

## Notes to Consolidated Financial Statements

March 31, 2018

### 1. Basis of Preparation

The accompanying consolidated financial statements of NTN Corporation (the "Company") and consolidated subsidiaries are prepared on the basis of accounting principles generally accepted in Japan, which are different in certain respects as to the application and disclosure requirements of International Financial Reporting Standards, and are compiled from the consolidated financial statements prepared by the Company as required by the Financial Instruments and Exchange Act of Japan.

In preparing the accompanying consolidated financial statements, certain reclassifications have been made to the consolidated financial statements issued domestically in order to present them in a format which is more familiar to readers outside Japan. In addition, certain notes included herein are not required under accounting principles generally accepted in Japan but are presented as additional information.

Certain amounts in the prior year's financial statements have been reclassified to conform to the current year's presentation. Such reclassification had no effect on consolidated profit or net assets.

The translation of yen amounts into U.S. dollar amounts is included solely for the convenience of readers outside Japan and has been made at ¥106.485 = U.S. \$1.00, the exchange rate prevailing on March 31, 2018. This translation should not be construed as a representation that yen can be converted into U.S. dollars at the above or any other rate.

### 2. Summary of Significant Accounting Policies

#### (a) Principles of consolidation

The accompanying consolidated financial statements include the accounts of the Company and the significant companies which it controls directly or indirectly. Companies over which the Company exercises significant influence in terms of their operating and financial policies have been included in the accompanying consolidated financial statements on an equity basis.

The financial statements of certain consolidated subsidiaries whose fiscal year end is December 31 have been included in consolidation on the basis of a full fiscal year closing on March 31 for consolidation purposes.

#### (b) Foreign currency translation

Monetary assets and liabilities denominated in foreign currencies are translated into yen at the rates of exchange in effect at the balance sheet date. Revenues and expenses are translated at the rates of exchange prevailing when the transactions were made.

Assets and liabilities of overseas consolidated subsidiaries are translated into yen at the exchange rates in effect at the respective balance sheet dates, except for the components of net assets excluding non-controlling interests which are translated at the respective historical rates. Revenue and expenses are translated at the average rates of exchange for the respective years. Differences arising from translation are reflected in "Translation adjustments" and "Non-controlling interests" in the accompanying consolidated balance sheets and statements of changes in net assets.

#### (c) Cash and cash equivalents

Cash and cash equivalents consist of cash on hand, deposits with banks withdrawable on demand, and short-term investments which are readily convertible to cash subject to an insignificant risk of any change in their value and which were purchased with an original maturity of three months or less.

#### (d) Allowance for doubtful accounts

The allowance for doubtful accounts is computed based on the actual historical percentage of bad debts and an estimate of uncollectible amounts determined after an analysis of specific individual receivables.

#### (e) Short-term investments and investment securities

The accounting standard for financial instruments requires that securities be classified into three categories: trading, held-to-maturity or other securities. Trading securities are carried at fair value and held-to-maturity debt securities are carried at amortized cost. Marketable securities classified as other securities are carried at fair value with any changes in unrealized holding gain or loss, net of the applicable income taxes, included directly in net assets. Cost of securities sold is determined by the moving average method. Non-marketable securities classified as other securities are carried at cost based on the moving average method.

#### (f) Inventories

Inventories are principally stated at lower of cost, determined by the average method, or net selling value.

#### (g) Property, plant and equipment (other than leased assets)

Property, plant and equipment are stated at cost. The Company and its domestic consolidated subsidiaries calculate depreciation by the straight-line method over the estimated useful lives of the respective assets. The foreign consolidated subsidiaries principally calculated depreciation by the straight-line method over the estimated useful lives of the respective assets.

The principal estimated useful lives are as follows:

Buildings and structures	10 to 50 years
Machinery, equipment and vehicles	5 to 12 years

Contributions granted by national and municipal governments are deducted directly from the acquisition costs of the related fixed assets as stipulated in the Corporation Tax Law of Japan. The property, plant and equipment accounts on the consolidated balance sheets at March 31, 2018 and 2017 were reduced by the following amounts:

	Millions of yen		Thousands of U.S. dollars
	2018	2017	2018
Land	¥ 799	¥ 799	\$ 7,503
Buildings and structures	372	402	3,493
Machinery, equipment and vehicles	119	155	1,118
	¥ 1,290	¥ 1,356	\$ 12,114

#### (h) Liability for retirement benefits

Liability for retirement benefits has been provided principally at an amount calculated based on the retirement benefit obligation after the fair value of the pension plan assets are deducted. The estimated benefit is attributed to each period by the benefit formula method over the estimated years of service of the eligible employees.

Past service cost is amortized as incurred primarily by the straight-line method over a period of principally 15 years, which is within the estimated average remaining years of service of the eligible employees.

Net unrecognized actuarial gain or loss is amortized commencing in the year following the year in which the gain or loss was recognized primarily by the straight-line method over a period of principally 15 years, which is within the estimated average remaining years of service of the eligible employees.

#### (i) Provision for product defect compensation

Provision for product defect compensation is provided at an estimated amount in order to cover the anticipated compensation.

#### (j) Leases

For lease transactions involving the transfer of ownership, the leased assets are depreciated by the same methods used for owned fixed assets.

For lease transactions not involving the transfer of ownership, leased assets are depreciated over the lease period using the straight-line method with a nil residual value.

#### (k) Research and development costs and computer software

Research and development costs are charged to income as incurred.

Expenditures relating to computer software developed for internal use are charged to income when incurred, except if the software is expected to contribute to the generation of income or to future cost savings. Such expenditures are capitalized as assets and are amortized by the straight-line method over their respective estimated useful lives, generally a 5-year period.

#### (l) Deferred income taxes

Deferred income taxes are provided for temporary differences between the balances of assets and liabilities reported for financial reporting purposes and the corresponding balances for tax reporting purposes.

#### (m) Derivative financial instruments and hedging activities

All derivatives are stated at fair value with any changes in fair value included in profit for the period in which they arise, except for derivatives which meet the criteria for deferral hedge accounting under which unrealized gain or loss, net of the applicable income taxes, is deferred as a component of net assets. Receivables and payables hedged by forward foreign exchange contracts which meet certain conditions are translated at the corresponding foreign exchange contract rates. Interest-rate swaps which meet certain conditions are accounted for as if the interest rates applied to the interest-rate swaps had originally applied to the underlying debt.

Interest-rate and cross currency swaps which meet certain conditions are accounted for as if the interest rates and currencies applied to the interest-rate and cross currency swaps had originally applied to the underlying debt.

#### (n) Distribution of retained earnings

Under the Corporation Law of Japan and the Company's Articles of Incorporation, the distribution of retained earnings with respect to a given financial period is made by resolution of the shareholders at a general meeting held subsequent to the close of the financial period. The distribution of retained earnings with respect to the interim financial period is made by resolution of the Board of Directors. The accounts for the period do not reflect such distributions.

#### (o) Consolidated taxation system

The Company and certain domestic consolidated subsidiaries adopted the consolidated taxation system, which allows companies to file tax returns based on the combined profits or losses of the parent company and its wholly owned domestic subsidiaries.

### 3. Standards Issued but Not Yet Effective

#### (a) Implementation Guidance on Tax Effect Accounting and Implementation Guidance on Recoverability of Deferred Tax Assets

##### (i) Overview

On February 16, 2018, the Accounting Standards Board of Japan (hereinafter referred to as the "ASBJ") issued "Revised Implementation Guidance on Tax Effect Accounting" (ASBJ Guidance No.28) and "Revised Implementation Guidance on Recoverability of Deferred Tax Assets" (ASBJ Guidance No.26). The ASBJ made the following necessary revisions while adhering fundamentally to the framework outlined in "Practical Guidelines on Accounting Standards for Tax Effect Accounting."

The authority for providing related accounting guidance has been transferred from the Japanese Institute of Certified Public Accountants to the ASBJ.

(Major revised accounting treatments)

- Accounting treatment of taxable temporary differences related to investments in subsidiaries, etc. when an entity prepares separate financial statements
- Accounting treatment related to the recoverability of deferred tax assets in entities that qualify as (Category 1)

##### (ii) Scheduled date of adoption

The Company expects to adopt the revised implementation guidance from the beginning of the fiscal year ending March 31, 2019.

##### (iii) Impact of the adoption of implementation guidance

The Company is currently evaluating the effect of the adoption of the revised implementation guidance on its consolidated financial statements.

#### (b) Accounting Standard and Implementation Guidance for Revenue Recognition

##### (i) Overview

On March 30, 2018, the ASBJ issued "Accounting Standard for Revenue Recognition" (ASBJ Statement No.29) and "Implementation Guidance on Accounting Standard for Revenue Recognition" (ASBJ Guidance No.30). The International Accounting Standards Board (hereinafter referred to as the "IASB") and the Financial Accounting Standards Board (hereinafter referred to as the "FASB") in the United States co-developed comprehensive accounting standards for revenue recognition and issued "Revenue from Contracts with Customers" (issued as IFRS 15 by the IASB and Topic 606 by the FASB) in May 2014. The ASBJ developed comprehensive accounting standards on revenue recognition and issued them in conjunction with the implementation guidance based on the fact that IFRS 15 will be applied from fiscal years starting on or after January 1, 2018 and Topic 606 will be applied from fiscal years starting after December 15, 2017.

As the basic policy in developing accounting standards for revenue recognition, the ASBJ defined the accounting standard starting with incorporating the basic principle of IFRS 15 from a standpoint of comparability between financial statements, which is one benefit of ensuring consistency with IFRS 15. Furthermore, the ASBJ added alternative accounting treatment without impairing comparability when there are matters to be considered related to accounting practices, etc. common in Japan.

##### (ii) Scheduled date of adoption

The Company expects to adopt the accounting standard and implementation guidance from the beginning of the fiscal year ending March 31, 2022.

##### (iii) Impact of the adoption of accounting standard and implementation guidance

The Company is currently evaluating the effect of the adoption of the accounting standard and the implementation guidance on its consolidated financial statements.

### 4. Additional Information

#### Performance-linked stock compensation scheme

The Company introduced a performance-linked stock compensation scheme (hereinafter referred to as the "Scheme") for its directors (excluding directors who do not reside in Japan and outside directors; the same applies hereinafter), which serves as an officer remuneration system that is closely linked to corporate performance targets in the mid-term management plan and which is highly transparent and objective in nature.

##### (i) Overview of transactions

The Scheme adopts a mechanism known as an officer remuneration BIP (Board Incentive Plan) trust (hereinafter referred to as the "BIP Trust"). The BIP Trust is an incentive plan for officers based on the performance share scheme and the restricted stock scheme in the U.S., and has a system in which the Company's shares acquired by the BIP Trust and funds equivalent to the proceeds received when converting into cash or disposing of such shares are distributed and paid according to the officers' positions and the degree of achievement of performance targets disclosed in the mid-term management plan, and other factors.

##### (ii) The Company's shares remaining in the trust

The Company's shares remaining in the trust are recorded as treasury stock in the net asset section, based on their book value (excluding the amount of incidental expenses) recorded in the accounts of the trust. The book value and number of shares of such treasury stock at March 31, 2018 totaled ¥180 million (\$1,690 thousand) and 566,826 shares, and at March 31, 2017 totaled ¥180 million and 568,000 shares, respectively.

### 5. Inventories

Inventories at March 31, 2018 and 2017 consisted of the following:

	Millions of yen		Thousands of U.S. dollars
	2018	2017	2018
Finished goods	¥ 96,468	¥ 97,406	\$ 905,930
Work in process	49,479	43,629	464,657
Raw materials and supplies	33,791	30,447	317,331
	¥ 179,738	¥ 171,482	\$ 1,687,918

### 6. Impairment of Fixed Assets

The Company and its consolidated subsidiaries group fixed assets used for manufacturing by management segment into minimum units which generate identifiable cash flows (e.g., a factory). They also group fixed assets used at the head office or used for sales activities as shared assets, and group fixed assets on an individual basis when they do not expect any future use.

The Company and its consolidated subsidiaries wrote down the following assets to their respective net recoverable values because the Company and its consolidated subsidiaries do not expect them to be recoverable. Consequently, the Company and its consolidated subsidiaries recorded related losses on impairment of fixed assets of ¥635 million (\$5,963 thousand) and ¥4,562 million in the accompanying consolidated statement of income for the years ended March 31, 2018 and 2017, respectively:

Location	Usage	Classification	Millions of yen		Thousands of U.S. dollars
			2018	2017	2018
Japan	Production equipment and other	Machinery and equipment	¥ 15	¥ 24	\$ 141
		Land	448	–	4,207
		Construction in progress	65	100	610
	Other	–	432	–	
	Welfare facilities	Buildings and structures	107	–	1,005
		Machinery and equipment	0	–	0
Europe	Production equipment and other	Machinery and equipment	–	85	–
		Other	–	79	–
Asia and other areas	Production equipment	Buildings and structures	–	1,319	–
		Machinery and equipment	–	2,441	–
–	–	Goodwill	–	82	–
			¥ 635	¥ 4,562	\$ 5,963

The recoverable value of the fixed assets presented in the above table has been measured primarily at net realizable value or value in use. If a fixed asset is unlikely to be sold or diverted to other usage, such asset is valued at nil.

## 7. Securities

(a) Information regarding marketable securities classified as other securities at March 31, 2018 and 2017 is summarized as follows:

	Millions of yen					
	2018			2017		
	Carrying value	Acquisition costs	Unrealized gain (loss)	Carrying value	Acquisition costs	Unrealized gain (loss)
Securities whose carrying value exceeds their acquisition costs:						
Equity securities	¥ 36,636	¥ 13,038	¥ 23,598	¥ 31,758	¥ 12,025	¥ 19,733
Securities whose carrying value does not exceed their acquisition costs:						
Equity securities	3,574	3,759	(185)	4,347	4,772	(425)
Total	¥ 40,210	¥ 16,797	¥ 23,413	¥ 36,105	¥ 16,797	¥ 19,308

	Thousands of U.S. dollars		
	2018		
	Carrying value	Acquisition costs	Unrealized gain (loss)
Securities whose carrying value exceeds their acquisition costs:			
Equity securities	\$ 344,048	\$ 122,440	\$ 221,608
Securities whose carrying value does not exceed their acquisition costs:			
Equity securities	33,564	35,301	(1,737)
Total	\$ 377,612	\$ 157,741	\$ 219,871

(b) Sales and aggregate gain on investment securities are summarized as follows:

There were no sales of investment securities for the years ended March 31, 2018 and 2017.

## 8. Short-Term Bank Loans, Long-Term Debt and Lease Obligations

Short-term bank loans principally represent short-term notes with average annual interest rates of 1.12% and 0.84% at March 31, 2018 and 2017, respectively.

Long-term debt and lease obligations at March 31, 2018 and 2017 consisted of the following:

	Millions of yen		Thousands of U.S. dollars
	2018	2017	2018
Loans from banks and other financial institutions, due through 2026, at an average annual interest rate of 1.12%	¥ 232,753	¥ 233,437	\$ 2,185,782
0.405% unsecured bonds due 2025	10,000	10,000	93,910
0.490% unsecured bonds due 2027	10,000	10,000	93,910
0.430% unsecured bonds due 2028	10,000	—	93,910
Lease obligations due through 2046	2,401	2,620	22,548
	265,154	256,057	2,490,060
Less current portion	(61,125)	(66,947)	(574,025)
	¥ 204,029	¥ 189,110	\$ 1,916,035

The aggregate annual maturities of long-term debt and lease obligations subsequent to March 31, 2018 are summarized as follows:

Year ending March 31,	Millions of yen		Thousands of U.S. dollars
	2018	2017	2018
2019	¥ 61,125		\$ 574,025
2020	24,602		231,037
2021	37,273		350,031
2022	43,839		411,692
2023	33,115		310,983
2024 and thereafter	65,200		612,292
	¥ 265,154		\$ 2,490,060

## 9. Retirement Benefits

### 1. Outline of retirement benefits for employees

The Company and certain domestic consolidated subsidiaries have defined benefit pension plans (i.e., corporate pension fund plans and lump-sum payment plans), covering substantially all employees who are entitled to lump-sum or annuity payments, the amounts of which are determined by reference to their basic rates of pay, length of service, and the conditions under which termination occurs. They also have defined contribution pension plans and advance payment plans. Certain overseas consolidated subsidiaries have defined benefit pension plans and/or defined contribution pension plans. The Company has also established an employees' retirement benefit trust.

### 2. Defined benefit pension plans

(1) The changes in the retirement benefit obligation for the years ended March 31, 2018 and 2017 are as follows:

	Millions of yen		Thousands of U.S. dollars
	2018	2017	2018
Retirement benefit obligation at the beginning of the year	¥ 103,637	¥ 104,978	\$ 973,254
Service cost	3,439	3,432	32,296
Interest cost	1,838	1,870	17,261
Actuarial gain	(538)	(612)	(5,052)
Benefits paid	(5,809)	(5,859)	(54,552)
Other	272	(172)	2,553
Retirement benefit obligation at the end of the year	¥ 102,839	¥ 103,637	\$ 965,760

\* Certain domestic consolidated subsidiaries calculate the liability for retirement benefits based on the simplified method.

(2) The changes in plan assets for the years ended March 31, 2018 and 2017 are as follows:

	Millions of yen		Thousands of U.S. dollars
	2018	2017	2018
Plan assets at fair value at the beginning of the year	¥ 61,488	¥ 57,841	\$ 577,433
Expected return on plan assets	1,676	1,834	15,739
Actuarial gain	1,122	3,240	10,537
Contributions by the employers	2,687	2,586	25,234
Benefits paid	(3,775)	(3,710)	(35,451)
Other	(752)	(303)	(7,062)
Plan assets at fair value at the end of the year	¥ 62,446	¥ 61,488	\$ 586,430

(3) The balance of retirement benefit obligation and plan assets at fair value, liabilities and assets recognized in consolidated balance sheets as of March 31, 2018 and 2017 are as follows:

	Millions of yen		Thousands of U.S. dollars
	2018	2017	2018
Funded retirement benefit obligation	¥ 93,915	¥ 95,273	\$ 881,955
Plan assets at fair value	(62,446)	(61,488)	(586,430)
	31,469	33,785	295,525
Unfunded retirement benefit obligation	8,924	8,364	83,805
Net amount of liabilities and assets recognized in the consolidated balance sheet	40,393	42,149	379,330
Liability for retirement benefits	40,393	42,149	379,330
Net amount of liabilities and assets recognized in the consolidated balance sheet	¥ 40,393	¥ 42,149	\$ 379,330

(4) The components of retirement benefit expenses for the years ended March 31, 2018 and 2017 are as follows:

	Millions of yen		Thousands of U.S. dollars
	2018	2017	2018
Service cost	¥ 3,439	¥ 3,432	\$ 32,296
Interest cost	1,838	1,870	17,261
Expected return on plan assets	(1,676)	(1,834)	(15,739)
Amortization:			
Actuarial loss	1,710	2,254	16,059
Past service cost	8	(9)	74
Retirement benefit expenses	¥ 5,319	¥ 5,713	\$ 49,951

(5) The components of retirement benefit liability adjustments included in other comprehensive income (before tax effect) for the years ended March 31, 2018 and 2017 are as follows:

	Millions of yen		Thousands of U.S. dollars
	2018	2017	2018
Actuarial loss	¥ 3,370	¥ 6,106	\$ 31,648
Past service cost	23	17	216
Total	¥ 3,393	¥ 6,123	\$ 31,864

(6) The components of retirement benefit liability adjustments included in accumulated other comprehensive income (before tax effect) as of March 31, 2018 and 2017 are as follows:

	Millions of yen		Thousands of U.S. dollars
	2018	2017	2018
Unrecognized actuarial loss	¥ (8,117)	¥ (11,487)	\$ (76,227)
Unrecognized past service cost	(257)	(280)	(2,413)
Total	¥ (8,374)	¥ (11,767)	\$ (78,640)

(7) The fair value of plan assets, by major category, as a percentage of total plan assets as of March 31, 2018 and 2017 are as follows:

	2018	2017
Equities	45.2%	50.5%
Bonds	29.2	23.6
General accounts at life insurance companies	15.2	16.0
Other	10.4	9.9
Total	100.0%	100.0%

The expected long-term rate of return on plan assets is determined as a result of consideration of both the portfolio allocation at present and anticipated in the future, and long-term expected rate of return from multiple plan assets.

(8) The assumptions used in accounting for the defined benefit plans are as follows:

	2018	2017
Discount rate	Principally 1.2%	Principally 1.2%
Expected long-term rate of return on plan assets	Principally 2.5%	Principally 2.5%

### 3. Defined contribution pension plans

	Millions of yen		Thousands of U.S. dollars
	2018	2017	2018
Contributions to defined contribution pension plans	¥ 1,622	¥ 1,545	\$ 15,232

## 10. Shareholders' Equity

(a) The Corporation Law of Japan (the "Law") provides that an amount equal to 10% of the amount to be disbursed as distributions of capital surplus (other than the capital reserve) and retained earnings (other than the legal reserve) be transferred to the capital reserve and the legal reserve, respectively, until the sum of the capital reserve and the legal reserve equals 25% of the capital stock account. Such distributions can be made at any time by resolution of the shareholders or by the Board of Directors if certain conditions are met.

Retained earnings include the legal reserve provided in accordance with the provisions of the Law. The legal reserve of the Company included in retained earnings amounted to ¥8,639 million (\$81,129 thousand) at March 31, 2018 and 2017, respectively.

(b) Movements in shares issued and treasury stock during the years ended March 31, 2018 and 2017 are summarized as follows:

	Number of shares			
	2018			
	April 1, 2017	Increase	Decrease	March 31, 2018
Shares issued: Common stock	532,463,527	—	—	532,463,527
Treasury stock: Common stock	1,388,394	18,767	1,202	1,405,959

	2017			
	April 1, 2016	Increase	Decrease	March 31, 2017
Shares issued: Common stock	532,463,527	—	—	532,463,527
Treasury stock: Common stock	795,969	592,425	—	1,388,394

The increase in treasury stock of 18,767 shares was due to purchases of shares of less than one voting unit and the decrease in treasury stock of 1,202 shares was mainly due to disposal of shares by the "Officer Remuneration BIP Trust" for the year ended March 31, 2018 (Please refer to Note 4). Additionally, the Company included 566,826 shares held by the "Officer Remuneration BIP Trust" in the number of treasury stock at March 31, 2018.

The increase in treasury stock of 592,425 shares was due to purchases of 24,425 shares of less than one voting unit and purchases of 568,000 shares by the "Officer Remuneration BIP Trust" as the trust asset of the new stock compensation scheme for directors for the year ended March 31, 2017. Additionally, the Company included 568,000 shares held by the "Officer Remuneration BIP Trust" in the number of treasury stock at March 31, 2017.

## 11. Contingent Liabilities

### Lawsuits, etc.

(1) In June 2012, the Company and its former executives received an indictment filed by the Tokyo District Prosecutors Office (hereinafter referred to as the "TDPO") on suspicion of having violated the Anti-Monopoly Act of Japan in connection with the sales of bearings in Japan. In March 2013, the Company received a cease and desist order and surcharge payment order for ¥7,231 million (\$67,906 thousand) from the Japan Fair Trade Commission (hereinafter referred to as the "JFTC"). Because the assertions by the JFTC and the TDPO are different from the Company's view of the facts, in April 2013, the Company requested the JFTC to initiate a hearing. As a result, hearing proceedings for the JFTC orders were commenced in September 2013. In a criminal trial, the Supreme Court of Japan dismissed the Company's final appeal in December 2017; therefore the conviction judged by the Tokyo District Court in February 2015 became final and binding. In light of the ruling by the Supreme Court, the Company decided to withdraw the hearing request regarding the cease and desist order from the JFTC in December 2017. With regard to the surcharge payment order, the Company will carry on with the hearing proceedings in which the Company will continue its argument on the basis for calculation of the surcharge while the Company will not continue its argument on any violation or non-violation of the Anti-Monopoly Act of Japan.

In June 2017, a consolidated subsidiary in South Korea received from the Korea Fair Trade Commission the notice that it had

finished the investigation with its conclusion that the subsidiary was not guilty of any wrongdoing with regard to automotive bearings sales in the South Korean market.

There are ongoing investigations by the authorities into consolidated subsidiaries in Brazil and elsewhere.

- (2) In the U.S. and Canada, a number of class action suits were filed against the Company and its consolidated subsidiaries for suspected price-fixing of bearing sales with business competitors.
- (3) In February 2016, a lawsuit was filed against eight bearing manufacturers, including the Company, in The United Kingdom Competition Appeal Tribunal. The suit sought the joint payment of damages of €507.8 million (provisional amount) to Peugeot S.A. and its total 19 group companies (hereinafter referred to as the "PSA group"). However, the PSA group withdrew the claim against the Company in April 2018.
- (4) The Company and its related companies may be subject to lawsuits similar to the above mentioned lawsuits, etc. and continue to address these claims. Depending on the results of the above lawsuits, etc., the results of operations of the Company and its consolidated subsidiaries could be affected. However, it is currently difficult to make reasonable estimates of the future possible effects on the results of operations and financial position of the Company and its consolidated subsidiaries.

## 12. Operating Leases

Future minimum lease payments subsequent to March 31, 2018 for non-cancelable operating leases were as follows:

Year ending March 31,	Millions of yen	Thousands of U.S. dollars
2019	¥ 1,218	\$ 11,438
2020 and thereafter	4,236	39,780
Total	¥ 5,454	\$ 51,218

### 13. Financial Instruments

#### Overview

##### (a) Policy for financial instruments

The Company and its subsidiaries (collectively, the "Group") raise necessary funds in accordance with management plans mainly by bank borrowings and issuance of corporate bonds in support of operations related to the manufacture and sales of bearings, constant-velocity joints (CVJs) and precision equipments. The Group utilizes bank borrowings for short-term operating funds, and bank borrowings and issuance of corporate bonds for long-term capital investments and finances. Temporary surplus funds are managed by low-risk financial assets. The Group utilizes derivatives to avoid or mitigate risks as described in the later part of this note and does not hold them for speculative purposes.

##### (b) Types of financial instruments and related risks

Trade receivables, notes, accounts receivable and electronically recorded monetary claims, are exposed to credit risk of customers. In addition, as a result of the business of the Group, which operates globally, foreign currency trade receivables are exposed to currency rate fluctuation risk, which is mitigated by utilizing forward foreign currency exchange contracts. Securities are mainly composed of stocks of the companies with which the Group has business relationships and they are exposed to fluctuation risk of market prices.

Trade payables, notes, accounts payable and electronically recorded obligations, are due within one year. Certain trade payables resulting from the import of raw materials are denominated in foreign currencies. These are exposed to fluctuation risk of foreign currencies. However, the risk is mitigated because the trade payables, notes and accounts payable denominated in foreign currencies are within persistently the range of accounts receivable denominated in the same currencies.

Loans are mainly utilized for business operations of the Group. Short-term loans are mainly utilized for financing of operating activities. Long-term loans are mainly utilized for capital investments and financing. These have maturity dates of 8 years or less, at the longest, subsequent to March 31, 2018. Certain loans are exposed to fluctuation risk of interest rates and fluctuation risk of exchange rates and this risk is hedged by derivative transactions of interest rate swap agreements and interest-rate and cross currency swap agreements.

The Group has a policy to utilize derivative transactions involving forward foreign currency exchange contracts, currency option agreements, currency swap agreements, interest rate option agreements and interest rate swap agreements for the purpose of avoiding future fluctuation risk of foreign currencies trade receivables and payables and mitigating future fluctuation risk of interest rate of loans and corporate bonds. The Group utilized forward foreign currency exchange contracts, interest rate swap agreements and interest-rate and cross currency swap agreements for the year ended March 31, 2018. Refer to "(m) Derivative financial instruments and hedging activities" in Note 2. "Summary of Significant Accounting Policies."

##### (c) Risk management for financial instruments

(i) Monitoring of credit risk (the risk that customers or counterparties may default)

In accordance with internal rules and manual, the credit management section periodically monitors financial conditions of major customers, manages collection due dates and balances of each customer and tries to identify credit risk of customers with worsening financial conditions at the early stage and mitigate the risk. Credit risk of securities is quite low because the Group utilizes certificate of deposits with high credit ratings, up to a limited amount, which is approved by the Company. The Group believes credit risk of derivative transactions is almost nil because counterparties are financial institutions with high credit ratings.

(ii) Monitoring of market risks (the risks arising from fluctuations in foreign currency exchange rates, interest rates and others)

The Group mainly utilizes forward foreign currency exchange contracts for hedging of fluctuation risk which is identified by each currency. Depending on the market conditions of foreign currencies, the Group utilizes forward foreign currency exchange contracts for forecasted export transactions with a maximum period of 6 months. The Group utilizes interest rate swap agreements and interest-rate and cross currency swap agreements to mitigate fluctuation risk of interest rates and fluctuation risk of loan principal due to floating exchange rates.

The Group continuously reviews securities holdings by monitoring periodically the market value and financial condition of securities' issuers (companies with business relationships with the Group) and by evaluating those relationships.

The Group has established policies which include maximum upper limits and reporting obligations for derivative transactions and complies fully with these guidelines. Derivative transactions are entered into by the Company's Accounting Department and certain consolidated subsidiaries. The Company carries out mutual supervision and monitoring of the derivative transactions in accordance with management policies and its consolidated subsidiaries apply the same approach. Each derivative transaction of the Company is reported to the responsible director when entered into. The consolidated subsidiaries are required to report the status of their derivatives transactions to the Company on a monthly basis and are also required to consult with the Company when they enter into derivative transactions other than forward foreign currency exchange contracts.

(iii) Monitoring of liquidity risk (the risk that the Group may not be able to meet its obligations on scheduled due dates)

The Group manages liquidity risk with the responsible section preparing and updating cash flow plans and keeping necessary funds based on reports of each section.

##### (d) Supplementary explanation of the fair value of financial instruments

The fair value of financial instruments is based on their quoted market price, if available. When there is no quoted market price available, fair value is reasonably estimated. Since various assumptions and factors are reflected in estimating the fair value, different assumptions and factors could result in different fair value. In addition, the notional amounts of derivatives in Note 14 "Derivative Financial Instruments and Hedging Activities" are not necessarily indicative of the actual market risk involved in the derivative transactions.

#### Fair Value of Financial Instruments

The carrying value of financial instruments on the consolidated balance sheets, fair value and the difference as of March 31, 2018 and 2017, are shown in the following table. The table does not include financial instruments for which it is extremely difficult to determine the fair value. (Please refer to Note 2 below).

	Millions of yen					
	2018			2017		
	Carrying value	Fair value	Difference	Carrying value	Fair value	Difference
(1) Cash and cash equivalents	¥ 86,088	¥ 86,088	¥ —	¥ 79,284	¥ 79,284	¥ —
(2) Short-term investments	2,595	2,595	—	718	718	—
(3) Notes and accounts – trade receivables	143,692	143,692	—	136,848	136,848	—
(4) Electronically recorded monetary claims	5,745	5,745	—	5,495	5,495	—
(5) Investment securities	40,210	40,213	3	36,105	36,109	4
(6) Short-term loans receivable included in other current assets	77	77	—	94	94	—
Total assets	¥ 278,407	¥ 278,410	¥ 3	¥ 258,544	¥ 258,548	¥ 4
(7) Short-term bank loans	58,080	58,080	—	66,733	66,733	—
(8) Current portion of long-term debt	60,853	60,853	—	66,615	66,615	—
(9) Notes and accounts – trade payables	69,716	69,716	—	59,262	59,262	—
(10) Electronically recorded obligations	64,112	64,112	—	58,132	58,132	—
(11) Accrued income taxes	3,888	3,888	—	3,057	3,057	—
(12) Long-term debt	201,900	202,080	180	186,822	187,600	778
Total liabilities	¥ 458,549	¥ 458,729	¥ 180	¥ 440,621	¥ 441,399	¥ 778
Derivative transactions (*)	¥ 636	¥ 636	¥ —	¥ 1,070	¥ 1,070	¥ —

	Thousands of U.S.dollars		
	2018		
	Carrying value	Fair value	Difference
(1) Cash and cash equivalents	\$ 808,452	\$ 808,452	\$ —
(2) Short-term investments	24,370	24,370	—
(3) Notes and accounts – trade receivables	1,349,411	1,349,411	—
(4) Electronically recorded monetary claims	53,951	53,951	—
(5) Investment securities	377,612	377,640	28
(6) Short-term loans receivable included in other current assets	723	723	—
Total assets	\$ 2,614,519	\$ 2,614,547	\$ 28
(7) Short-term bank loans	545,429	545,429	—
(8) Current portion of long-term debt	571,470	571,470	—
(9) Notes and accounts – trade payables	654,703	654,703	—
(10) Electronically recorded obligations	602,075	602,075	—
(11) Accrued income taxes	36,512	36,512	—
(12) Long-term debt	1,896,042	1,897,732	1,690
Total liabilities	\$ 4,306,231	\$ 4,307,921	\$ 1,690
Derivative transactions (*)	\$ 5,973	\$ 5,973	\$ —

\* Assets and liabilities arising from derivative transactions are shown at net value with the amount in parentheses representing net liability position.

Note 1: Methods to determine the fair value of financial instruments and other matters related to securities and derivative transactions  
 (1) Cash and cash equivalents, (2) Short-term investments, (3) Notes and accounts-trade receivables, (4) Electronically recorded monetary claims and (6) Short-term loans receivable included in other current assets  
 Since these items are settled in a short time period, their carrying value approximates fair value.

(5) Investment securities

The fair value of equity securities is based on quoted market prices.



(7) Short-term bank loans, (9) Notes and accounts-trade payables (10) Electronically recorded obligations and (11) Accrued income taxes  
Since these items are settled in a short time period, their carrying value approximates fair value.

(8) Current portion of long-term debt and (12) Long-term debt

Long-term debt is composed of corporate bonds and long-term loans. The fair market value of corporate bonds is based on quoted market prices. The fair value of long-term loans is based on the present value of the total of principal and interest discounted by the interest rate to be applied assuming new loans under the similar conditions to existing loans are made.

Certain long-term loans with floating interest rates have been hedged by interest rate swap agreements and interest-rate and cross currency swap agreements. These have been accounted for as loans with fixed interest rates. The fair value of those long-term loans is based on the present value of the total of the principals, interest payments and net cash flows of the swap agreements discounted by the interest rates to be applied assuming new loans under similar conditions are made.

Derivative Transactions

Please refer to Note 14 "Derivative Financial Instruments and Hedging Activities" section of these Notes to Consolidated Financial Statements.

Note 2: Financial instruments for which it is extremely difficult to determine the fair value are as follows:

	Millions of yen		Thousands of U.S. dollars
	2018	2017	2018
Unlisted stocks			
Stocks of subsidiaries and affiliates	¥ 18,735	¥ 17,992	\$ 175,940
Other	289	290	2,714
Total	¥ 19,024	¥ 18,282	\$ 178,654

Because no quoted market price is available and it is extremely difficult to determine the fair value, the above financial instruments are not included in the preceding table.

Note 3: Redemption schedules for cash and cash equivalents, receivables and marketable securities with maturities at March 31, 2018 and 2017 are as follows:

	Millions of yen			
	2018			
	Within one year	More than one year and within five years	More than five years and within ten years	More than ten years
Cash and cash equivalents	¥ 86,088	¥ —	¥ —	¥ —
Short-term investments	2,595	—	—	—
Trade receivables	143,692	—	—	—
Electronically recorded monetary claims	5,745	—	—	—
Short-term loans receivable included in other current assets	77	—	—	—
Total	¥ 238,197	¥ —	¥ —	¥ —

	Millions of yen			
	2017			
	Within one year	More than one year and within five years	More than five years and within ten years	More than ten years
Cash and cash equivalents	¥ 79,284	¥ —	¥ —	¥ —
Short-term investments	718	—	—	—
Trade receivables	136,848	—	—	—
Electronically recorded monetary claims	5,495	—	—	—
Short-term loans receivable included in other current assets	94	—	—	—
Total	¥ 222,439	¥ —	¥ —	¥ —

Thousands of U.S. dollars

	2018			
	Within one year	More than one year and within five years	More than five years and within ten years	More than ten years
Cash and cash equivalents	\$ 808,452	\$ —	\$ —	\$ —
Short-term investments	24,370	—	—	—
Trade receivables	1,349,411	—	—	—
Electronically recorded monetary claims	53,951	—	—	—
Short-term loans receivable included in other current assets	723	—	—	—
Total	\$ 2,236,907	\$ —	\$ —	\$ —

Note 4: The redemption schedule for long-term debt is disclosed in Note 8 "Short-Term Bank Loans, Long-Term Debt and Lease Obligations" section of these Notes to Consolidated Financial Statements.

## 14. Derivative Financial Instruments and Hedging Activities

### (a) Derivative transactions to which hedge accounting is not applied

The estimated fair value of the derivatives positions outstanding which do not qualify for deferral hedge accounting at March 31, 2018 and 2017 is summarized as follows:

#### Currency-related transactions

Classification	Transaction	Millions of yen			
		Notional amount	More than one year	Fair value	Valuation gain
Over-the-counter transactions	Forward foreign currency exchange contracts				
	Selling:				
	Euro	¥ 6,343	¥ —	¥ 131	¥ 131
	U.S. dollars	13,135	—	272	272
	Other	2,277	—	10	10
	Buying:				
Other	1,774	—	64	64	
Interest-rate and cross currency swaps	Receive/fixed yen and pay / fixed Euro	14,067	14,067	159	159
	Total	¥ 37,596	¥ 14,067	¥ 636	¥ 636

Classification	Transaction	Millions of yen			
		2017			
		Notional amount	More than one year	Fair value	Valuation gain
Over-the-counter transactions	Forward foreign currency exchange contracts				
	Selling:				
	Euro	¥ 6,975	¥ 1,338	¥ 220	¥ 220
	U.S. dollars	13,781	—	(8)	(8)
	Other	2,241	—	(71)	(71)
	Buying:				
Other	204	—	(4)	(4)	
Interest-rate and cross currency swaps	Receive/fixed yen and pay / fixed Euro	10,058	10,058	933	933
	Total	¥ 33,259	¥ 11,396	¥ 1,070	¥ 1,070

		Thousands of U.S. dollars			
		2018			
Classification	Transaction	Notional amount	More than one year	Fair value	Valuation gain
	Forward foreign currency exchange contracts				
	Selling:				
	Euro	\$ 59,567	\$ —	\$ 1,230	\$ 1,230
	U.S. dollars	123,351	—	2,554	2,554
	Other	21,384	—	95	95
Over-the-counter transactions	Buying:				
	Other	16,659	—	601	601
	Interest-rate and cross currency swaps				
	Receive/fixed yen and pay / fixed Euro	132,103	132,103	1,493	1,493
	Total	\$ 353,064	\$ 132,103	\$ 5,973	\$ 5,973

The fair value of forward foreign currency exchange contracts is computed using prices provided by counterparty financial institutions.

#### (b) Derivative transactions to which hedge accounting is applied

The estimated fair value of the derivatives positions outstanding which qualify for deferral hedge accounting at March 31, 2018 and 2017 is summarized as follows.

		Millions of yen		
		2018		
Method of hedge accounting	Transaction	Notional amount	More than one year	Fair value
Swap rates applied to underlying long-term debt	Interest rate swaps Receive / floating and pay / fixed	¥ 14,000	¥ 6,000	(*1)
Swap rates and currency applied to underlying long-term debt	Interest-rate and cross currency swaps Receive / floating U.S. dollars and pay / fixed yen	¥ 1,500	—	(*2)
Forward foreign currency exchange contracts applied to underlying accounts-trade receivable	Forward foreign currency exchange contract Selling: U.S. dollars	¥ 86	—	(*3)

		Millions of yen		
		2017		
Method of hedge accounting	Transaction	Notional amount	More than one year	Fair value
Swap rates applied to underlying long-term debt	Interest rate swaps Receive / floating and pay / fixed	¥ 18,500	¥ 14,000	(*1)
Swap rates and currency applied to underlying long-term debt	Interest-rate and cross currency swaps Receive / floating U.S. dollars and pay / fixed yen	¥ 1,500	¥ 1,500	(*2)
Forward foreign currency exchange contracts applied to underlying other current liabilities	Forward foreign currency exchange contract Selling: U.S. dollars	¥ 79	—	(*3)
	Buying: Euro	¥ 3,003	—	(*3)

		Thousands of U.S. dollars		
		2018		
Method of hedge accounting	Transaction	Notional amount	More than one year	Fair value
Swap rates applied to underlying long-term debt	Interest rate swaps Receive / floating and pay / fixed	\$ 131,474	\$ 56,346	(*1)
Swap rates and currency applied to underlying long-term debt	Interest-rate and cross currency swaps Receive / floating U.S. dollars and pay / fixed yen	\$ 14,086	—	(*2)
Forward foreign currency exchange contracts applied to underlying accounts-trade receivable	Forward foreign currency exchange contract Selling: U.S. dollars	\$ 808	—	(*3)

\*1 Because interest rate swap agreements are accounted for applying swap rates to underlying long-term debt, their fair value is included in that of long-term debt disclosed in Note 13 "Financial Instruments."

\*2 Because interest-rate and cross currency swaps agreements are accounted for applying swap rates to underlying long-term debt, their fair value is included in that of long-term debt disclosed in Note 13 "Financial Instruments."

\*3 Because forward foreign currency exchange contracts are accounted for applying forward foreign exchange rate to underlying accounts-trade receivable, and underlying accounts-trade receivable and other current liabilities, for the years ended March 31, 2018 and 2017, respectively, their fair value is included in that of accounts-trade receivable and other current liabilities.

## 15. Research and Development Costs

Research and development costs included in cost of sales and selling, general and administrative expenses totaled ¥21,007 million (\$197,277 thousand) and ¥19,196 million for the years ended March 31, 2018 and 2017, respectively.

## 16. Gain on Reversal of Loss on Arbitration Ruling

In relation to arbitration proceedings for allegedly defective products with Volvo Powertrain AB in Europe, NTN-SNR ROULEMENTS (hereinafter referred to as "NTN-SNR") received the final ruling from the Arbitration Institute of the Stockholm Chamber of Commerce (Sweden) that ordered NTN-SNR to provide compensation for damages in November 2015. Accordingly, the Company and NTN-SNR recorded loss on arbitration ruling for the year ended March 31, 2016. The Company and NTN-SNR thoroughly examined the ruling and decided that there was a flaw in such arbitration proceedings. Therefore, the Company and NTN-SNR challenged the ruling in the Stockholm District Court in February 2016. In January 2017, NTN-SNR has reached an agreement to settle with Volvo Powertrain AB. As a result, the Company and NTN-SNR recorded gain on reversal of loss on arbitration ruling in the amount of ¥2,147 million for the year ended March 31, 2017.

## 17. Loss on Surcharge Payments under the Anti-Monopoly Act

In relation to a number of class action suits for suspected price-fixing of bearing sales with other business competitors, the Company and its consolidated subsidiary in the U.S. have reached an agreement to settle with indirect purchasers, parts of the certain plaintiffs in the U.S. in November 2016. In addition, the Company has negotiated the compensation of damages with a part of customers in association with investigations by the authorities about the competition laws. Nevertheless, in overall consideration of the effects to operations of the Company and its consolidated subsidiaries due to extended negotiations, the Company reached the conclusion to pay the settlement amount because the Company considered that an amicable and early resolution would accord with the overall benefits for both parties.

As a result, the Company and its consolidated subsidiaries recorded loss on surcharge payments under the Anti-Monopoly Act in the amount of ¥3,710 million (\$34,841 thousand) and ¥12,129 million for the years ended March 31, 2018 and 2017, respectively.

## 18. Other Comprehensive Income (Loss)

The following table presents the analysis of other comprehensive income (loss) for the years ended March 31, 2018 and 2017.

	Millions of yen		Thousands of U.S. dollars
	2018	2017	2018
Net unrealized holding gain on securities:			
Amount arising during the year	¥ 4,104	¥ 7,210	\$ 38,541
Reclassification adjustments for gains included in profit	—	(134)	—
Before tax effect	4,104	7,076	38,541
Tax effect	(1,231)	(2,123)	(11,561)
Total	2,873	4,953	26,980
Translation adjustments:			
Amount arising during the year	5,269	(8,768)	49,481
Reclassification adjustments for losses included in profit	—	86	—
Before tax effect	5,269	(8,682)	49,481
Tax effect	—	—	—
Total	5,269	(8,682)	49,481
Retirement benefit liability adjustments:			
Amount arising during the year	1,069	3,451	10,039
Reclassification adjustments for losses included in profit	1,911	2,305	17,946
Before tax effect	2,980	5,756	27,985
Tax effect	(1,742)	(2,132)	(16,359)
Total	1,238	3,624	11,626
Share of other comprehensive income (loss) of affiliates accounted for by the equity method:			
Amount arising during the year	553	(768)	5,194
Reclassification adjustments for gains included in profit	(7)	—	(66)
Total	546	(768)	5,128
Other comprehensive income (loss), net	¥ 9,926	¥ (873)	\$ 93,215

## 19. Income Taxes

Income taxes applicable to the Company and its domestic subsidiaries comprise corporate taxes, inhabitants' taxes and enterprise taxes which, in the aggregate, resulted in a statutory tax rate of 30.2% for the years ended March 31, 2018 and 2017. Overseas subsidiaries are subject to the income taxes of the respective countries in which they operate.

The effective tax rates for the years ended March 31, 2018 and 2017 differ from the Company's statutory tax rate for the following reasons:

	2018	2017
Statutory tax rates	30.2%	30.2%
Permanent non-deductible expenses	1.5	0.8
Permanent non-taxable income	(6.5)	(9.3)
Elimination of dividend income	8.0	11.8
Equity in earnings of affiliates	(0.5)	(0.4)
Difference in overseas consolidated subsidiaries' applicable tax rates	(7.7)	(2.9)
Increase in valuation allowance	5.3	34.7
Decrease in deferred tax assets due to change in statutory tax rates	(2.5)	0.1
Tax credit for research and development expenses	(2.1)	(0.5)
Other	(8.5)	5.5
Effective tax rates	17.2%	70.0%

The tax effects of temporary differences which gave rise to significant portions of the deferred tax assets and liabilities at March 31, 2018 and 2017 are presented below:

	Millions of yen		Thousands of U.S. dollars
	2018	2017	2018
Deferred tax assets:			
Liability for retirement benefits	¥ 15,090	¥ 16,390	\$ 141,710
Inventories	2,147	1,167	20,162
Tax loss carryforwards	7,965	9,443	74,799
Accrued expenses	4,403	5,339	41,349
Valuation loss on investment securities	898	898	8,433
Impairment loss	1,026	863	9,635
Other	4,103	4,901	38,532
Gross deferred tax assets	35,632	39,001	334,620
Less: valuation allowance	(5,843)	(5,969)	(54,872)
Total deferred tax assets	29,789	33,032	279,748
Deferred tax liabilities:			
Depreciation and amortization	(8,879)	(13,373)	(83,383)
Unrealized holding gain on securities	(7,020)	(5,789)	(65,925)
Reserve for deferred gain on property included in retained earnings	(1,192)	(1,233)	(11,194)
Retained earnings of overseas consolidated subsidiaries	(169)	(184)	(1,587)
Other	(855)	(1,171)	(8,030)
Total deferred tax liabilities	(18,115)	(21,750)	(170,119)
Net deferred tax assets	¥ 11,674	¥ 11,282	\$ 109,629

## 20. Amounts per Share

Amounts per share at March 31, 2018 and 2017 and for the years then ended were as follows:

	Yen		U.S. dollars
	2018	2017	2018
Net assets	¥ 477.17	¥ 431.66	\$ 4.48
Profit attributable to owners of parent:			
Basic	38.36	5.33	0.36
Cash dividends	15.00	10.00	0.14

Amounts per share of net assets are computed based on the number of shares of common stock outstanding at the year end.

Basic profit attributable to owners of parent per share is computed based on the profit attributable to owners of parent of common stock and the weighted-average number of shares of common stock outstanding during the year. Diluted profit attributable to owners of parent per share has not been presented because there were no potentially dilutive shares of common stock for the years ended March 31, 2018 and 2017.

The Company recorded shares held by the "Officer Remuneration BIP Trust" (Please refer to Note 4) as treasury stock in the consolidated financial statements as of March 31, 2018 and 2017. Accordingly, to compute "net assets per share," the Company's shares held by the trust (566,826 shares and 568,000 shares at March 31, 2018 and 2017, respectively) are included in treasury stock that is excluded from the number of shares outstanding as of March 31, 2018 and 2017. In addition, to compute "profit attributable to owners of parent per share," the Company's shares held by the trust (567,097 and 349,538 average number of shares for the years ended March 31, 2018 and 2017, respectively) are included in treasury stock that is excluded from the computation of the average number of shares for the years ended March 31, 2018 and 2017.

Cash dividends per share represent the cash dividends proposed by the Board of Directors as applicable to the respective years together with the interim cash dividends paid.

## 21. Segment Information

### 1. Outline of reporting segments

The Group's reporting segments are divisions of the Group for which separate financial information is available, and whose operating results are reviewed regularly by the highest management decision-making body (the Board of Directors meeting of the Company) in order to allocate management resources and assess performance of operations.

The Group's main business lines consist of the manufacture and sales of bearings, CVJs and precision equipments for the aftermarket, general industrial machinery market, and automotive market. Business activities in Japan are controlled by the Company (the Head Office), and overseas business activities are controlled by the General Manager responsible in each region. Business entities in each region prepare their own plans and strategies to conduct business activities while analyzing profitability and the investment efficiency of operations.

Accordingly, the Group has four reporting segments based on geographic business segmentation controlled by the Head Office or the General Managers: Japan, the Americas, Europe, and Asia and other areas. Each reporting segment engages in the manufacture and sale of bearings, CVJs, and precision equipments and other products.

### 2. Calculation methods used for net sales, profit or loss, assets, liabilities and other items on each reporting segment

The accounting policies of the segments are substantially the same as those described in Note 2 "Summary of Significant Accounting Policies." Inter-segment sales and transfers are recorded at the same prices used in transactions with third parties.

### 3. Information as to net sales, profit or loss, assets, liabilities, and other items for each reporting segment for the years ended March 31, 2018 and 2017

Reportable segment information for the years ended March 31, 2018 and 2017 is summarized as follows:

	Millions of yen						
	2018						
	Reporting segments						Adjustments
Japan	Americas	Europe	Asia and other areas	Total			
<b>Sales, profit and assets or liabilities by reporting segments:</b>							
Net sales:							
Sales to third parties	¥ 213,977	¥ 194,277	¥ 188,225	¥ 147,894	¥ 744,373	¥ —	¥ 744,373
Inter-segment sales and transfers	133,346	4,269	4,292	14,058	155,965	(155,965)	—
Total	347,323	198,546	192,517	161,952	900,338	(155,965)	744,373
Segment profit	¥ 8,015	¥ 7,092	¥ 2,800	¥ 19,601	¥ 37,508	¥ 2,101	¥ 39,609
Segment assets	¥ 600,933	¥ 163,009	¥ 153,353	¥ 172,959	¥ 1,090,254	¥ (250,202)	¥ 840,052
Segment liabilities	¥ 390,502	¥ 104,868	¥ 112,839	¥ 52,309	¥ 660,518	¥ (90,226)	¥ 570,292
<b>Other items:</b>							
Depreciation and amortization	¥ 13,482	¥ 9,854	¥ 7,236	¥ 6,934	¥ 37,506	¥ —	¥ 37,506
Capital expenditures	¥ 26,409	¥ 10,287	¥ 7,710	¥ 4,267	¥ 48,673	¥ (201)	¥ 48,472

	Millions of yen						
	2017						
	Reporting segments						Adjustments
Japan	Americas	Europe	Asia and other areas	Total			
<b>Sales, profit and assets or liabilities by reporting segments:</b>							
Net sales:							
Sales to third parties	¥ 200,956	¥ 187,788	¥ 165,262	¥ 129,323	¥ 683,329	¥ —	¥ 683,329
Inter-segment sales and transfers	119,879	3,605	3,755	12,980	140,219	(140,219)	—
Total	320,835	191,393	169,017	142,303	823,548	(140,219)	683,329
Segment profit	¥ 4,462	¥ 8,286	¥ 3,310	¥ 14,523	¥ 30,581	¥ 5,042	¥ 35,623
Segment assets	¥ 584,617	¥ 169,057	¥ 138,029	¥ 157,234	¥ 1,048,937	¥ (250,046)	¥ 798,891
Segment liabilities	¥ 379,093	¥ 115,146	¥ 95,336	¥ 53,954	¥ 643,529	¥ (89,688)	¥ 553,841
<b>Other items:</b>							
Depreciation and amortization	¥ 13,168	¥ 10,098	¥ 6,390	¥ 6,973	¥ 36,629	¥ —	¥ 36,629
Capital expenditures	¥ 19,207	¥ 11,699	¥ 8,318	¥ 3,749	¥ 42,973	¥ (64)	¥ 42,909

	Thousands of U.S. dollars						
	2018						
	Reporting segments						Adjustments
Japan	Americas	Europe	Asia and other areas	Total			
<b>Sales, profit and assets or liabilities by reporting segments:</b>							
Net sales:							
Sales to third parties	\$ 2,009,457	\$ 1,824,454	\$ 1,767,620	\$ 1,388,871	\$ 6,990,402	\$ —	\$ 6,990,402
Inter-segment sales and transfers	1,252,251	40,090	40,306	132,019	1,464,666	(1,464,666)	—
Total	3,261,708	1,864,544	1,807,926	1,520,890	8,455,068	(1,464,666)	6,990,402
Segment profit	\$ 75,269	\$ 66,601	\$ 26,295	\$ 184,073	\$ 352,238	\$ 19,730	\$ 371,968
Segment assets	\$ 5,643,358	\$ 1,530,817	\$ 1,440,137	\$ 1,624,257	\$ 10,238,569	\$ (2,349,646)	\$ 7,888,923
Segment liabilities	\$ 3,667,202	\$ 984,815	\$ 1,059,670	\$ 491,233	\$ 6,202,920	\$ (847,312)	\$ 5,355,608
<b>Other items:</b>							
Depreciation and amortization	\$ 126,610	\$ 92,539	\$ 67,953	\$ 65,117	\$ 352,219	\$ —	\$ 352,219
Capital expenditures	\$ 248,007	\$ 96,605	\$ 72,405	\$ 40,071	\$ 457,088	\$ (1,888)	\$ 455,200

The total amount of segment profit is adjusted to operating income of the consolidated statement of income.

Other than those corresponding to segment assets, adjustments relate to the elimination of inter-segment transactions, etc. The adjustments for segment assets consist of inter-segment elimination, etc. of ¥290,727 million (\$2,730,216 thousand) and ¥286,466 million and the corporate assets of the Group of ¥40,525 million (\$380,570 thousand) and ¥36,420 million for the years ended March 31, 2018 and 2017, respectively. The corporate assets are mainly long-term investment funds (investment securities) for the years ended March 31, 2018 and 2017.

#### 4. Related information

##### (1) Sales by products and service

Sales by products and service classified by the similarity of the market for the years ended March 31, 2018 and 2017 are summarized as follows:

	Millions of yen			
	2018			
	Aftermarket	Industrial machinery	Automotive	Total
Sales to third parties	¥ 116,695	¥ 119,085	¥ 508,593	¥ 744,373

	Millions of yen			
	2017			
	Aftermarket	Industrial machinery	Automotive	Total
Sales to third parties	¥ 104,501	¥ 98,611	¥ 480,217	¥ 683,329

	Thousands of U.S. dollars			
	2018			
	Aftermarket	Industrial machinery	Automotive	Total
Sales to third parties	\$ 1,095,882	\$ 1,118,327	\$ 4,776,193	\$ 6,990,402

##### (2) Regional information

###### (a) Sales

Sales categorized by country and region based on locations of customers within the Group for the years ended March 31, 2018 and 2017 are summarized as follows:

	Millions of yen				
	2018				
	Japan	Americas	Europe	Asia and other areas	Total
	¥ 204,325	¥ 201,677	¥ 175,599	¥ 162,772	¥ 744,373

	Millions of yen				
	2017				
	Japan	Americas	Europe	Asia and other areas	Total
	¥ 191,466	¥ 194,765	¥ 154,990	¥ 142,108	¥ 683,329

	Thousands of U.S. dollars				
	2018				
	Japan	Americas	Europe	Asia and other areas	Total
	\$ 1,918,815	\$ 1,893,947	\$ 1,649,049	\$ 1,528,591	\$ 6,990,402

"Americas" includes the U.S.A., Canada and Central and South America. "Europe" includes Germany, France, the U.K. and others. "Asia and other areas" include China, Thailand, India and others. The sales of the "Americas" segment above include the sales to customers in the U.S.A. of ¥172,454 million (\$1,619,514 thousand) and ¥168,383 million for the years ended March 31, 2018 and 2017, respectively. The sales of the "Asia and other areas" segment above include the sales to customers in China of ¥86,709 million (\$814,284 thousand) and ¥74,223 million for the years ended March 31, 2018 and 2017, respectively.

##### (b) Property, plant and equipment

Property, plant and equipment categorized by country and region within the Group at March 31, 2018 and 2017 are summarized as follows:

	Millions of yen				
	2018				
	Japan	Americas	Europe	Asia and other areas	Total
	¥ 113,587	¥ 72,952	¥ 49,544	¥ 51,976	¥ 288,059

	Millions of yen				
	2017				
	Japan	Americas	Europe	Asia and other areas	Total
	¥ 110,920	¥ 76,259	¥ 44,964	¥ 52,469	¥ 284,612

	Thousands of U.S. dollars				
	2018				
	Japan	Americas	Europe	Asia and other areas	Total
	\$ 1,066,695	\$ 685,092	\$ 465,267	\$ 488,106	\$ 2,705,160

1. Property, plant and equipment in "Americas" in the amount of ¥64,293 million (\$603,775 thousand) and ¥67,938 million is located in the U.S.A. at March 31, 2018 and 2017, respectively.
2. Property, plant and equipment in "Europe" in the amount of ¥34,724 million (\$326,093 thousand) and ¥32,545 million is located in France at March 31, 2018 and 2017, respectively.
3. Property, plant and equipment in "Asia and other areas" in the amount of ¥38,839 million (\$364,737 thousand) and ¥39,440 million is located in China at March 31, 2018 and 2017, respectively.

#### 5. Loss on impairment of fixed assets

Loss on impairment of fixed assets by reporting segment for the years ended March 31, 2018 and 2017 is summarized as follows:

	Millions of yen					
	2018					
	Japan	Americas	Europe	Asia and other areas	Adjustments	Total
	¥ 635	¥ —	¥ —	¥ —	¥ —	¥ 635

	Millions of yen					
	2017					
	Japan	Americas	Europe	Asia and other areas	Adjustments	Total
	¥ 556	¥ —	¥ 164	¥ 3,760	¥ 82	¥ 4,562

	Thousands of U.S. dollars					
	2018					
	Japan	Americas	Europe	Asia and other areas	Adjustments	Total
	\$ 5,963	\$ —	\$ —	\$ —	\$ —	\$ 5,963

## 22. Business Combination

### Common Control Transaction, etc.

#### 1. Overview of transaction

(1) Company name and business description of combined company  
 Combined company : NTN BEARING-MALAYSIA SDN.BHD.  
 Business description : Sales of bearings, CVJs, precision equipments and other products

(2) Date of the business combination  
 December 12, 2017

(3) Legal form of business combination  
 Additional acquisition of stock from non-controlling shareholders

(4) Company name of combined company after business combination  
 There is no change.

(5) Other matters related to overview of transaction  
 The Company acquired an additional 40% of ownership interests through the transaction. As a result, NTN BEARING-MALAYSIA SDN.BHD. became a wholly owned subsidiary of the Company. The Company aims to enhance the consolidation group management and to expand the business in ASEAN by the transaction.

#### 2. Overview of accounting treatment applied

The transaction was treated as "transaction with non-controlling shareholders" which falls under the category of "common control transactions, etc." set forth in "Accounting Standard for Business Combinations" and "Implementation Guidance on Accounting Standard for Business Combinations and Accounting Standard for Business Divestitures."

#### 3. Matters to be disclosed when additionally acquiring shares of subsidiaries

Details on acquisition cost of acquired company and consideration for acquisition by type

Consideration for the acquisition: Cash and cash equivalents (including accounts payable other) ¥223 million (\$2,094 thousand)

#### 4. Matters related to change in ownership interests held by the Company due to transactions with non-controlling shareholders

(1) Main reason for change in capital surplus  
 Additional acquisition of shares in a subsidiary

(2) Increase in capital surplus due to transaction with non-controlling shareholders  
 ¥1,052 million (\$9,879 thousand)

## 23. Subsequent Event

The following distribution of retained earnings of the Company, which has not been reflected in the accompanying consolidated financial statements as of March 31, 2018 and for the year then ended, was approved at the annual general meeting of the shareholders held on June 27, 2018:

Year ending March 31,	Millions of yen	Thousands of U.S. dollars
Year-end cash dividends (¥7.5 (U.S. \$0.07) per share)	¥ 3,987	\$ 37,442

## Independent Auditor's Report



### Independent Auditor's Report

The Board of Directors  
 NTN Corporation

We have audited the accompanying consolidated financial statements of NTN Corporation and its consolidated subsidiaries, which comprise the consolidated balance sheet as at March 31, 2018, and the consolidated statements of income, comprehensive income, changes in net assets, and cash flows for the year then ended and a summary of significant accounting policies and other explanatory information, all expressed in Japanese yen.

#### Management's Responsibility for the Consolidated Financial Statements

Management is responsible for the preparation and fair presentation of these consolidated financial statements in accordance with accounting principles generally accepted in Japan, and for designing and operating such internal control as management determines is necessary to enable the preparation and fair presentation of the consolidated financial statements that are free from material misstatement, whether due to fraud or error.

#### Auditor's Responsibility

Our responsibility is to express an opinion on these consolidated financial statements based on our audit. We conducted our audit in accordance with auditing standards generally accepted in Japan. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the consolidated financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the consolidated financial statements. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the consolidated financial statements, whether due to fraud or error. The purpose of an audit of the consolidated financial statements is not to express an opinion on the effectiveness of the entity's internal control, but in making these risk assessments the auditor considers internal controls relevant to the entity's preparation and fair presentation of the consolidated financial statements in order to design audit procedures that are appropriate in the circumstances. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

#### Opinion

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the consolidated financial position of NTN Corporation and its consolidated subsidiaries as at March 31, 2018, and their consolidated financial performance and cash flows for the year then ended in conformity with accounting principles generally accepted in Japan.

#### Convenience Translation

We have reviewed the translation of these consolidated financial statements into U.S. dollars, presented for the convenience of readers, and, in our opinion, the accompanying consolidated financial statements have been properly translated on the basis described in Note 1.

June 27, 2018  
 Osaka, Japan

*Ernst & Young Shin Nihon LLC*

A member firm of Ernst & Young Global Limited

# Third-Party Opinion

## NTN Report 2018 Third-Party Opinion



### Takeshi Mizuguchi

Professor, Faculty of Economics, Takasaki City University of Economics

#### Profile

After working at a trading company and auditing firm, Mizuguchi became a lecturer in the Faculty of Economics at Takasaki City University of Economics in 1997. He assumed his present role in 2008. Mizuguchi specializes in responsible investment and non-financial information disclosure. He has served as Chair of the Green Bonds Working Group (Ministry of the Environment), a member of the ESG Working Group (Ministry of the Environment) and Director of the Society for Environmental Economics and Policy Studies. His major publications include *Responsible Investment—Changing the Future through the Flow of Capital* (Iwanami Shoten, Publishers; winner of the SEEPS Commentary Award) and *ESG Investment—Form of the New Capitalism* (Nikkei Publishing).

Congratulations on your 100th year in business. I respect the steady progress you have made through your work on bearings. The section entitled 'A Century in Business' at the beginning of this report was a valuable source of information on the wide range of pioneering achievements you have made over your long history. The pioneering spirit of your founders has certainly lived on through the years.

The 'Value Creation Process' pages have given me a good picture of NTN's approaches to keeping the world rolling. There was a clear presentation of your work on issues of public concern such as global warming and Japan's aging population. I learned how this work is being done through reducing energy loss, providing safety and comfort, and suggesting natural energy-based ideas for ensuring sustainability. The basis for an integrated report is the concept of integrated thinking, which means generating corporate value from solutions to issues of public concern. Therefore, it's important to first gain a clear awareness of what the current issues are.

For example, over 200 people died from heavy downpours in western Japan in July 2018. This event was followed by a large number of abnormally hot weather patterns, heat waves and floods in the world. The World Meteorological Organization (WMO) has said that these heat waves and abnormally high temperatures are the predicted outcome of climate change caused by greenhouse gases. These weather events incur an enormous social cost.

So with climate change being one of the most pressing issues of public concern, I was favorably impressed by how you have responded by showcasing the eco-friendly nature of your mainstay bearing products (arising from their ability to reduce energy consumption by reducing friction). Similarly impressive is how you are using this technology to develop proprietary products for wind turbine applications, and

moving into B to C product areas such as the NTN Micro Hydro Turbine. These activities call for a grand vision for the potential of NTN technologies to solve problems in wind power and other applications. With enough motivation, there's no telling how effective these technologies could be in spreading wind power worldwide and reducing energy consumption in 10 or 20 years' time, for example. It's also important for NTN to curb its own CO2 emissions. While you have presented environmental targets, I also look forward to seeing you becoming more involved in this area by taking part in international initiatives such as SBT and RE100.

Declining birthrates, the aging population and the shrinking workforce are issues of public concern in Japan that rival climate change in importance. I think your focus on robotics business areas is the right approach for addressing these issues. I also have high hopes for the growth policy you have outlined that draws on your legacy technology expertise to pioneer new areas and find solutions for various challenges. I respect the unwavering efforts you continue to make through the Global QC Circle Convention and similar initiatives to work on issues such as quality, protecting human rights and encouraging women in the workplace.

I'd like to make one last remark about your officer profile page. While perhaps unremarkable for a tradition-oriented Japanese company, the lack of female faces among the officer photos reminded me of the importance of diversity. Both in the corporate world and among the private lives of citizens, attitudes in Japan are perhaps different from those overseas. The inclusion of foreign names among the executive officers was a welcome sight, but I think it would also be good to start seeing women's faces among the photos at some point.

## Responding to the Third-Party Opinion

I would like to express my heartfelt thanks to Professor Mizuguchi for his valuable opinion.

Creating corporate value by providing solutions to issues of public concern is an approach we value that was made possible by feedback received from third-party opinions in previous NTN Reports and from experts at Stakeholder Dialog.

Upon marking our 100th anniversary in March 2018, we reaffirmed the connection between our Founder's Spirit and corporate philosophy by defining the "NTN Spirit." Grounded in our corporate philosophy, this spirit embodies the mindsets and actions our employees need to emulate as they continue to work on sustained growth over the next 100 years.

The valuable opinion you have provided will be carefully considered as we work on finding solutions to issues of public concern through our business activities. We are dedicated to becoming a Monozukuri corporation, a manufacturer, able to help make the world a better place over the next 100 years. We look forward to fulfilling our mission to develop a "smooth society."



### Hiroshi Nakano

Director and Corporate General Manager, CSR Headquarters

# Investor Information (as of March 31, 2018)

#### Head Office

NTN Corporation  
3-17, 1-chome, Kyomachibori, Nishi-ku,  
Osaka 550-0003, Japan

#### Transfer Agent for Common Stock

Mitsubishi UFJ Trust and Banking Corporation  
4-5, 1-chome, Marunouchi, Chiyoda-ku,  
Tokyo 100-8212, Japan

#### General Meeting of Shareholders

The General Meeting of Shareholders was held on June 26, 2018; Osaka

#### Common Stock

Authorized: 1,800,000,000  
Issued and Outstanding: 532,463,527

#### Stock Exchange Listings

First Section of Tokyo Stock Exchange (#6472)

#### Stock price range in the fiscal year ended March 31, 2018

High: 600 yen  
Low: 424 yen

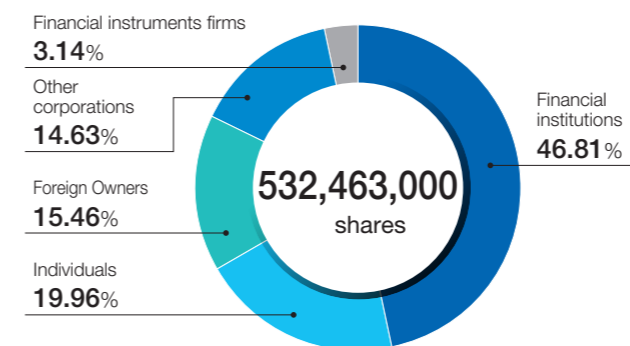
#### Number of shareholders

34,604

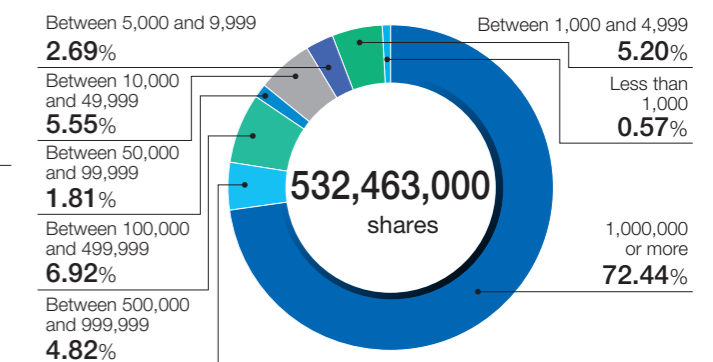
#### Independent audit firm

Ernst & Young ShinNihon LLC

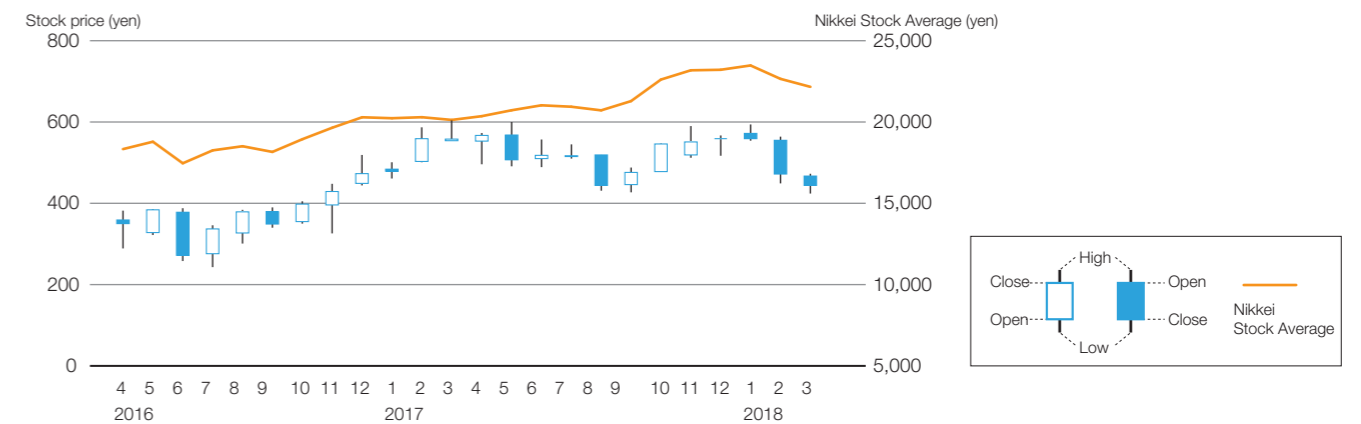
#### Breakdown of Shareholders



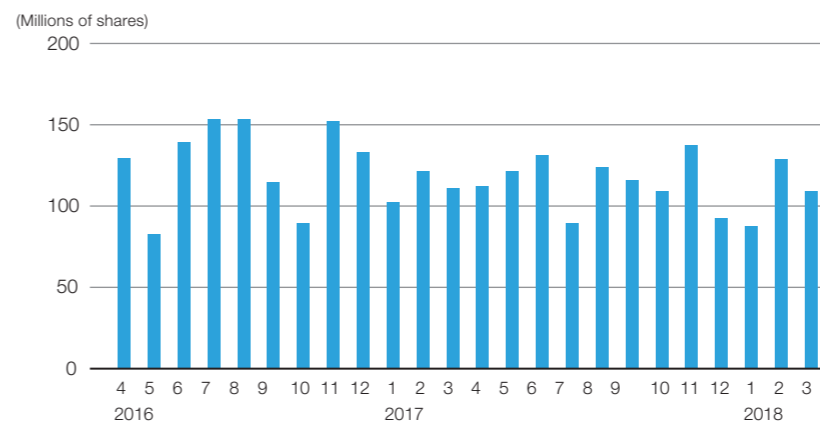
#### Breakdown of Number of Shares Held



#### Recent Stock Price Range



#### Monthly Volume Traded



#### Inquiries

Corporate Communications Department  
TEL. : +81-6-6449-3528  
FAX : +81-6-6443-3226  
E-mail : irmanager@ntn.co.jp

#### 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.ntnglobal.com/en/index.html>

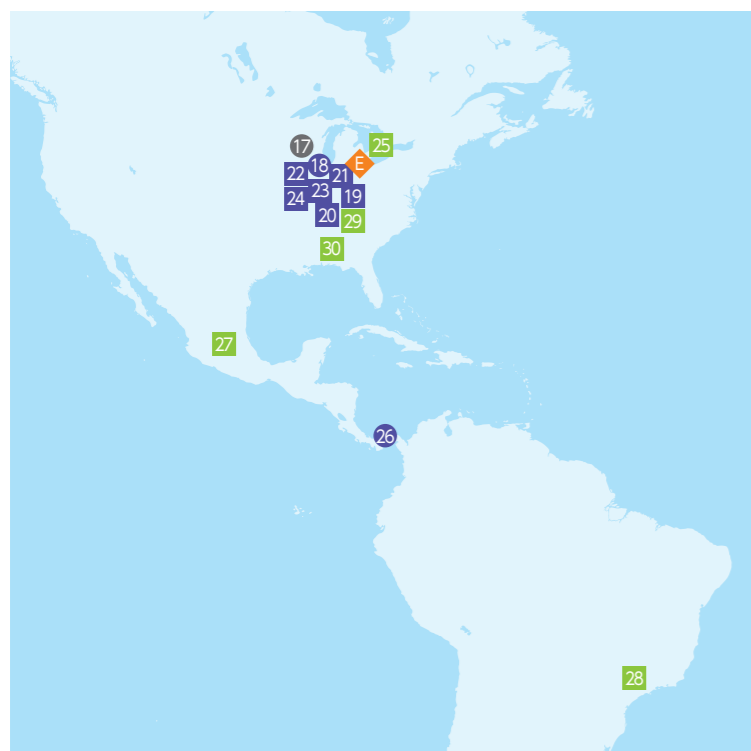
# Global Network (As of March 31, 2018)

## Japan



Company Name	Paid-in capital	Holdings as percentage (%)
① NTN Corporation (parent company)		
⑪ Kuwana Works		
⑫ Iwata Works		
⑬ Okayama Works		
⑭ Nagano Works		
① NTN BEARING SERVICE CORPORATION	JPY 480,000,000	100
② NTN MIE CORP.	JPY 3,000,000,000	100
③ NTN KONGO CORP.	JPY 1,000,000,000	100
④ NTN HOUDATSU SHIMIZU CORP.	JPY 1,250,000,000	100
⑤ NTN NOTO CORP.	JPY 1,000,000,000	100
⑥ NTN FUKUIROI CORP.	JPY 1,500,000,000	100
⑦ NTN AKAIWA CORP.	JPY 1,250,000,000	100
⑧ NTN MIKUMO COMPANY LTD.	JPY 450,000,000	100
⑨ NTN OMAEZAKI CORP.	JPY 266,000,000	97.4
⑩ NTN ENGINEERING PLASTICS CORP.	JPY 100,000,000	100
⑪ NTN ADVANCED MATERIALS CORP.	JPY 400,000,000	99.34
⑫ NTN CASTING CORP.	JPY 450,000,000	100
⑬ NTN KINAN CORP.	JPY 450,000,000	100
⑭ NTN KAMINA CORP.	JPY 725,000,000	80
⑮ NTN Technical Service Corp.	JPY 200,000,000	100
⑯ NTN LOGISTICS CO., LTD.	JPY 10,000,000	100 (100)
◆ NTN R&D CENTER		
◆ PRODUCTION ENGINEERING R&D CENTER		
◆ INDUSTRIAL TECHNICAL CENTER		
◆ ADVANCED TECHNOLOGY R&D CENTER		

## Americas



Company Name	Paid-in capital	Holdings as percentage (%)
⑰ NTN USA CORP.	USD 197,120,000	100
⑱ NTN BEARING CORP. OF AMERICA	USD 24,700,000	100 (100)
⑲ NTN DRIVESHAFT, INC.	USD 54,580,000	100 (100)
⑳ NTN DRIVESHAFT ANDERSON, INC.	USD 16,000,000	100 (100)
㉑ AMERICAN NTN BEARING MFG. CORP.	USD 24,330,000	100 (100)
㉒ NTN-BOWER CORP.	USD 117,000,000	100 (100)
㉓ NTK PRECISION AXLE CORP.	USD 15,000,000	60 (60)
㉔ NTA PRECISION AXLE CORP.	USD 20,000,000	62.5 (62.5)
㉕ NTN BEARING CORP. OF CANADA LTD.	CAD 20,100,000	100
㉖ NTN-SUDAMERICANA, S.A.	USD 700,000	100
㉗ NTN MANUFACTURING DE MEXICO, S.A. DE C.V.	MXN 431,805,719	100 (5)
㉘ NTN do Brasil Produção de Semi-Eixos Ltda.	BRL 164,026,956	(6.48)
㉙ ASAHII FORGE OF AMERICA CORP.	USD 10,100,000	19.8 (19.8)
㉚ Seohan-NTN Driveshaft USA CORP.	USD 6,000,000	49
◆ NTN Automotive Center		

Two consolidated subsidiaries in addition to the Group companies above

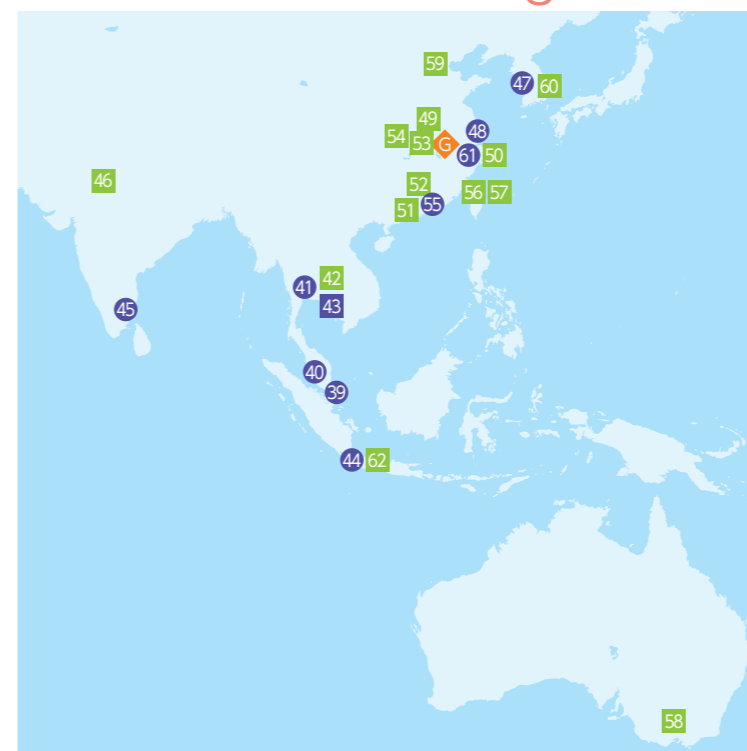
## Europe



Company Name	Paid-in capital	Holdings as percentage (%)
⑳ NTN Wälzlager (Europa) G.m.b.H.	EUR 14,500,000	100
㉑ NTN Kugellagerfabrik (Deutschland) G.m.b.H.	EUR 18,500,000	100
㉒ NTN Mettmann (Deutschland) G.m.b.H.	EUR 25,000	100 (100)
㉓ NTN Antriebstechnik G.m.b.H.	EUR 50,000	100
㉔ NTN BEARINGS (UK) LTD.	GBP 2,600,000	100 (0.04)
㉕ NTN-SNR ROULEMENTS	EUR 123,599,542	100
㉖ NTN TRANSMISSIONS EUROPE	EUR 82,843,207	100
㉗ NTN TRANSMISSIONS EUROPE CREZANCY	EUR 11,500,000	100 (100)
◆ NTN-SNR R&D Center		

Seven consolidated subsidiaries in addition to the Group companies above

## Asia and Other Regions



Company Name	Paid-in capital	Holdings as percentage (%)
㉘ NTN BEARING-SINGAPORE (PTE) LTD.	SGD 36,000,000	100 (0.97)
㉚ NTN BEARING-MALAYSIA SDN.BHD.	MYR 10,000,000	100 (100)
㉜ NTN BEARING-THAILAND CO., LTD.	THB 780,000,000	100 (99.999)
㉞ NTN MANUFACTURING (THAILAND) CO., LTD.	THB 1,311,000,000	100 (99.999)
㉠ NTPT CO., LTD.	THB 700,000,000	75 (10.73)
㉡ PT. NTN BEARING INDONESIA	USD 7,300,000	100 (100)
㉣ NTN BEARING INDIA PRIVATE LTD.	INR 300,000,000	100 (0.1)
㉥ NTN NEI Manufacturing India Private LTD.	INR 4,808,000,000	97.4 (24.96)
㉦ NTN KOREA CO., LTD.	KRW 500,000,000	100
㉧ NTN (CHINA) Investment Corp.	USD 256,545,000	100
㉨ Nanjing NTN Corp.	USD 180,000,000	100 (86.67)
㉩ Shanghai NTN Corp.	USD 166,500,000	95 (15.72)
㉪ Guangzhou NTN-Yulon Drivetrain Co., Ltd.	USD 12,500,000	60 (12)
㉫ Xiangyang NTN-Yulon Drivetrain Co., Ltd.	USD 34,000,000	60 (60)
㉬ NTN-RAB (Changzhou) Corp.	USD 28,440,000	100
㉭ NTN-LYC (Luoyang) Bearing Corp.	USD 73,800,000	50 (50)
㉮ NTN CHINA LTD.	HKD 2,500,000	100
㉯ TUNG PEI INDUSTRIAL CO., LTD.	TWD 1,257,232,620	27.35
㉰ TAIWAY Industry CO., LTD.	TWD 160,000,000	36.25
㉱ UNIDRIVE PTY LTD.	AUD 5,000,000	40
㉲ Beijing NTN-Seohan Driveshaft Co., Ltd.	USD 6,000,000	40 (6.67)
㉳ Seohan-NTN Bearing CO., LTD.	KRW 75,780,330,000	49
㉴ NTN-DONGPAI (Shanghai) Bearing Sales Corp.	USD 1,460,000	25 (25)
㉵ PT. TPI MANUFACTURING INDONESIA	USD 55,415,050	28.8 (0.002)
◆ NTN China Technical Center		

One consolidated subsidiary in addition to the Group companies above

NOTES 1. The scope of consolidation as of March 31, 2018 consisted of NTN Corporation and 63 consolidated subsidiaries (16 domestic and 47 overseas subsidiaries). A total of 9 affiliates (all 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: No additions/removals
- ◆ Affiliates: No additions/removals

2. Of the above subsidiaries, the following companies are specified subsidiaries: NTN USA CORP., NTN DRIVESHAFT, INC., NTN-BOWER CORP., NTN do Brasil Produção de Semi-Eixos Ltda., NTN Wälzlager (Europa) G.m.b.H., NTN-SNR ROULEMENTS ('NTN-SNR'), NTN TRANSMISSIONS EUROPE, NTN NEI Manufacturing India Private LTD., NTN (China) Investment Corp., Nanjing NTN Corp., Shanghai NTN Corp., and NTN-LYC (Luoyang) Bearing Corp.

3. Figures in curved brackets under "Holding as 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 BEARING CORP. OF AMERICA and NTN-SNR have sales (excluding internal sales between consolidated companies) accounting for more than 10% of consolidated sales. Figures for NTN-SNR are consolidated figures encompassing nine NTN-SNR subsidiaries.

6. Of the above subsidiaries, ① to ⑤ are NTN Corporation business units, 1 to 28 and 31 to 55 (in symbols ● ■ ■) are consolidated subsidiaries, and 29, 30 and 56 to 62 (in symbols ● ■ ■) are affiliates subject to the equity method.





## NTN Corporation

1-3-17, Kyomachibori, Nishi-ku, Osaka 550-0003, Japan  
<https://www.ntnglobal.com/en/>



2018.10.4500