

# NEXCO East Annual Report 2018



## Annual Report 2018

### East Nippon Expressway Company Limited

Shin-Kasumigaseki Building, 3-2, Kasumigaseki 3-chome, Chiyoda-ku, Tokyo  
100-8979, Japan (General reception on 15th Floor)  
NEXCO East Customer Center +81-570-024-024 / +81-3-5338-7524  
<https://www.e-nexco.co.jp/en/>

In consideration of the environment, this report uses FSC® certified paper and printing ink that doesn't contain volatile organic compounds, along with printing that uses the "waterless printing" method, which doesn't require dampening solutions including alkaline developing solutions and isopropyl alcohol. In addition, "universal design fonts" are employed in this document, taking into consideration ease of reading.



(Issued in September 2018)



## TOP COMMITMENT

NEXCO East Group engages in the construction, management and operation of expressways, rest areas, and other expressway-related businesses in the eastern part of Japan, from the Kanto region to Hokkaido, Niigata, and Nagano.

For the purpose of achieving a sustainable society that extends beyond the framework of regions, countries, and generations, NEXCO East Group strives to create the value of “connections” and will continue to grow as a company that contributes to all stakeholders.



Chairman  
**Kunie OKAMOTO**

President and Chief Executive Officer  
**Toru OBATA**



# NEXCO East Annual Report 2018

## CONTENTS

■ TOP COMMITMENT .....	1
■ Business Areas of NEXCO East .....	3
■ Management Principles of NEXCO East Group .....	4
■ Company Profile .....	5
■ TOP MESSAGE .....	7
■ 2025 Long-term Vision and Mid-term Management Plan .....	9
■ Special Topic 01 For Sustainable Expressway Services .....	13
■ Special Topic 02 Various Impacts by Improving Expressway Networks in the Tokyo Metropolitan Area .....	17
■ Special Topic 03 Efforts to Make Expressways More User-Friendly for Foreign Visitors .....	21
■ Aspiring to Create Safer and More Comfortable “Best Ways” ..	23
■ For More Convenient and Comfortable Service .....	27
■ Next-generation Expressways Designed via Creation and Utilization Technologies .....	31
■ For Society and For Employees .....	39
■ Company Profile / Board Members / Organization Chart / List of Expressways Currently Operating / List of Expressways under Construction / Number of Interchanges and Rest Areas / Financial Statements / Group Companies of NEXCO East .....	41

### WE SUPPORT

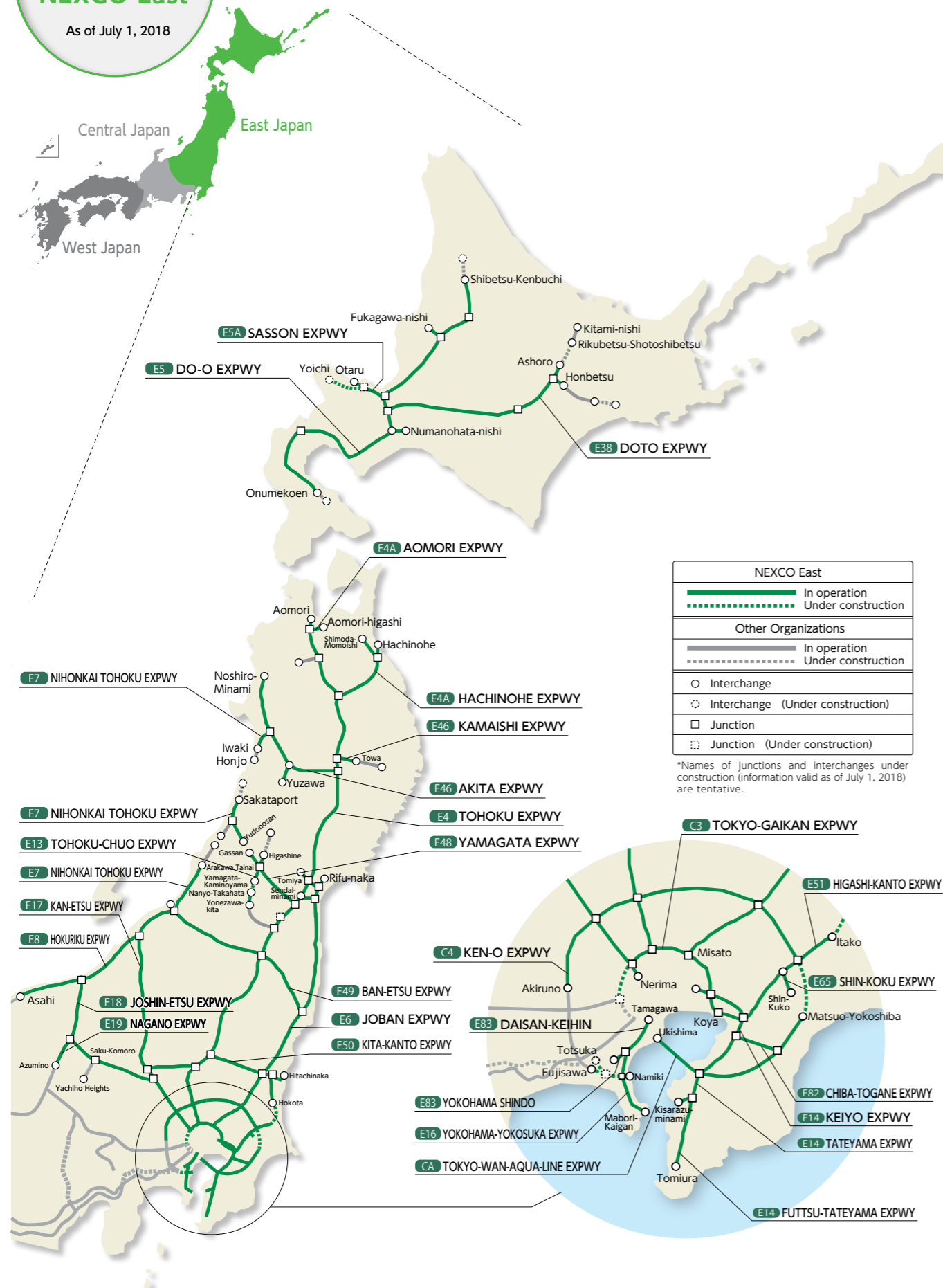


NEXCO East has participated in the “United Nations Global Compact” initiative and has adopted 10 principles in the four areas of human rights, labor, the environment, and anticorruption, as stated in this initiative.

- |                                    |   |
|------------------------------------|---|
| ● Policy for compiling this report | This NEXCO East Annual Report has been issued to publicize to stakeholders details on NEXCO East Group's business involving expressways and its actions toward the development of a sustainable society through business involving expressways. This report can be downloaded from the corporate website of NEXCO East. |
| ● Scope of reporting               | East Nippon Expressway Co., Ltd. (NEXCO East) and its 27 group companies.   |
| ● Reporting period                 | From April 1, 2017 to March 31, 2018 (Some activities outside of the specified period are also included.)   |

## Business Areas of NEXCO East

As of July 1, 2018



## Management Principles of NEXCO East Group

### ◆ Group Management Principle

By maximizing the social and economic effects of its expressways, NEXCO East Group contributes to improve regional development and the quality of life, and to boosting the Japanese economy.



### ◆ Group Management Vision

NEXCO East Group will create value that connects all stakeholders, working toward a prosperous society transcending regions, countries, and generations, and will grow as a company that contributes to these stakeholders.



### ◆ Group Management Policy

- NEXCO East Group puts our customers first, and improves the safety, reliability, comfort, and convenience of expressways.
- NEXCO East Group applies our technologies and know-how in order to contribute to society based on fair and transparent business activities, and provides accurate corporate information.
- NEXCO East Group optimizes our business resources to improve our customer service and corporate value and to establish sound management with a never-ending pursuit of efficiency.
- NEXCO East Group respects the efforts and results of each employee, and values their motivation and challenging spirit.
- NEXCO East Group promotes CSR management that contributes to all stakeholders, including customers, local communities, global society, the public, the environment, shareholders and investors, business partners, and employees.

## Company Profile

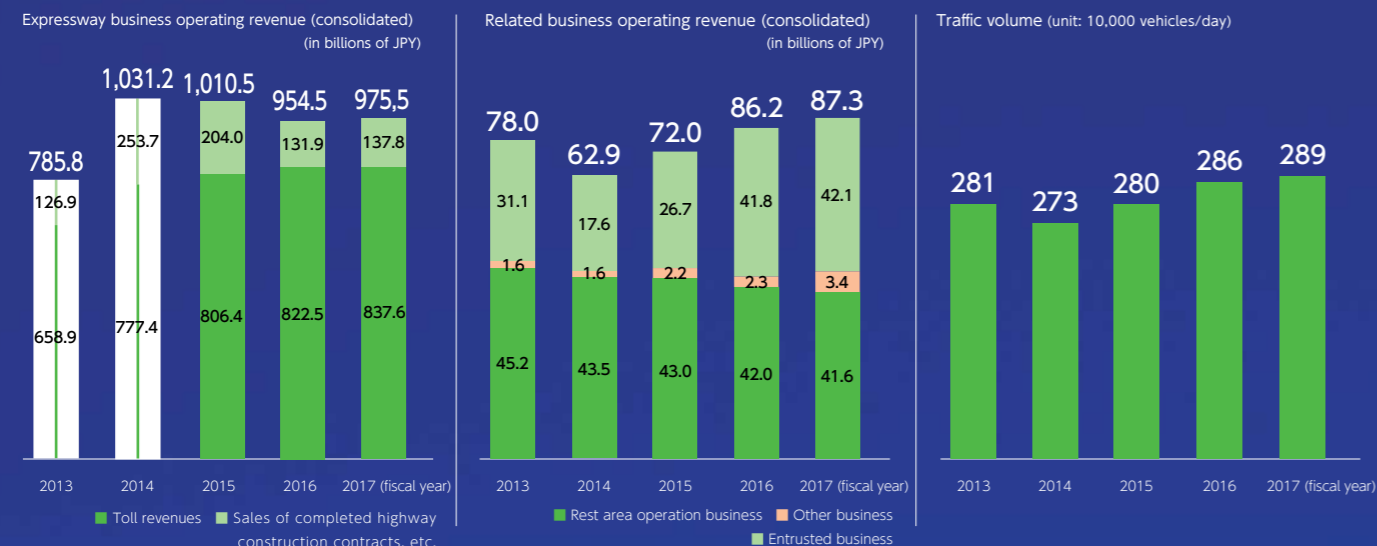
NEXCO East implements steady improvements to expressway networks so as to provide customers with safe, reliable, comfortable, and convenient expressway services, thereby contributing to regional development, improvements in people's lives and the revitalization of the national economy.

### ● NEXCO East Group Business Operations

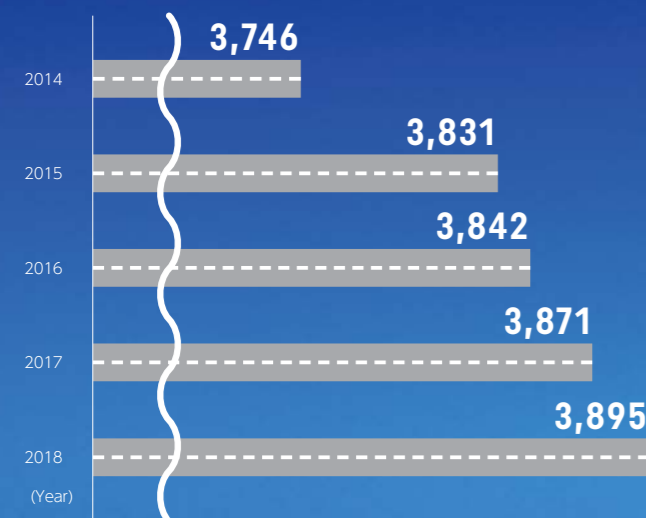
NEXCO East Group engages in construction, management and operation of expressways, rest areas, and other expressway-related businesses in the eastern part of Japan, from the Kanto region to Hokkaido, Niigata, and Nagano.



### ● Major Indexes



### Length of roads in service (in kilometers, as of July 1, 2018)



### Interchanges and rest areas

#### ■ Number of interchanges (as of July 1, 2018)



#### ■ Number of rest areas (as of July 1, 2018)



### ● Company Profile

Trade Name	East Nippon Expressway Company Limited
Representative	Toru Obata, President and Chief Executive Officer
Date of Establishment	October 1, 2005
Capital	52.5 billion yen
Number of Employees	2,243 (As of March 31, 2018)*

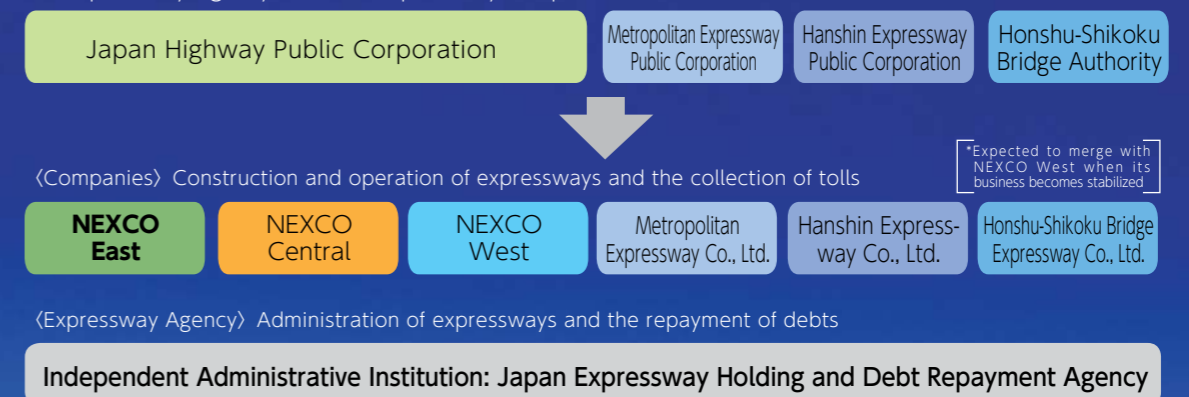
\*This figure excludes employees from our company assigned to outside the company and includes employees from outside the company assigned to our company

### ● Corporate History

- 2005 Privatization of Japan Highway Public Corporation and establishment of the East Nippon Expressway Company Limited.
- 2006 The brand name, NEXCO East, is chosen.
- 2007 The customer center is established.
- 2008 First "Pasar," Pasar Makuhari is launched.
- 2009 India Liaison Office is established.
- 2010 First Themed Area, "Yorii Rest Area: The Little Prince" is opened.
- 2015 The entire route of the JOBAN EXPWY is opened. The Expressway Renewal Project is launched.
- 2017 The section of the KEN-O EXPWY between Sakai-Koga IC and Tsukuba-chuo IC is opened, linking the TOMEI EXPWY and TATEYAMA EXPWY.
- 2018 The section of the TOKYO-GAIKAN EXPWY between Misato-minami IC and Koya JCT is opened.

### ● Outline of Privatization of Former Japan Highway Public Corporation

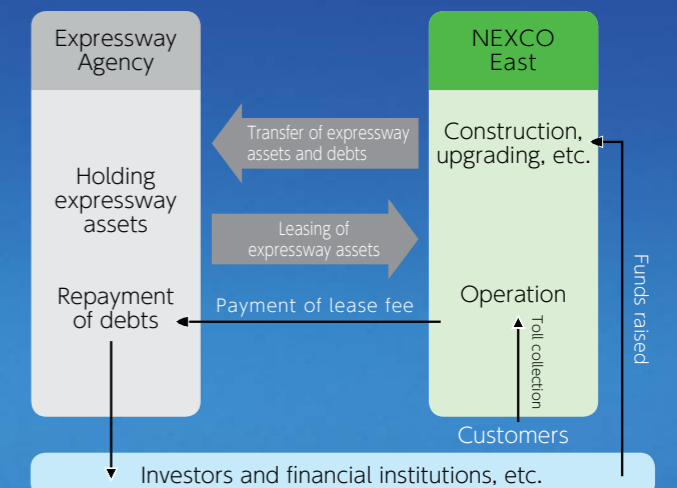
On October 1, 2005, following the privatization of Japan Highway Public Corporation, which had been established in 1956, along with other public highway corporations, Japan Expressway Holding and Debt Repayment Agency (hereinafter referred to as the "Expressway Agency") and six expressway companies were established.



### ● Schemes for Expressway Businesses

NEXCO East constructs and upgrades expressways in the eastern Japan area and transfers the assets and debts to the Expressway Agency, while at the same time operating the expressway assets leased from the Expressway Agency for which a lease fee is paid through the management and operation of the leased assets.

The Expressway Law specifies that tolls from expressways shall not generate profit. The collected tolls are used for the necessary operation and maintenance of expressways and the provision of various services, as well as for paying back debt by means of the lease fee paid to the Expressway Agency.





President and  
Chief Executive Officer  
**Toru OBATA**

## A Network Connecting Regions— Aiming for Further Enhancement of Expressways

### Q. What is the mission of NEXCO East Group?

#### Infrastructure Network for Carrying and Connecting

Expressways are infrastructure networks for carrying goods and connecting regions. In terms of “carrying,” expressways play a vital role in supporting the industrial base of Japan. As for “connecting,” expressways connect the regions to the capital, and to each other, bringing vitality to all areas. In this regard, expressways themselves serve as public infrastructure.

The mission of NEXCO East Group is to efficiently manage expressways so that they are safe, reliable, comfortable, and convenient. My role as president and CEO is to conduct our operations from the perspective of our customers and provide an enhanced and satisfying experience.

#### Aiming for Safe and Reliable Expressways

Maintenance of aging infrastructure is our greatest challenge in terms of safety and reliability. This is

particularly relevant for NEXCO East Group, because many of our expressways run through cold regions and are thus susceptible to snow and ice. If we did not properly maintain these roads, it would lead to major problems. In FY2015, NEXCO East Group launched the “Expressway Renewal Project,” which is a long-term initiative stretching to FY2030. I understand that the major road works from this project will cause some inconvenience, but I ask for your understanding and cooperation in order to bring safety and reliability to the next generation.

We are also making efforts to realize our SMH (Smart Maintenance Highway) concept, through which we use state-of-the-art technologies such as ICT to make infrastructure management more advanced and efficient. In the near future, I believe that Japan's declining birthrate and aging population will lead to a major social problem in the form of a decreasing number of young workers. To stay ahead of this issue, we must consider how we can improve the efficiency of

maintenance work. I believe that it is the role of NEXCO East Group to develop technologies and solutions that utilize to the fullest knowledge we have attained thus far. We should, moreover, look to patent our knowledge and know-how so that in the future, we can provide it as a commodity to clients inside and outside Japan.

#### Connecting Regions, and Connecting Regions with Each Other

We are continuing to expand our expressway networks. In June of this year, thanks to the cooperation of everyone in the areas through which it passes, we opened a new section of the TOKYO-GAIKAN EXPWY between Misato-minami IC and Koya JCT. This new link aims to relieve congestion in the Tokyo Metropolitan Area and improve transportation convenience and productivity. We are also working on improving peripheral expressways surrounding the Tokyo Metropolitan Area and expressways in each region to eliminate any missing links in our networks. The “connections” realized by expressway improvements will bring vitality to local regions and contribute to their development.

It is also important that enhancements to rest areas do not simply bring comfort and convenience to drivers; they also help form connections with local regions. We are contributing to the revitalization of local regions by installing walk-in gates so that rest areas can be accessed by local residents from general roads and by turning rest areas into “regional show windows” that showcase and sell local specialty products.

#### As Expressways Carrying “Life”

We are enhancing rest areas so that they can operate as emergency response centers that can be used by local authorities in times of disaster. One of our most important roles—and something that the general public expects of us—is to secure expressways as lifelines in the event of an emergency or disaster. We prepare for disasters by completing thorough preparations and conducting drills so that we can quickly restore damaged expressways and thereby enable disaster victims to evacuate, and make it possible for the Self Defense Forces, police and firefighters to carry out rescue activities and transport relief supplies.

### Q. What are your resolutions going forward?

#### Becoming a Proactive Partner in the Creation of Value

NEXCO East Group will fulfill our corporate social responsibilities (CSR) based on the three pillars of “vitalization of regional communities,” “promotion of traffic safety” and “environmental preservation.” Understanding that we cannot thrive as a company without the vitality of local communities, the CSR

Promotion Committee in NEXCO East Group established an action plan to promote regional revitalization in FY2017. We are also taking steps to implement a policy of CSV (creating shared value) based on our CSR concept. My desire is to move forward positively in our efforts to bring vitality to regional communities as well as enhance rest areas.

At the same time, it is also important to create a bright and healthy working environment so that employees can achieve a good work-life balance. Since 2016, our group has been involved in the “E-Shokuba (ES) creation movement,” as a measure to reduce work hours, maintain and promote good health, mental health care and prevent harassment, and reform employee awareness. Achieving an efficient work style and optimizing working hours in this way will help us fulfill our social responsibility to develop excellent human resources and empower women in the workplace.

#### “Safety” Is the No. 1 Priority

NEXCO East Group has one clear mission: that is to operate expressways efficiently, making safety the No. 1 priority. It is extremely important as an organization that every employee who works for NEXCO East Group understands this philosophy, and sets their goals accordingly. Twenty-four hours a day, 365 days a year—everyone must do what they have to do, and do it properly. “Make the extraordinary ordinary.” I resolve to steer our company so that this concept is shared throughout our group, leading to regional development, improvements in people's lives and the revitalization of the national economy.



# Challenging Ourselves and Making Rapid Progress to Realize the Future Ideal State of NEXCO East

~2025 Long-term Vision and Mid-term Management Plan~



Opening ceremony for the TOKYO-GAIKAN EXPWY between Misato-minami IC and Koya JCT



Expressway Renewal Project



Shobu PA on KEN-O EXPWY (joint rest area for both inbound and outbound lanes)

In 2017, NEXCO East Group formulated its Mid-term Management Plan (FY2017-FY2020) identifying the four years from FY2017 until FY2020 as “a period for challenging themselves and making rapid progress to realize the future ideal state of the company” in order to achieve the 2025 Long-term Vision of the group. Based on this plan, NEXCO East Group provides safe, reliable, comfortable, and convenient expressway services, contributes to local communities and responds to increases in foreign visitors and environmental conservation, promotes technology development that contributes to society, strengthens the profitability of relevant businesses, and strengthens the management of the entire group, all in order to fulfill the social missions of the group. Hence, by aspiring to create value that “connects” all stakeholders, as was defined in the group's Management Vision, and to grow as a corporate group contributing to every stakeholder, NEXCO East Group is promoting the plan in a united fashion.



Representative Director and Executive Vice President,  
Corporate Strategy Division  
**Seigo SAKAKI**

## ◆ Long-term Vision 2025

NEXCO East Group has formulated “Long-term Vision 2025” to enhance the corporate value of the Group and continuously fulfill our mission. This is a summary of what we would like to achieve by 2025, 20 years after the establishment of NEXCO East.

### A company that is trusted by the public: Reliable

By placing safety and reliability as top priorities of the company, NEXCO East Group will be a model company for infrastructure management companies which take action for the realization of a sustainable society with a pioneering spirit, including the secure maintenance of aging expressways.

### A company that is needed by customers: Required

NEXCO East Group will always pursue the provision of the largest satisfaction to our customers with a minimum cost and offer new value to customers by utilizing information and communication technologies, etc.

### A company that lives up to the expectations of local communities: Responsible

NEXCO East Group will establish a strong relationship with local communities, contribute to local communities through the use of our expressway network and assets, and continuously take a variety of actions that lead to co-existence and co-prosperity with local communities.

### A company that receives recognition from international society: Recognized

By utilizing our high technical capabilities, NEXCO East Group will establish relationships of mutual trust with overseas stakeholders and accumulate expertise on overseas businesses to meet the needs of international society.

### A company whose employees realize the value of their work: Rewarding

NEXCO East Group will have an established corporate culture in which creating the value of “connection” through our business brings employees satisfaction at work.

(Formulated in May 2014)

## ◆ Major Achievements of the Previous Mid-term Management Plan (FY2014-FY2016)

- **Providing expressways that are safe, reliable, comfortable and convenient, 24 hours a day, 365 days a year**
  - » Quickly restoring and maintaining reliable road functionality in the event of an emergency or natural disaster
  - » Launching the Expressway Renewal Project (to implement large-scale upgrades and repairs of expressways)
  - » Promoting safety measures such as measures to prevent driving the wrong way
  - » Transforming Moriya SA into an emergency response center and starting operation of the New Traffic Control Center of the Kanto Regional Head Office
  - » Smoothly introducing a new toll system in the Tokyo Metropolitan Area
  - » Starting operation of areas such as Pasar Moriya (outbound) and two “Dramatic Areas”
- **Steadily improving networks...Newly opening the following sections (a total of 136 kilometers):**
  - » JOBAN EXPWY (between Joban-Tomioka IC and Minami-Soma IC, and between Soma IC and Yamamoto IC): The entire route of the JOBAN EXPWY is now open
  - » KEN-O EXPWY (between Okegawa-Kitamoto IC and Shiraoka-Shobu IC, between Kuki-Shiraoka JCT and Tsukuba-chuo IC, and between Inashiki IC and Taiji JCT)

## ◆ Overall Perspective ~Five Basic Policies with Priority Actions~

### 01 Provision of safe, reliable, comfortable, and convenient expressway services

- Provide expressway services that customers can use with ease by making safety the top priority
  - Promoting the Expressway Renewal Project
  - Realizing Smart Maintenance Highway (SMH) and ensuring the soundness of assets
  - Reinforcing disaster prevention and reduction of impacts of disasters
  - Reducing the number of traffic accidents
  - Reducing violations of Cabinet orders regarding oversized/overloaded vehicles
  - Advancing measures against snow and ice
- Steadily facilitating expressway network development and strengthening functions for expressway usage in a smart manner
- Developing comfortable and convenient expressway services tailored to the needs of customers
  - Securing smooth traffic
  - Enriching information services, such as choices for routes (active use of ETC 2.0 data)
  - Developing toll services that are efficient and highly convenient
  - Systematically establishing new commercial facilities, extension and reconstruction work on commercial buildings, and renewing facilities due to deterioration
  - Maintaining and strengthening the operation structure of gas stations and the installation of quick-charging devices
- Establishment of easy-to-maintain expressways, focusing on quality, cost and productivity while always placing top priority on safety

### 02 Contribution to local communities and responding to increases in foreign visitors and environmental conservation

- Contribution to local communities
  - Promoting tourism and supporting recovery from the 2011 Great East Japan Earthquake
  - Maintaining and improving expressways in cooperation with local communities
  - Technological assistance to local governments
- Coping with increases in foreign visitors and the 2020 Tokyo Olympics and Paralympics
- Promoting environmental conservation

### 03 Promotion of technological development that contributes to society

- Technological development so as to enhance business operations and labor-saving by prioritizing safety first (via the active use of ICT, AI, and IoT big data)
  - Realization of SMHs, and technology development for the advancement of traffic safety and measures against snow and ice
  - Active use of new vehicle technologies (consideration of utilizing the automated driving technology)
  - Promotion of technology development by establishing and actively using the NEXCO-East Technology Center for Development & Education

### 04 Strengthening the profitability of expressway-related businesses

- Improving customer service and corporate value through the optimum use of management resources, as well as strengthening profitability by streamlining management
- Rest area business:**
  - Introducing measures to advance the attractiveness of rest areas
  - Efficiently administering commercial facilities
- Other businesses:**
  - Strengthening of the earning capacity of existing business projects
  - Active use of unused lands
  - Creation of new business operations
  - Promotion of overseas business

### 05 Strengthening the management capability of the entire group


- Pursuit of the advancement of group management
- Internal controls, ensuring and cultivating human resources, productivity improvement, etc.
  - Further strengthening and enhancement of internal control systems
  - Securing and cultivating human resources and promoting the creation of a workplace environment where employees feel the worth of their work and a sense of satisfaction
  - Improving the ability to respond to actual incidents on expressways by establishing and utilizing the NEXCO-East Technology Center for Development & Education
  - Promotion of the "E-Shokuba creation movement" (promotion of healthy management) and supporting the success of women in the workplace
  - Optimizing duties and facilitating productivity improvement
  - Improving the corporate brand

## ◆ Financial Projections

### ● Expressway Business

#### Profit & loss plan


Based on the agreement with the Japan Expressway Holding and Debt Repayment Agency (Expressway Agency), NEXCO East steadily engages in the necessary management of expressways and the payment of rent for expressway assets from the expressway toll income that we receive from our customers, so that the Expressway Agency can use it to pay back its debts.

	Toll income:	Approx. 2.8 trillion yen <sup>*1</sup>
	Rent for expressway assets:	Approx. 2.0 trillion yen <sup>*1</sup>
	Administrative expenses, etc.:	Approx. 800 billion yen <sup>*1</sup>

<sup>\*1</sup> Planned figures (excluding tax) in the agreement that was concluded (revised) with the Expressway Agency on March 31, 2017

#### Investment plan

Regarding the assets of the Expressway Agency<sup>\*2</sup>, based on the agreement with them, NEXCO East Group has an approximately 2 trillion yen investment plan for new construction, repair, and reconstruction projects for the TOKYO-GAIKAN EXPWY, YOKOHAMA KANJO-MINAMI EXPWY, and expanding the JOBAN EXPWY to 4 lanes. For the assets of group companies, approximately 130 billion yen in investments is projected for the development of toll collection machines and ETC facilities as well as renewal of aging facilities.


	Agency assets <sup>*2</sup> :	Approx. 2.0 trillion yen
	Company assets:	Approx. 130 billion yen

<sup>\*2</sup> Expressway assets that are scheduled for hand-over to the Expressway Agency after construction completion

### ● Expressway-related Business

#### Profit & loss plan

NEXCO East Group enhances its customer services and corporate values via the optimum use of management resources, and strengthens earning capacities by streamlining management, aiming to reach 4 billion yen in operating income in the last year of the plan (FY2020).

	Results of FY2016:	1.8 billion yen
	Plan for FY2020:	4.0 billion yen

#### Investment plan

We are scheduling investments of approximately 48 billion yen in the assets of expressway-related businesses, such as the establishment of new commercial facilities, extension and remodeling of existing commercial facilities, and renewal of aging facilities, as well as the establishment of the NEXCO-East Technology Center for Development & Education and the replacement of IT systems.

	Company assets:	Approx. 48 billion yen
---	-----------------	------------------------

<sup>\*Please refer to p.6 for an outline of the Expressway Agency.</sup>

# For Sustainable Expressway Services

## ✓ Ordinary Maintenance

NEXCO East Group routinely inspects and cleans up expressways and systematically repairs various structures so as to provide a safe and reliable road environment.

In addition, as the climate of the majority of our business areas is severe in the winter, NEXCO East Group has taken measures against snow and ice to ensure safe traffic conditions in the winter season. In FY2017, the total distance of plowing snow reached approximately 590,000 km.



Total distance of plowing snow  
Approx. 590,000 km



Bridge inspections (hammering test)



Cleaning road surfaces



Bridge inspection via rope access



Tunnel wall cleaning



Pavement rehabilitation



Removal of snow around emergency telephone

## ✓ Establishment of Sustainable Long-term Expressway Maintenance (Expressway Renewal Project)

The number of large-sized vehicles using expressways has been increasing every year since NEXCO East started offering the use of approximately 1,660 km of expressways out of the current total 3,900 km of expressways 30 years ago. Moreover, as shown by the amount of anti-freezing agent used—which reaches approximately 160,000 tons a year, about 70% of NEXCO East's roads pass through snowy and cold regions. This means that many of the bridges and tunnels located in NEXCO East's area are in a severe environment, and as a result, significant changes are occurring in the conditions of those structures.

With these matters in mind, in FY2015, NEXCO East Group requested approval from the Minister of Land, Infrastructure, Transport and Tourism to launch a large-scale project to renew and repair expressway structures based on the Act on Special Measures concerning Road Construction and Improvement. The purpose of this project was to ensure that expressways could continue to play their role as vital lifelines in Japan that support social infrastructure in the areas of economics, communities, medicine, and disaster prevention and response. This project, which is run jointly with two other expressway companies, was named the "Expressway Renewal Project," and a logo was devised in order to enhance public understanding about the project's importance.

In the near future, as the Expressway Renewal Project gets into full swing, each region will need to regulate road traffic, such as by closing roads and implementing two-way traffic. NEXCO East Group is therefore engaging in publicity activities in cooperation with other expressway companies to make sure that the purpose and need for this project is fully understood by customers.



Slab replacement work



### Activities of the Expressway Renewal Project



#### Replacing slabs\*

Old slabs are replaced with more durable concrete slabs.

\*Slabs are parts of bridge structures that directly support the weight of vehicles, etc., passing over the bridge and transmit the load to the girders.



Slab replacement work



#### Adding a waterproof layer to slabs

A high-performance waterproof floor slab is used as a waterproof layer to prevent the concrete slabs from deteriorating.



#### Reinforcing girders

Reinforcing material is added to the girders to make them more durable.



#### Installing inverts\*

Inverts are installed to strengthen the structure of tunnels to which excessive force is applied from around the tunnel and improve stability.

\*An invert is a mechanism whereby the bottom of the tunnel is bound to an inverted arch with concrete to increase yield strength and prevent deformation.

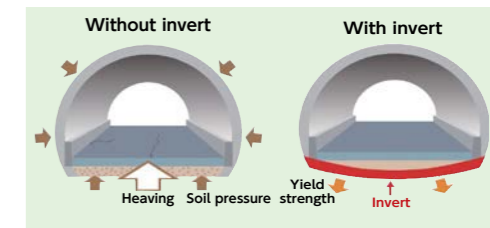


Illustration of invert installation



#### Installing ground anchors\*

Ground anchors with high corrosion resistance are installed to ensure the long-term stability of roadside slopes.

\*Ground anchors are used for the stabilization of steep slopes.



Ground anchor installation

Addition of ground anchors

## Smart Maintenance Highways (SMH)

As we enter an era of aging infrastructure, the public is becoming more interested in ideal maintenance, renewal, and management technologies. Against this backdrop, NEXCO East Group has been actively installing ICT and mechanized facilities with a view to finding ways to solve various issues on site to ensure the safety and reliability of expressway infrastructure for the long term. In 2013, we announced to the public the "SMH Framework" for building a comprehensive maintenance system as an integration of such technologies and engineers. In 2014, NEXCO East elevated its status from the SMH Framework to the "Master Plan," devised a concrete roadmap for the realization of the Master Plan by 2020, and set themes and tasks according to the maintenance cycles of the expressways (see Figure 1). Since then, the group has

been working on materializing the Master Plan. One of the major items for realizing SMH (see Figure 2) involved the launch in 2018 of the MSM-UI (multi-scale monitoring user interface), which is a tool that enables the diverse data required to operate expressways—data that is central to the SMH concept—to be organized visually and acquired quickly and easily from large-scale touch-screen panels. MSM-UI, together with mobile computers, BI (business innovation) tools and live teleconferencing systems are now being deployed in each local area. Aiming for complete roll-out by 2020, NEXCO East has been pushing ahead with the introduction of SMH technologies that will bring advances and efficiencies to infrastructure management leading to further evolutions in expressway operations.

Fig. 1: "Themes" and "tasks" according to the maintenance cycle

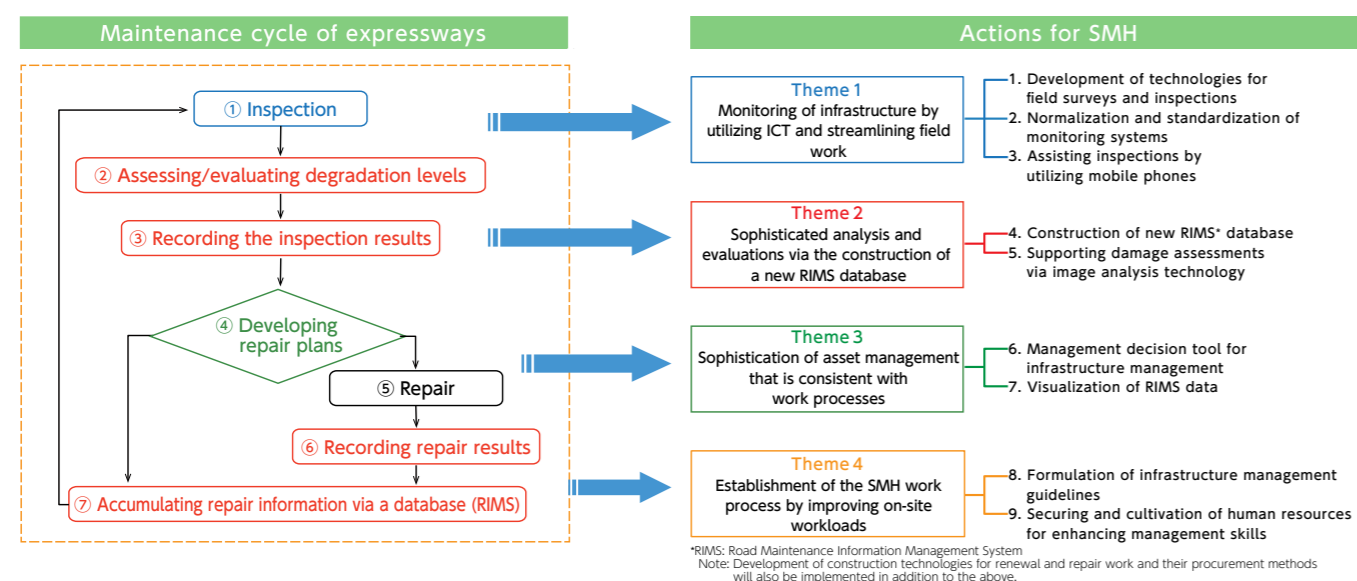
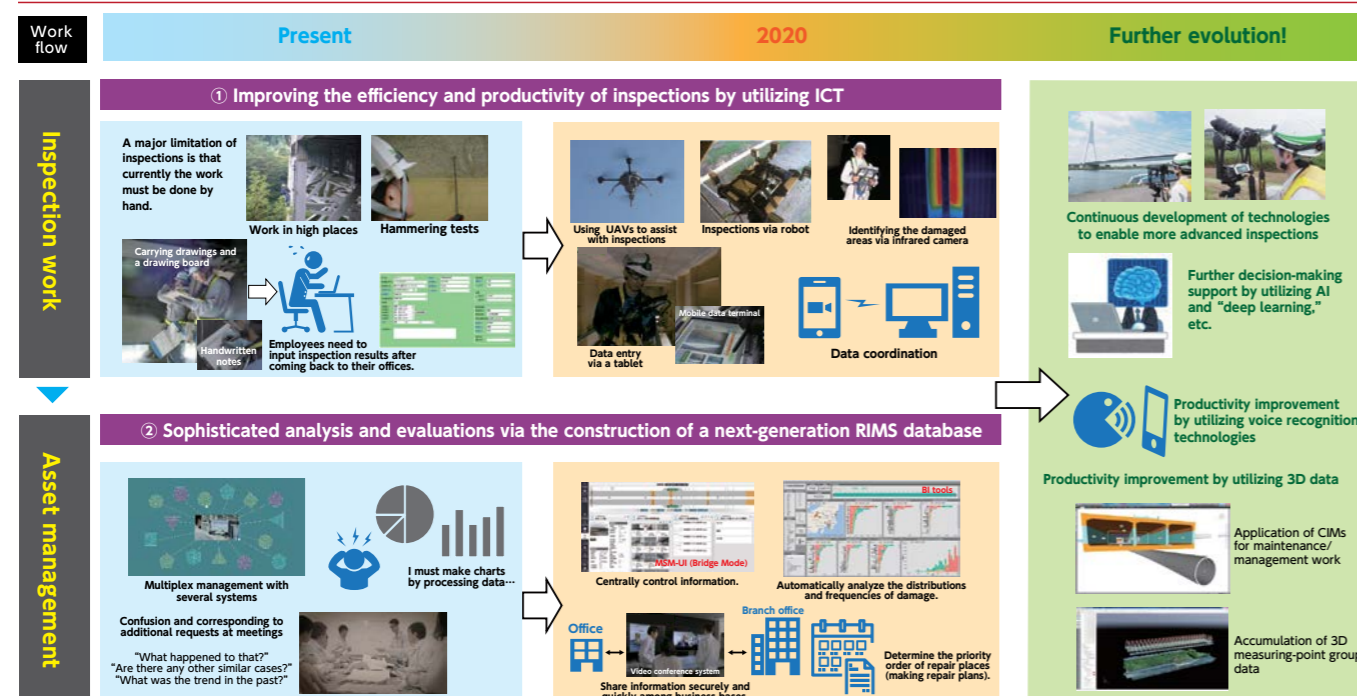


Fig. 2: Major items for the realization of (SMH) in the future

**NEXCO East Group will enhance and systemize its work by 2020, by ① streamlining and increasing the productivity of inspection work, and ② improving management, in order to seek the further evolution of the group.**



## Technology Development for Enhancing Snow and Ice Countermeasures

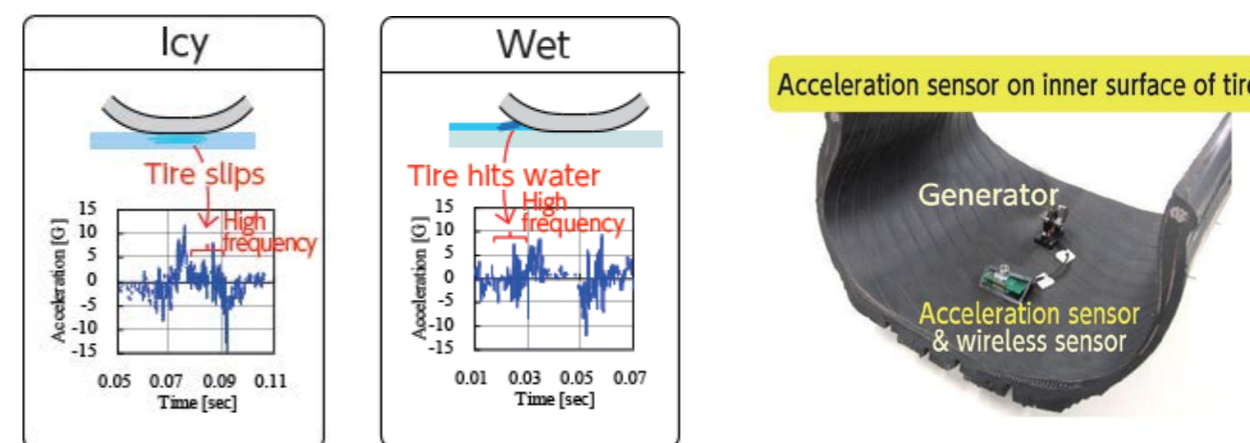
The implementation of measures to prevent road surface freezing (by scattering antifreezing agents) serves an important role in providing a safe and comfortable driving environment for our drivers. To understand the surface conditions quantitatively, we installed a system (known as CAIS<sup>®</sup>) to detect road surface conditions on the vehicles that patrol for snow and ice every 3-4 hours. We have also commercialized the Intelligent Salting Control Optimization System (ISCOS)<sup>\*</sup>, which can change the amount of the agent being automatically sprinkled according to the derived road surface conditions. In the future, it will be possible to sprinkle a more ideal amount of anti-freezing agent according to the road

surface conditions, and this is also expected to reduce the cost of preventing expressway freezing, and to reduce salt damage on road structures. Other measures we are taking to provide more advanced countermeasures against snow and ice include development of driving support technologies that use the Quasi-Zenith Satellite System to guide the safe operation of snow-ice control vehicles (see p.33), and research into technologies for forecasting road conditions in real time using AI (artificial intelligence) that will provide drivers with up-to-date information on road conditions such as when roads are likely to close and reopen.

\*Patent No. 5709144

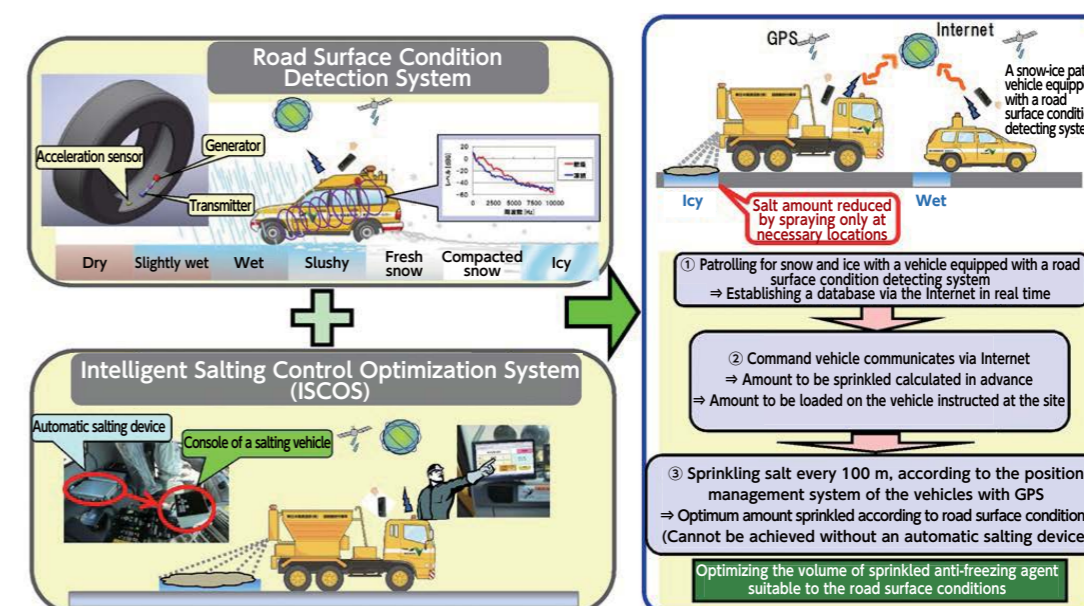
### Overview of CAIS<sup>®</sup>

An acceleration sensor fitted to the inside of the tire outputs characteristic vibration waveforms according to the road surface conditions. These waveforms are used to identify seven types of road surfaces, such as icy and wet.



### Overview of ISCOS

The results of road surface identification by CAIS<sup>®</sup> are sent to the Web server via the Internet and stored in a database. By accessing the Web, the stored data can be used to calculate the optimum amount of salt to be sprinkled according to the road surface conditions every 100 m. An antifreezing agent scattering vehicle equipped with an automatic salting device automatically accesses the Web and downloads the optimum amount of salt to be sprinkled based on the road surface data, allowing salting to be carried out automatically while the vehicle is traveling along the road.



# Various Impacts by Improving Expressway Networks in the Tokyo Metropolitan Area

## ✓ Becoming More Convenient! Development of KEN-O EXPWY and TOKYO-GAIKAN EXPWY

The section of the KEN-O EXPWY (one of the three peripheral expressways surrounding the Tokyo Metropolitan Area) between Sakai-Koga IC and Tsukuba-chuo IC was opened in February 2017, followed by the section of the TOKYO-GAIKAN EXPWY (another of the peripheral expressways) between Misato-minami IC and Koya JCT in June 2018. This is part of the company's plan to improve the expressway networks in the Tokyo Metropolitan Area.

### ● Expansion of the TOKYO-GAIKAN EXPWY in the Tokyo Metropolitan Area

The approximately 85-km extension of the TOKYO-GAIKAN EXPWY, which connects a radius of approximately 15 km from the downtown area, is expected to create a smooth network in the downtown area.

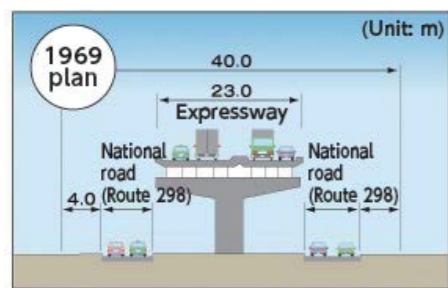
The opening of the section between Misato-minami IC and Koya JCT is expected to improve the flow of traffic in the downtown area, improve logistics productivity, ease chronic traffic congestion on roads along the route while improving the safety of residential roads, and promote tourism in a wider area.



## ✓ The Progress of the TOKYO-GAIKAN EXPWY (Misato-minami IC to Koya JCT)

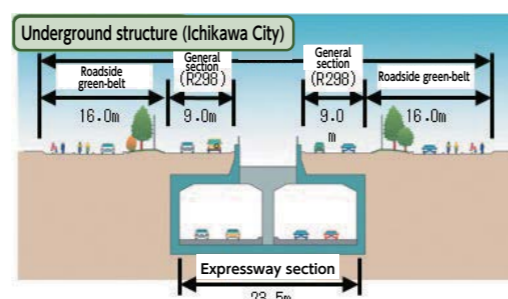
The section opened had received urban planning approval in 1969, but planning coordination was fraught with difficulties due to concerns by local residents that the expressway would affect their quality of life. Construction eventually started in 1996, after it was agreed to change the road from an elevated structure to an underground structure. The road was finally opened in June 2018, fifty years after urban planning approval was obtained.

Original plan (elevated structure)



Original plan in 1969

New plan (underground structure)



### ● Environmentally Friendly Structure

In 1969 when the road received urban planning approval as an elevated structure, local residents raised concerns about the impact of the planned road on their quality of life. These included concerns about the impact of vehicles on the living environment, the fragmentation of local areas due to the construction of the road, and the preservation of remaining green belts in the city. Taking these concerns into account, in 1987 a revised plan for the route and road structure was submitted. The revised plan changed the road to an underground structure that would have less impact on the cityscape and sunlight, etc. The plan also included the creation of a 16-meter-wide environmental preservation space on both sides of the main lane.

## ✓ Various Efforts for Construction of the Expressway

### ● Consensus-building with Local Residents

Efforts were made in cooperation with the local authorities in the areas through which the road would pass to respond sincerely and appropriately to the concerns of local residents.

### Publicity and public relations activities

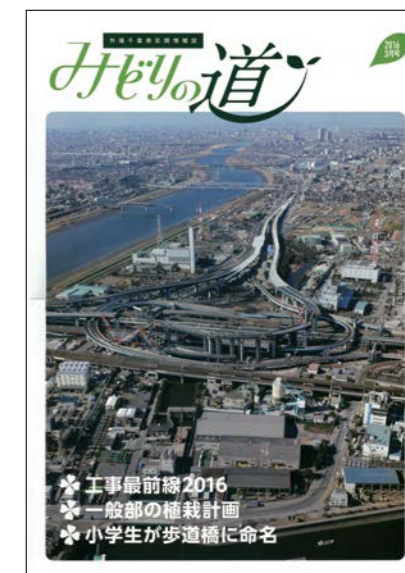
Local events were held to publicize the TOKYO-GAIKAN EXPWY and at the same time receive feedback from the public.

### Provision of information through consultation counters and public relations magazines

Three consultation counters were set up to provide information on the progress of construction and answer people's questions. A public relations magazine was also published.

### Investigation into environmental preservation spaces

The Chiba Outer Ring Road Environmental Preservation Space Creation Investigation Committee and other local review committees were set up.



Public relations magazine "Midori no Michi"

### ● Measures to Preserve Green-belts

- Taking into account opinions expressed in environmental assessments, NEXCO East established investigation committees, etc., that included local residents and experts, and based on their recommendations we restored green-belts and other areas that had been temporarily removed during construction.
- When constructing the part of the expressway that passes through Kozukayama Park (Kitakokubun, Ichikawa City), we used a tunnel structure made with a non-open cut method in order to preserve as much greenery as possible.

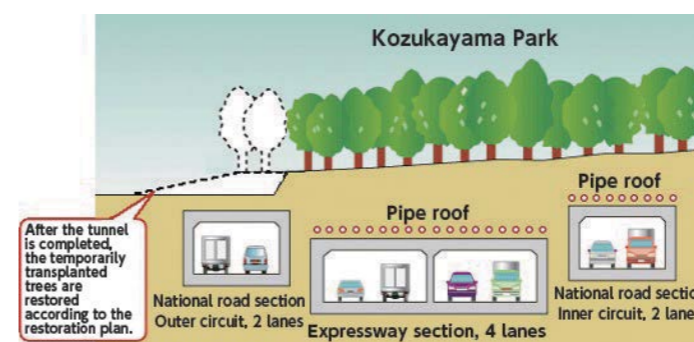


Illustration of Kozukayama area green-belt preservation



TOKYO-GAIKAN EXPWY passing under Kozukayama Park

### ● Local Coordination Efforts

- 29 overpasses were constructed to maintain the safety of school walking routes.
- Nine of the overpasses were named by local elementary schools to give local people a sense of familiarity when using the overpasses.



Yagirikko Overpass (Shimo-yakiri, Matsudo City)  
Photograph taken in October 2016

## ● Various Construction Technologies

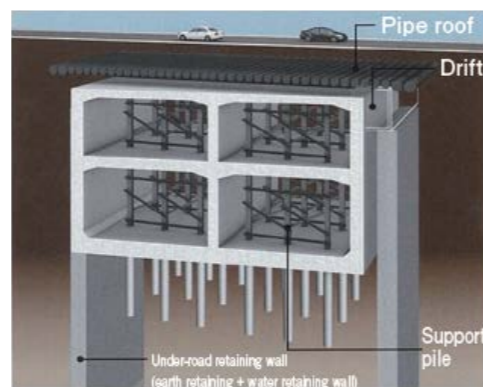
- Because the TOKYO-GAIKAN EXPWY passes through urban areas, it crosses municipal roads with lifelines running along them such as electricity, gas and water. 2,000 lifelines were relocated with the rerouting of municipal roads.
- There were also six locations where the expressway intersected railway lines. A safe, secure and logical construction method was used in these locations so that the operation of the trains was not affected.
- Various other construction methods were also used in locations where the expressway intersected roads and rivers.

### Intersection with Mamagawa River Open-cut method by rerouting the river

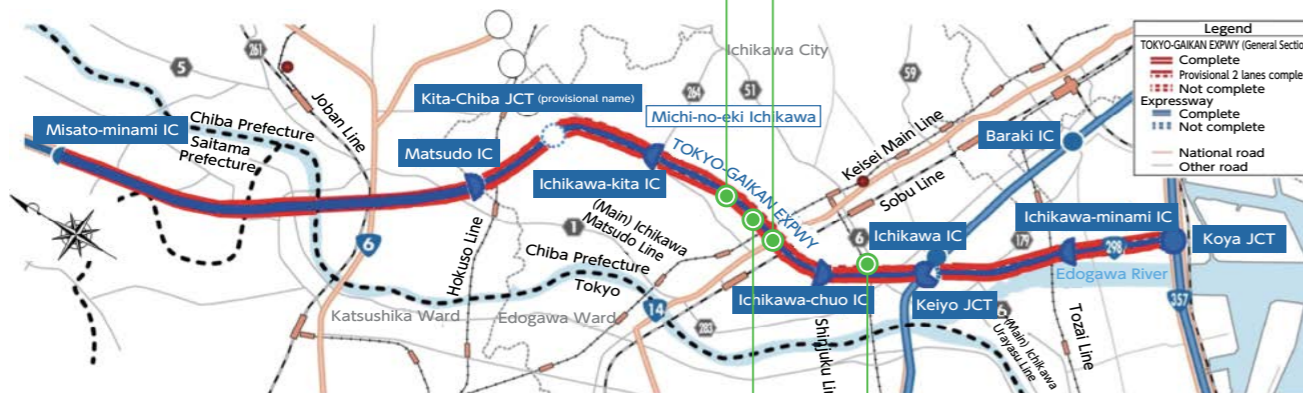


- To allow the expressway section to pass under the Mamagawa River, an enclosure was constructed to reroute the Mamagawa River.

### Intersection with National Road Route 14: Pipe roof construction method + Underpinning construction method



- A pipe roof construction method was used for underpinning and a non-open cut method using an under-road retaining wall was also used.
- The functionality of existing infrastructure was retained by constructing under the road with 2.65 meters of overburden.

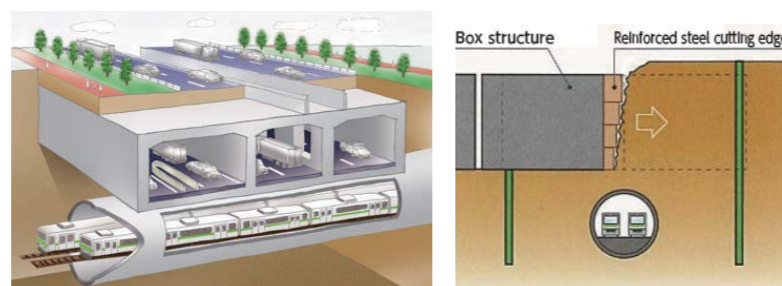


### Keisei Main Line intersection R & C (roof & culvert) construction method World's largest cross-section area



- A box culvert was built and towed under the train lines (separated from the train lines by a distance of 4.6 m).
- The box culvert used for this construction was a large-scale 2-level, 4-lane structure with dimensions of (H) 18.4 m x (W) 43.8 m x (L) 37.4 m.

### Intersection with Toei Shinjuku Line Front jacking construction method



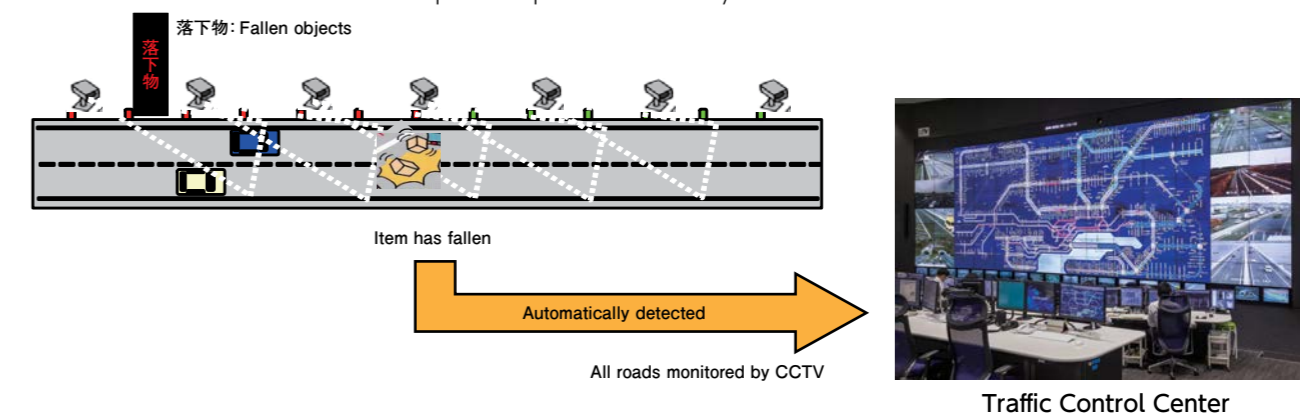
- Intersection with TOKYO-GAIKAN EXPWY directly above the Toei Shinjuku Line (separated by a distance of approx. 3.8 m).
- A front jacking construction method was used to prevent deformity of the underground tunnel due to buoyancy.

## ☑ Efforts Related to Disaster Prevention and Safety

We are utilizing innovative approaches in the Chiba Prefecture section to improve road safety.

### ● Safety Measures for the Main Lane Sections

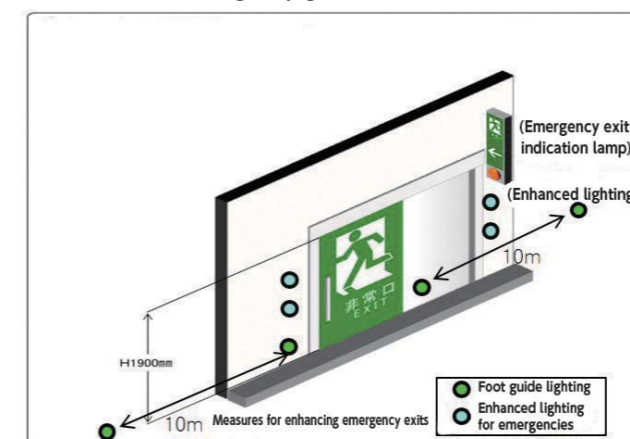
- All expressway main lanes are monitored by road information monitoring cameras.
- Accidents or items that have fallen on the road are automatically detected through image processing and control is switched to the quick-response control system.



### ● Safety Measures for Keiyo Junction

- Facilities have been enhanced and added to each ramp tunnel.
- Independent evacuation routes have been located as a means of evacuating in an emergency.
- The locations of emergency exits have been made more visible.

#### Emergency guidance facilities



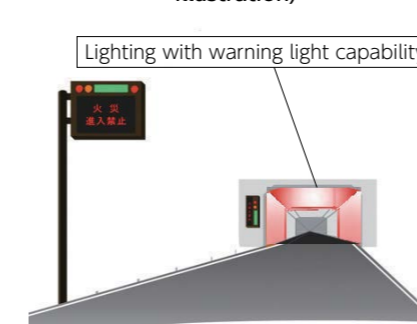
#### Illustration of shield section



### ● Safety Measures for Tunnel Entrances

To stop vehicles entering tunnels in an emergency, we have implemented information boards at tunnel entrances (enhanced displays), lights with warning light capability and traffic lights (Keiyo Junction only).

#### Main lanes (installation illustration)



#### Lighting with warning light capability (in normal times)



#### Lighting with warning light capability (in an emergency)



# Efforts to Make Expressways More User-Friendly for Foreign Visitors

The 2020 Tokyo Olympics and Paralympics are expected to draw a large number of foreign visitors to Japan. We are also seeing more foreign visitors coming to Japan for sightseeing and business. To cope with this situation, NEXCO East is implementing a range of measures to make expressways more user-friendly for foreign visitors.

## Implementing and Promoting Numbering on Expressways

In line with a proposal to implement numbering on expressways (made on October 24, 2016), we have been promoting the use of a numbering system on expressway signs indicating junctions, interchange exits, and important locations in the city such as airports and sightseeing spots. We expect to complete the numbering of major signs by 2020.



Kuki-Shiraoka JCT (Outbound), TOHOKU EXPWY



Keiyo JCT (Outer Course), TOKYO-GAIKAN EXPWY \*Opened on June 2, 2018

### Types of expressway signs that use numbering

JCT guide sign



Ashiho JCT (Outbound), TOHOKU EXPWY

Confirmation sign



Before Fukagawa JCT (Outbound), DO-O EXPWY

Guide sign in urban area



Iwatsuki IC, TOHOKU EXPWY

Road confirmation sign



NIHONKAI TOHOKU EXPWY

## Expressway Pass for Foreign Tourists Travelling in Japan

Due to a recent increase in tourists from overseas, NEXCO East has introduced fixed-rate passes for foreign tourists visiting Japan in cooperation with car rental companies, so that tourists can visit a wider selection of places using the expressways.



## Development of Duty-free Shops



Duty-free sales (Tomobe Rest Area [Inbound], JOBAN EXPWY)

Counters for duty-free processing have been set up in shopping areas to allow foreign visitors to purchase popular souvenir food items and other goods duty free. The first such counter was opened in the Taiiei Rest Area (inbound/outbound) on the HIGASHI-KANTO EXPWY in September 2015. Currently 17\* rest areas are operating duty-free counters, and we are taking steps to further expand the number of shops offering duty-free shopping.

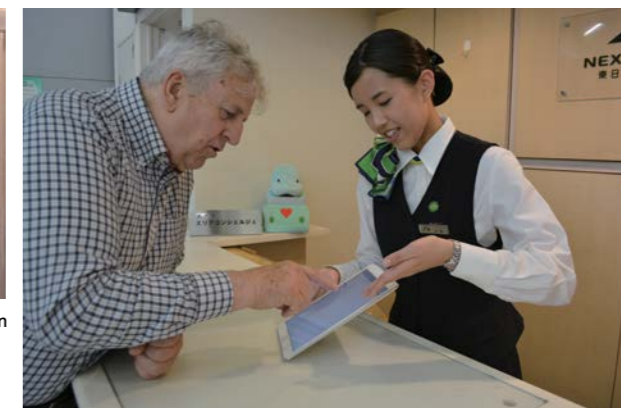
\*As of July 1, 2018

## Multilingual Guidance in Information Centers

NEXCO East has enhanced convenience for foreign visitors to Japan by providing guidance about nearby facilities in multiple languages using tablet devices. All of our information centers have also obtained the Japan National Organization's Foreign Tourist Information Center Authorization, which will allow us to improve our services so that foreign visitors can use our expressways more comfortably and easily.



Foreign Tourist Information Center Authorization



Multilingual guidance using tablets

## Pictograms and Multilingual Signs



Pictogram guidance (Keiyo Ichikawa Rest Area [Outbound], KEIYO EXPWY)

To make rest areas easy to use for foreign visitors, signs for toilets and other facilities feature multiple languages together with the International Symbol of Access, as well as pictograms that comply with JIS standards.



Near Oyachi IC, DO-O EXPWY

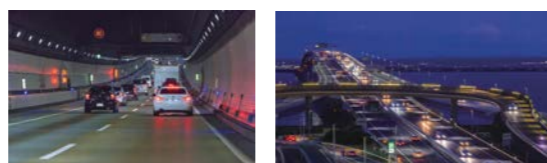
The Operation Division of NEXCO East supports the safety and reliability of 3,895 km of expressways in the eastern Japan area, 24 hours a day/365 days a year. In addition to daily inspections, maintenance, and tasks regarding traffic safety and tolls, the Operation Division engages in a wide variety of projects, such as to strengthen the functions of expressways, including countermeasures for traffic congestion, as well as the Expressway Renewal Project for ensuring the soundness of the expressways for a long time. In addition, securing transportation routes that support rescue and recovery activities as early as possible in the event of a large-scale disaster is also an essential mission of expressway-related companies. Moreover, due to predicted changes in working age populations and the employment environment, improving efficiency and productivity is also a pressing task. The Operation Division is also working intensively on the realization of a next-generation comprehensive infrastructure management system (i.e., the “Smart Maintenance Highway Framework”) by utilizing the latest technologies, such as ICT and AI, and is focusing on the mechanization and advancement of operations to control snow and ice, due to having many regions with heavy snowfall under the company's jurisdiction. By putting customers first and giving top priority to safety, NEXCO East Group pursues the provision of safe, reliable, comfortable, and convenient expressways.

## Aspiring to Create Safer and More Comfortable “Best Ways”

### ● Congestion Forecasting Using AI

As more people use the TOKYO-WAN-AQUA-LINE EXPWY on weekends and holidays to access amusement parks and other popular locations in neighboring Chiba Prefecture, traffic volumes on the road are continuing to increase, leading to chronic traffic congestion in the Kawasaki-bound lane during the return rush in the evenings.

With the aim of easing this congestion, NEXCO East joined forces with NTT DOCOMO in December 2017 to implement a traffic congestion forecasting system known as AI Traffic Congestion Forecast that uses AI to predict the occurrence of traffic jams. The system makes predictions based on crowds on the day in question, enabling more precise forecasting compared with conventional traffic congestion forecasting methods that rely on information such as weather forecasts and event schedules.



## Keeping a Close Watch on the Safety of Expressways 24 Hours a Day/365 Days a Year

### Traffic Control Center

The Traffic Control Center is divided into the Traffic Control Division and the Facility Control Division, and operates 24 hours a day to keep track of road conditions, etc. more. We have also developed mutual backup systems between some regional head offices to provide mutual support in the event of a large-scale disaster.

#### ● Traffic Control Division

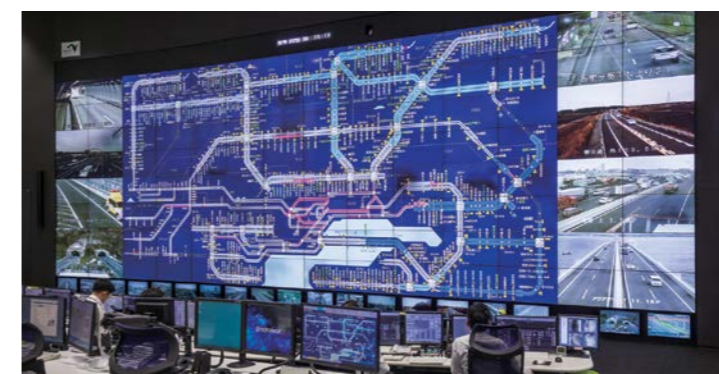
The Traffic Control Division collects information on unusual events, road conditions, and weather conditions in conjunction with the Regional Police Bureau Expressway Management Office, and provides such information to our drivers.

When unusual events occur, we provide instructions to the Traffic Management Patrol Squad onsite so they can take appropriate actions to handle the situation. If need arises, we also call on firefighting services, and we notify other road administrators and relevant local governments, etc. The Traffic Control Center of the Kanto Regional Head Office, which has jurisdiction over the Kanto region, has the highest level of aseismic performance. The center can provide a high level

of transportation control, as it acts to provide information on the length of traffic jams and to collect information regarding onsite situations through GPS information and footage from dashboard cameras installed in the vehicles of the Traffic Management Patrol Squad. We have also been making control operations more sophisticated; for example, by utilizing 3D maps at junctions to quickly understand accident situations, making it possible for us to deal with accidents smoothly.

#### ● Facility Control Division

The Facility Control Division measures, monitors and controls the operations of various facilities on roads and tunnels using remote supervisory control facilities 24 hours a day. In the event of a fire in a long tunnel, we swiftly and accurately provide evacuation guidance for drivers and operate emergency facilities in the tunnels. Moreover, we also analyze the records of facility operations to provide assistance for the maintenance and improvement of facilities.



Traffic Control Center, Kanto Regional Head Office (Traffic Control Division)



Traffic Control Center, Kanto Regional Head Office (Facility Control Division)

## Traffic Patrols

NEXCO East patrols expressways periodically and as required to collect traffic information such as congestion, road conditions such as fallen objects, and weather conditions. Also, when unusual events occur, Traffic Patrol squads hasten to the scenes, remove fallen objects and, in cooperation with the traffic police and fire departments, address the accidents and assist those with cars that have been damaged.



Handling accidents

〈Achievements in 2017〉  
Number of cleanups of fallen objects:

Approx. **107,400**

Distance covered by traffic patrols:

Approx. **22,600,000**km  
(Approximately 1.5 laps around the earth per day)

## Crackdown on Vehicles in Violation of Laws and Regulations, etc.

The maximum speed limits according to vehicle dimensions on roads and the hazardous materials that vehicles can carry through the long tunnels are designated by laws and regulations. In particular, overloaded vehicles that are in violation of laws and regulations have a large impact on the

structures of expressways and may lead to serious accidents.

Therefore, NEXCO East Group provides guidance and cracks down on those vehicles in violation of laws and regulations at toll gates on the interchange of expressways.



Lightening a vehicle's load



Traffic law enforcement (directing vehicles)

## Promotion of Traffic Safety

NEXCO East promotes safe driving through traffic safety campaigns and events in cooperation with local police and traffic safety councils. Additionally, through the NEXCO East website, posters, flyers, leaflets, and TV commercials, we

also conduct various educational activities such as manner-improvement campaigns and calling for caution when driving on expressways and the compliance of traffic laws and regulations.



Commercial to help stop drivers driving the wrong way



Traffic safety campaign



A pocket guide for the promotion of traffic safety

### VOICE

Nexco-Patrol Kanto Company Ltd.  
Member of Nasu Office

Shizuka OTA



When implementing road traffic control as part of my traffic management patrol duties, I have to run carrying heavy equipment and materials. So not only do I have to be physically fit; I also need to train myself so that I can carry out my duties quickly and safely on the road. You might think that this is a hard job for a woman, but if you have the drive to do it, gender doesn't matter. Going forward, I'd like to help create a more female-friendly working environment while working hard to carry out my daily duties and take care of road users from the unique perspective I have as a woman.

# Maintaining and Improving the Driving Environment

## Measures for Traffic Safety

In order to prevent traffic accidents, NEXCO East Group analyzes the situations of traffic accidents that have occurred in the past and implements various traffic safety measures such as using chevron

alignment signs, high-visibility reflective tape, guiding lane markings, rumble strips, and thin-layer pavements so as to call attention to sharp corners, control speed and prevent lane departure, etc.



Sharp-corner guide signs and high-visibility reflective tape



Guiding lane marks (dashed line section)



Rumble strips (provisional 2-lane sections)



Thin-layer pavement (red pavement section)

## Measures to Prevent Driving the Wrong Way

As driving the wrong way on expressways can cause fatal accidents, we promote measures to prevent unreasonable turning and wrong way driving, including the installation of rubber poles at merging points to main lanes, arrows and signs indicating the correct driving direction, and coloring pavement according to direction at level crossing points of Y-shaped interchanges.



Measure to prevent driving the wrong way when entering the main expressway lanes.

## Measures for the Prevention of Head-on Collisions in Provisional 2-Lane Sections (Wire Rope)

The provisional 2-lane sections of expressways where inbound and outbound lanes are separated by rubber poles are areas where tragic accidents such as head-on collisions can occur. Therefore, since April 2017, as a trial, NEXCO East has installed wire rope instead of rubber poles on the median of approximately 70 km-length of expressway as a countermeasure to prevent head-on collisions. Since then, there have been no fatalities or serious accidents involving crossing over the ropes into oncoming lanes. (As of end of March, 2018)

Going forward, NEXCO East will, taking into account the verification results from the Committee for Investigating Technologies to Prevent Head-on Collisions on Expressways, begin full-scale implementation of wire ropes in sections undergoing earthwork.



Wire rope



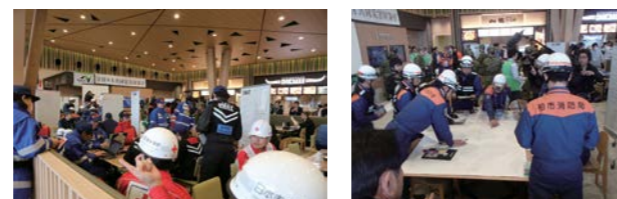
Wattsu PA (Inbound), DO-O EXPWY

The Rest Area Business Division operates 197 commercial facilities, including “Pasars” and “YASMOCCA,” at rest areas on expressways, along with running expressway-related businesses, including an Asset Utilization Business. Also, we have systematically established new commercial facilities, expanded and renovated them, and renewed aging facilities at rest areas, so that our customers can use them safely, reliably, comfortably, and conveniently. In addition, we aspire to create rest areas (service areas & parking areas [SA/PA]) that contribute to local communities, by acting as showrooms for the various regions, devising menus that use locally grown products, and by establishing walk-in gates. We are also creating rest areas for foreign visitors that feature duty-free shops, area concierge multilingual guidance and facilities that use multilingual signage and pictograms to make them easier for everyone to understand. Regarding the expressway-related business, we proactively engage in a wide variety of business by efficiently using management resources, such as businesses utilizing spaces below viaducts, and the hotel business.

## For More Convenient and Comfortable Service

### Using Rest Areas as Emergency Response Centers in a Disaster

In the Great East Japan Earthquake, expressway rest areas were utilized by the Japan Self Defense Forces, fire departments and other relief workers as operations bases and relay centers. With this in mind, NEXCO East has been equipping rest areas with functions to back up lifelines such as power generators and water wells, as well as other functions to enable the rest areas to be used as joint disaster response centers so that the relevant authorities can carry out effective disaster relief activities in the event of a disaster. NEXCO East also works together with relevant organizations to conduct joint disaster drills and other such activities.



Joint disaster drills (Moriya SA [Inbound], JOBAN EXPWY)

## Developing Safe, Reliable, Comfortable, and Convenient Rest Areas and Various Businesses by Effective Use of Our Business Resources



## Engagement in the Creation of Unique and Fascinating Rest Areas

### Development of “Enrichment of Uniqueness and Attractiveness” Areas

#### ● Development of Pasar

“Pasar” is the flagship brand of NEXCO East Group's commercial facilities called “Michi-naka (In Expressway),” and it has provided familiar chain stores for public and gourmet foods that drivers

can only enjoy onsite, aspiring to offer a wide variety of services.

So far, six Pasars have opened near the Tokyo Metropolitan Area, including Pasar Makuhari (Outbound) on the KEIYO EXPWY.



Pasar Moriya (Outbound), JOBAN EXPWY

#### List of Pasar

- Hanyu PA (Outbound), TOHOKU EXPWY
- Miyoshi PA (Inbound), KAN-ETSU EXPWY
- Moriya SA (Inbound), JOBAN EXPWY
- Moriya SA (Outbound), JOBAN EXPWY
- Makuhari PA (Inbound), KEIYO EXPWY
- Makuhari PA (Outbound), KEIYO EXPWY

### ● Development of Dramatic Areas

NEXCO East Group has developed rest areas called “Dramatic Areas” which serve as regional bases, where we concentrate on “locality and the pleasures of travelling” with an aim to

host “dramatic travel spots.” We capture the atmosphere of the local area in various forms, such as the exterior of the facilities, local food and local souvenirs.



Akagi-kogen SA (Inbound), KAN-ETSU EXPWY



Display of Shin-Etsu main line train at Yokokawa SA (Inbound), JOSHIN-ETSU EXPWY

### ● Development of Themed Areas

NEXCO East Group operates Themed Areas where world views on integrated themes are expressed throughout the individual rest areas, such as “Onihei-Edo-Dokoro” (a town recreated from a part of the Edo Period [1745-1829], based

on the popular novel character “Onihei” ) and the “Yorii Rest Area: The Little Prince” (based on the children's book by Saint-Exupery). By inviting our drivers to visit extraordinary spaces like these, we can provide them with surprising and heartfelt moments.



“Onihei-Edo-Dokoro,” Hanyu PA (Inbound), TOHOKU EXPWY



“Yorii Rest Area: The Little Prince,” Yorii PA (Inbound), KAN-ETSU EXPWY

### Development of “Enrichment of Basic Services” Areas

In small-to-medium-sized rest areas, NEXCO East provides basic services (food and souvenirs) in what it calls “Enrichment of Basic Services” Areas. Shops that operate under the “YASMOCCA” brand

have been installed in such areas to seek to create places where drivers can casually drop in for a rest. In addition, convenience stores are also available for driver convenience.



“Power lunch” on the regular menu



Keiyo-Ichikawa PA (Outbound), KEIYO EXPWY

### Installation of Quick Charging Stations

NEXCO East is installing quick-charging stations to contribute to the promotion of electric vehicles. Currently, 139\* quick-chargers have been installed along expressways, and chargers are scheduled to be added to 10 new locations in the Hokkaido region in FY2018.

\*As of July 1, 2018



Tomobe SA (Outbound), JOBAN EXPWY

## More Customer-Friendly Rest Areas

### Working on Improving the Comfort of Facilities

Aiming for rest areas that all of our drivers can use comfortably, we are introducing universal design and making our facilities accessible to those with disabilities by eliminating stairs, providing the appropriate parking spaces, and providing wheelchairs and communication boards.

In addition to installing warm water bidet-style toilet seats and automatic hot-water faucets, we are providing large stalls with baby seats and small handwashing facilities, children's urinals, and bathrooms or ostomates\*.

At many rest areas, we also installed diaper-changing stations, nursing rooms, and hot-water heaters for baby formula so that small children and their families can enjoy using expressways.

\*Restrooms that are equipped with sinks or wash stands for colostomy/bladder bag users.



Exclusive parking for people with disabilities



Rest facilities with step-free parking lots and sidewalks



Multi-function restroom



Free spaces for kids



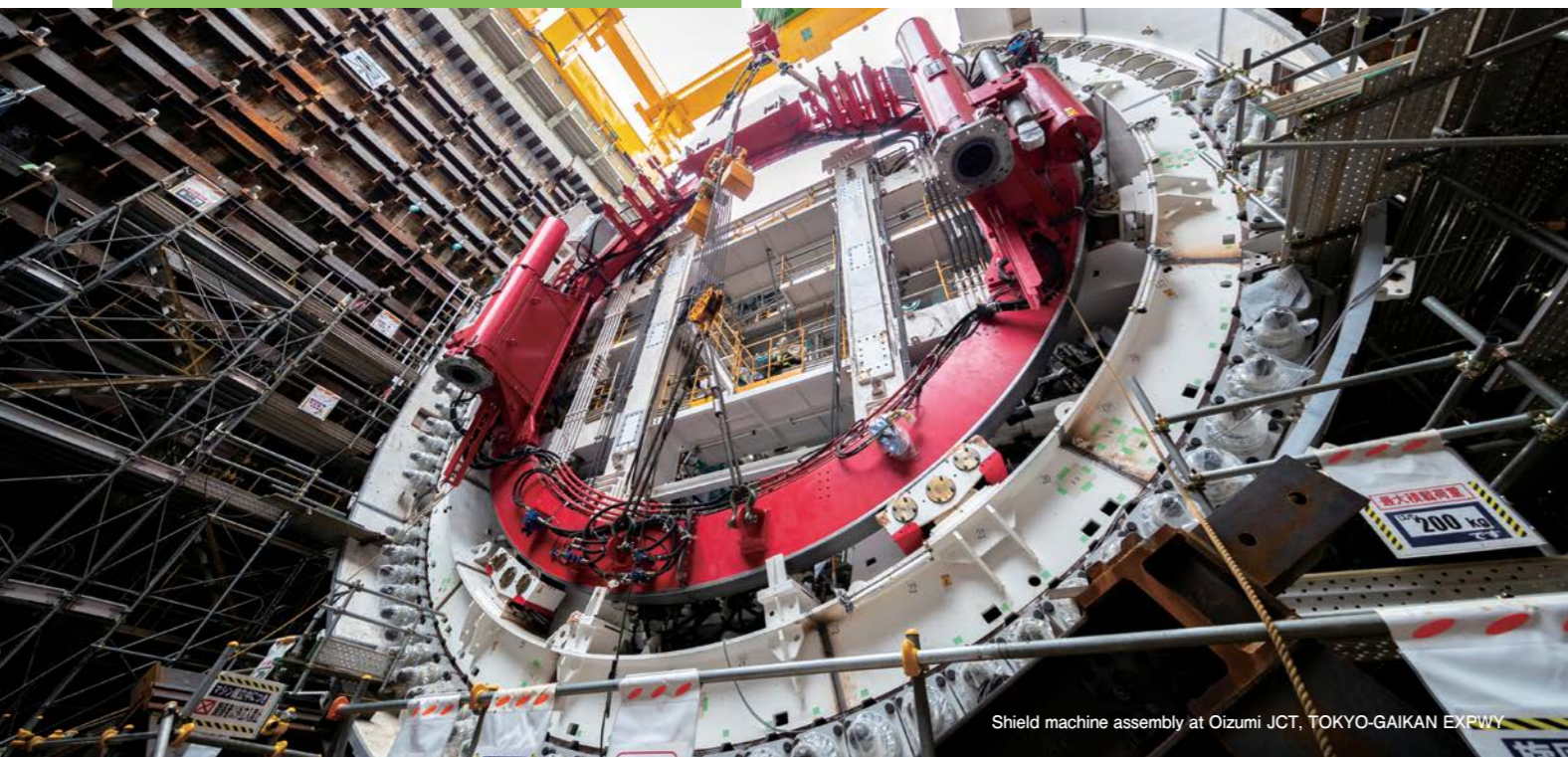
Diaper changing table & nursing room

### “Relaxation through Flowers and Greenery” Expressway Gardens Project

This is a project to establish “Expressway Gardens” to turn gardens of rest areas into easier-to-use and comfortable spaces, as well as to enhance local identities and seek cooperation with local communities. NEXCO East continues working to provide drivers more peaceful and more healing spaces.



An Expressway Garden that was designed and supervised by the garden facilities near a neighborhood (Iwamizawa SA [Inbound], DO-O EXPWY)



Shield machine assembly at Oizumi JCT, TOKYO-GAIKAN EXPWY

The Construction and Technology Division aims to deliver safe, reliable, comfortable, and convenient expressway services via “creation technologies” and “utilization technologies.”

Our construction business aims to expand the expressway network and improve network functions by eliminating any missing links in the networks of the Tokyo Metropolitan Area, increasing the number of lanes to 4 lanes, installing Smart ICs, and upgrading rest facilities. We give top priority to safety, pursue high quality, low cost, and high productivity, and engage in the construction of roads that increase customer trust, all via the “creation technologies” that NEXCO East has cultivated.

Also, we conduct research and technology development into “utilization technologies” for aging expressways from the aspects of realizing SMHs, enhancing traffic safety, implementing more advanced measures against snow and ice, and preserving the environment. Furthermore, in order to ensure that these “creation technologies” and “utilization technologies” are passed down to the next generation, NEXCO East undertakes the necessary actions, including the establishment of the NEXCO-East Technology Center for Development & Education, which will become a place for training the engineers that are necessary for conducting advanced research and technology development.

## Next-generation Expressways Designed via Creation and Utilization Technologies

Developing the Expressway Network by Continuously Applying Various “Creation Technologies”

### Tunnel Construction in Urban Areas

Shield machines have been used for constructing tunnels in urban areas on the TOKYO-GAIKAN EXPWY and KEN-O EXPWY. In particular, for the construction of the TOKYO-GAIKAN EXPWY (between the KAN-ETSU EXPWY and TOMEI EXPWY), we used a shield machine that has the largest cross-section area in Japan—about 16 m in diameter.



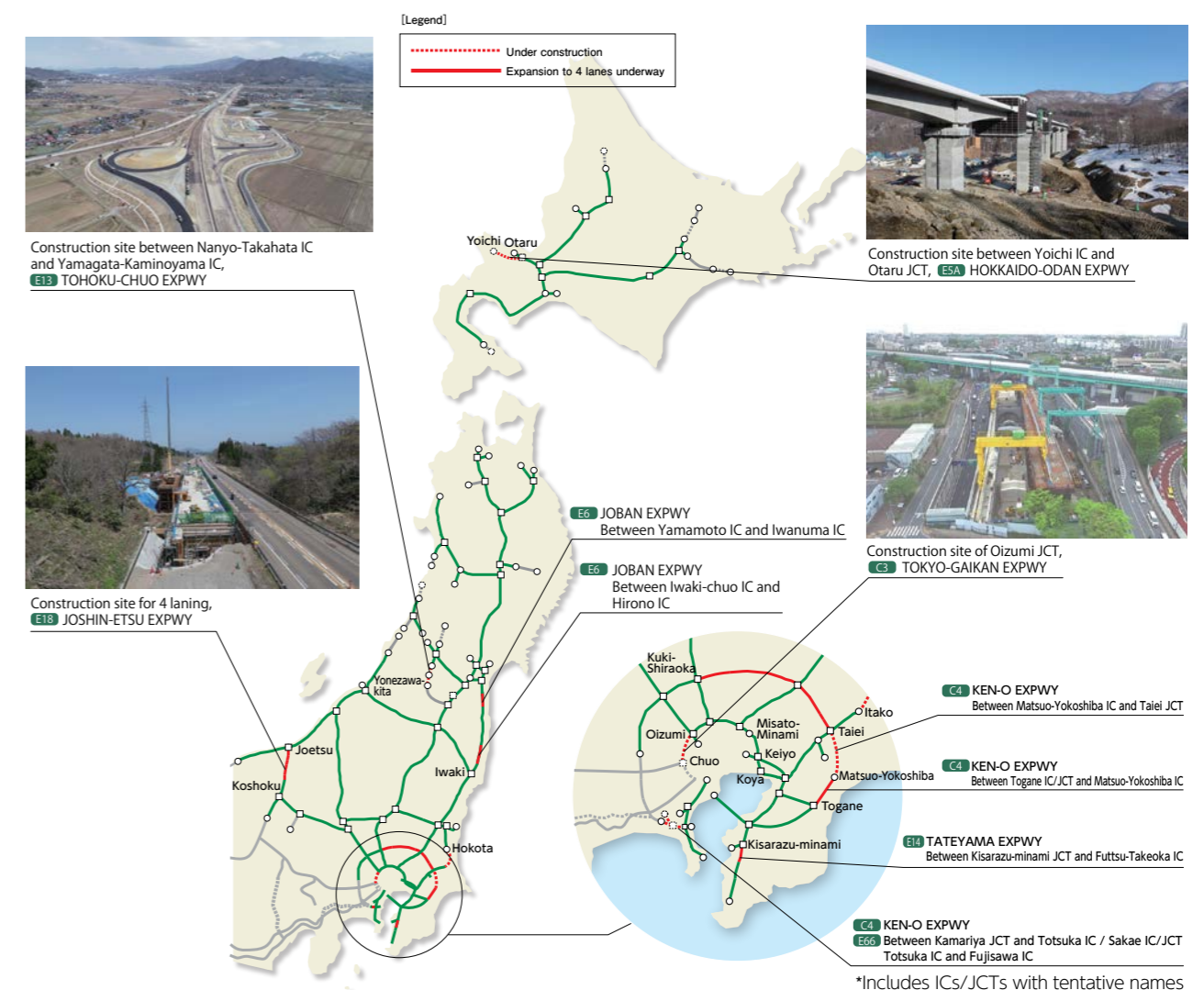
Tunnel construction using shield machine

## Steadily Expanding Expressway Networks so as to Contribute to the Development of Local Communities

### Promoting the Steady Expansion of Expressway Networks

NEXCO East is improving expressways by developing its network in the Tokyo Metropolitan Area and other areas and by increasing the number of lanes to 4 lanes. Since 2005, we have developed a 557-km network over 11 expressway routes and worked on increasing lanes to 4 lanes for 44 km over three expressway routes. In February of 2018, we opened a new 8.8-km section of the HIGASHI-KANTO EXPWY between

the Hokota IC and Ibarakikuko-kita IC, and in June 2018, we opened a new 15.5-km stretch of the TOKYO-GAIKAN EXPWY between the Misato-minami IC and the Koya JCT. We are also steadily developing 123 km over five expressway routes and increasing lanes to 4 lanes for 206 km over six expressway routes, thereby contributing to the development of local communities.



### VOICE



Tohoku Regional Head Office  
Yamagata Construction Office  
Nanyo-Takahata Area  
Construction Manager

Motoya CHUTOKU

I am in charge of the construction project on the TOHOKU-CHOU EXPWY (section between the Nanyo-Takahata IC and Yamagata-Kaminoyama IC) in Yamagata Prefecture. The section that I'm supervising features some of the country's weakest areas of land, and because we're carrying out not just earthwork but also bridge and tunnel construction, we need to place absolute priority on safety as we tackle this very difficult construction project. Even as we face many challenges, we value communication with local residents and other people involved in the project, and wish for nothing more than to properly complete this road that we have worked so hard on.

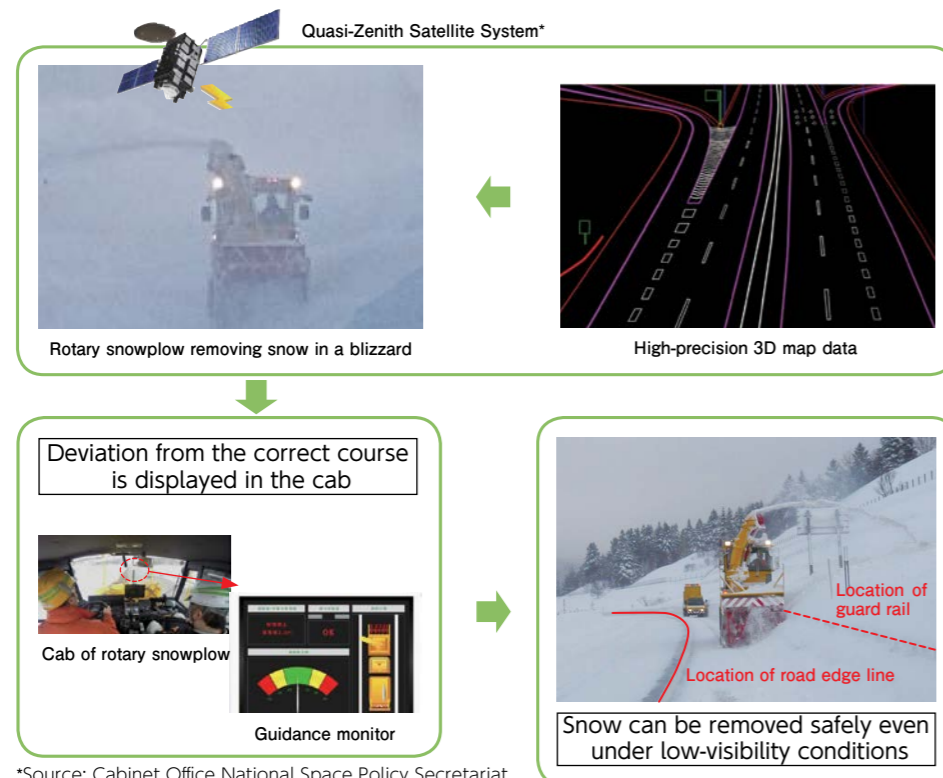
## Researching and Developing Technologies for Utilizing Expressways

### Advancing Sophisticated Countermeasures for Snow and Ice

NEXCO East endeavors to advance countermeasures for snow and ice by utilizing IoT, AI, and robotics, in order to reduce road closures in the winter, ensure safe traffic, and cope with the shortage of skilled workers that implement these countermeasures.

#### ● Driving Support System That Uses the Quasi-Zenith Satellite System

NEXCO East is developing driving support technologies to guide the safe operation of snow-ice control vehicles by combining the Quasi-Zenith Satellite System, which can provide high-precision location information, with high-precision 3D map data.



\*Source: Cabinet Office National Space Policy Secretariat

#### ● Integrated Control System for the Operating Devices of Snow-Ice Control Vehicles

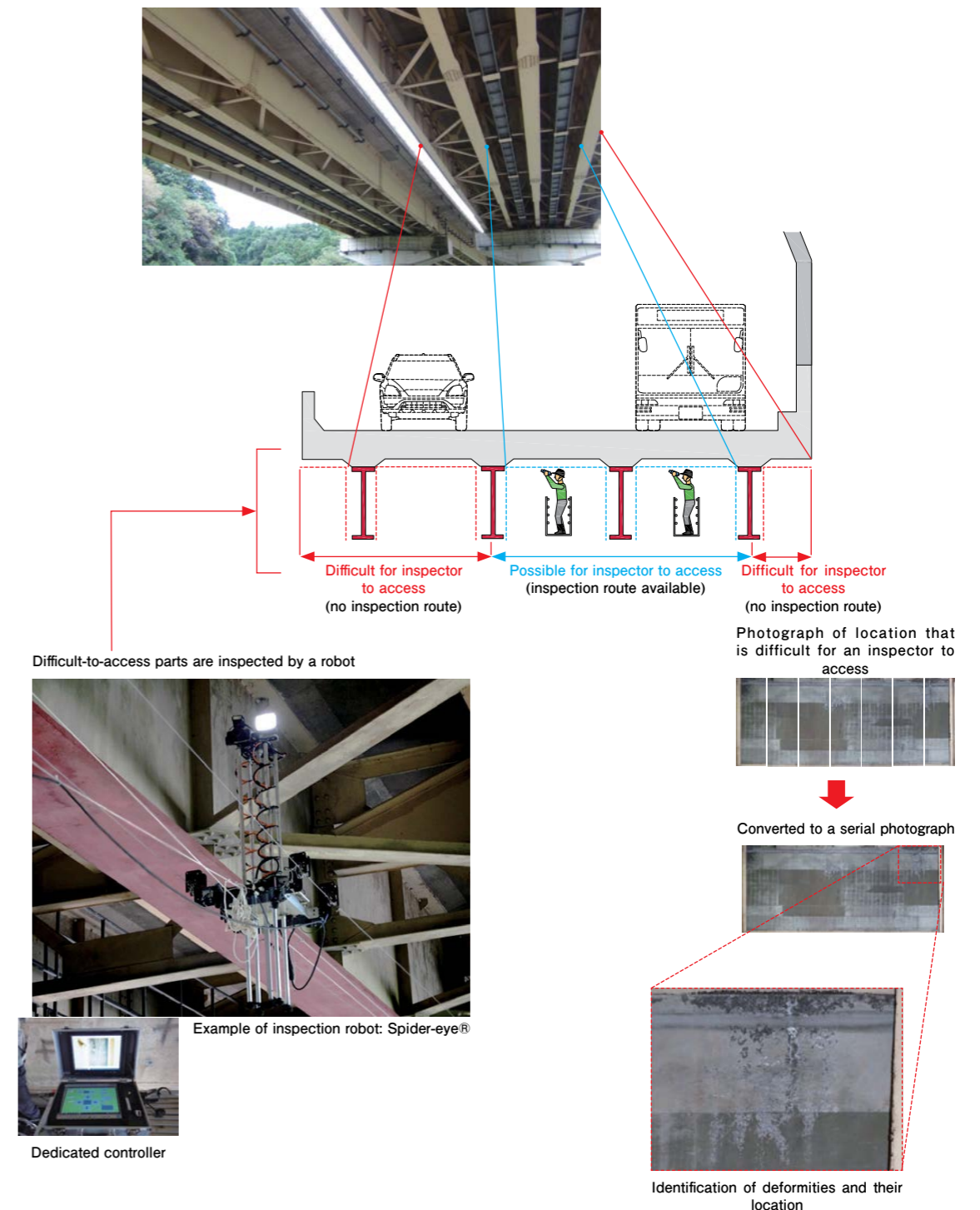
NEXCO East is going to amalgamate the various operations of Snow-Ice control vehicles (which

require complicated operations), identify operational patterns, and develop an automobile steering system by which snow-ice control vehicles can be operated by a single button.



### More Advanced Inspections

NEXCO East is carrying out more advanced inspections by developing inspection robots that can be used in locations that are difficult for human inspectors to access.



#### VOICE



Nexco-East Engineering Company Ltd.  
Saitama Maintenance Planning Center  
Civil Engineering Inspection and Diagnostics Group 1

Yusuke EGUCHI

I'm in charge of the development of Spider-eye®. Spider-eye was first trialed in an inspection in FY2017. Through the photographs taken by Spider-eye, we were able to identify cracks in the concrete and cracks in the printing of the steel beams with the same accuracy as if an inspector had seen it in a close-up inspection. Going forward, I would like to improve the mechanical specifications of Spider-eye to give it a better inspection performance—something that has been problematic—so that it can be used in place of human inspectors in locations that are difficult to access. To this end, I will continue to develop this technology with an eye on its usefulness at actual inspection sites.

## NEXCO East's Various Efforts for Environmental Preservation

### Energy Conservation and Employing High-visibility Lighting Fixtures

NEXCO East is upgrading the lighting in tunnels from the conventional high-pressure sodium lamps to LED lamps, and this action has not only improved visibility, but also contributed to saving energy. In FY2017, lighting in 13 tunnels was changed to LED lamps. The total reduction in electricity usage by switching to LED lamps so far is estimated at approximately 32 million kwh/year (CO<sub>2</sub> reduction of about 17,000 tons/year). Also, we began efforts to reduce electricity usage further by introducing LED lamps for lighting on roads, in addition to tunnel lighting.








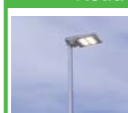

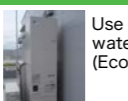

LED lighting in a tunnel

### Promoting Environmentally Friendly “eco Inters<sup>®</sup>” and “eco Areas<sup>®</sup>”

Based on a policy of actively installing energy-saving electrical facilities in interchanges and rest areas, NEXCO East is promoting the establishment of “environmentally friendly” facilities in which

steps are taken to improve the efficiency of heating and cooling systems inside buildings and utilize reusable energy sources such as solar power.

#### An example of eco Inters<sup>®</sup>

<b>Indoor lighting</b>  LED lighting used as standard	<b>Solar power</b>  Solar power generation: 5 kW	<b>Double-paned glass sashes</b>  Double-paned glass used as standard for the outer surface sashes	
<b>Thermal insulation coating</b>  Use of a folded-plate thermal insulation coating product			
<b>Road lighting</b>  Use of LED floodlights			
<b>Information boards</b> Use of LED units			
<b>Signal lights</b> Use of LED lamps			
<b>Gate lighting</b>  Use of LED floodlights	<b>Water heating systems</b>  Use of electric water heaters (EcoCute)	<b>Eave materials</b> Use of aluminum panels to lighten the eaves Implementation of fall-prevention measures in both base materials and finished materials	<b>Thermal insulation</b>  Use of glass walls inside outer walls and inside ceilings Spraying of foaming urethane on the underside of eaves

### Planting Greenery to Mitigate Global Warming

In FY2017, we planted trees covering about 2 ha of newly opened expressway sections. As a result, the total tree-planted area on the slopes of embankments, etc., reached about 3,700 ha at the end of FY2017. CO<sub>2</sub> absorption and carbon fixation effects in this tree-planted area are estimated at approximately 39,000 tons per year. Tree planting not only provides CO<sub>2</sub> absorption and carbon fixation effects, but also contributes to easing the heat island phenomenon via the leafy canopies of trees.



### Efforts to Protect Local Ecosystems

During construction work on the GAIKAN EXPWY (between Misato-minami IC and Koya JCT), NEXCO East in collaboration with Ichikawa-shi uprooted a large-diameter Japanese black pine tree (approximately 10 meters high) that had been growing inside the construction area and replanted it in front of Sugano Station on the Keisei Main Line as a symbolic tree.



### Reducing CO<sub>2</sub> by Efficiently Utilizing Forestry Resources

In construction work on the HIGASHI-KANTO EXPWY (between Hokota IC and Ibarakikuko-kita IC), NEXCO East used pine piles to maintain the ground load-bearing capacity of the foundations of regulating reservoir embankments. A special feature of pine piles is that they do not easily rot, even when high underground water levels keep them in a constantly wet state. Moreover, they are more workable and economic to use than concrete piles, and have a design load-bearing capacity that is more than sufficient for requirements.

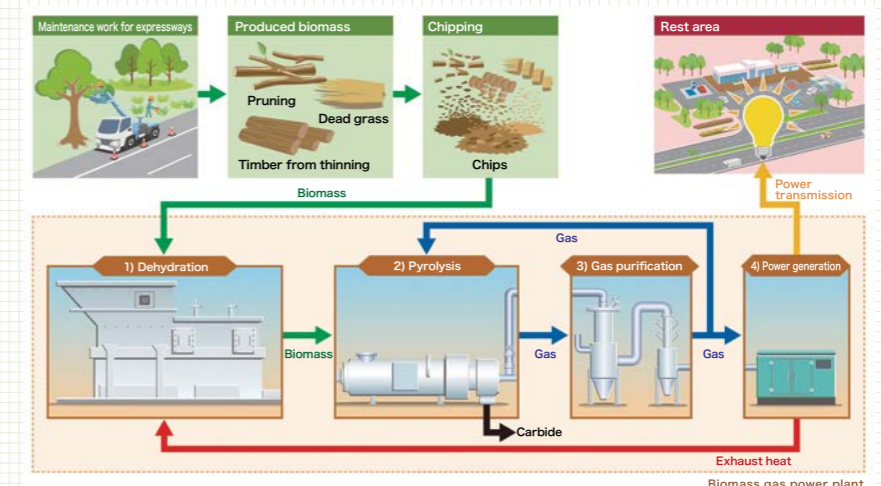
By efficiently utilizing forestry resources in this way, the carbon fixation effect\* provided by pine piles has led to a reduction in CO<sub>2</sub> during this construction of approximately 27,000 tons compared to when conventional materials such as concrete piles are used.

\*Carbon fixation amount of pine piles: Approximately 0.6 tons of CO<sub>2</sub>/m<sup>3</sup>



### New Green Recycling Challenge ( “Biomass Gasification Power Generation” )

NEXCO East operates a biomass gas power generation system that utilizes the gas derived from pyrolysis as energy, as a new recycling system for the plant-derived materials produced from the mowing of grass, pruning of trees, and thinning of timber, in order to supply electricity to a rest area (Nasu-Kogen SA [Inbound], TOHOKU EXPWY).



## Developing Overseas Business By Utilizing the Technologies and Know-how of NEXCO East's Expressway Business

### Participating in the Overseas Road Project

In 2010, NEXCO East established a liaison office in India, where large-scale road development is expected, and has been collecting information on participating in projects there. In March 2014, the company entered the road PPP business in India through the acquisition of a portion of the shares of a special purpose vehicle (SPV) that is being used to carry out a project pertaining to the 4-lane expansion of a section of the road between Pune and Solapur, located in the State of Maharashtra. Moreover, since April 2017, NEXCO

East has been providing technical advisory services to Cube Highways regarding surveying and designing a rest area project in India, and we are currently examining how we can expand our rest facilities business. Furthermore, in December of 2017, we formed a consortium with Mitsubishi Corporation and Japan Overseas Infrastructure Investment Corporation for Transport & Urban Development (JOIN) and have concluded a basic agreement to obtain a 20% share in Cube Highways with the goal of full-scale entry into the toll road administration business in India. Going forward, we aim to leverage our advisory services to bring improvements and added value to this business.



Toll road projects currently involved in (including routes we expect to obtain)



Providing technical advisory services at a proposed site for rest facilities

### Consulting Projects for ODA

NEXCO East provides surveying, planning and technical support for projects in the road, bridge, tunnel and ITS sectors as part of the Government

of Japan's efforts to promote the export of quality infrastructure to developing countries.



Meeting planning for ITS project (India)



Presentation for Capacity Development of Road and Bridge Technology the Republic of the Union of Myanmar



Traffic congestion on the outskirts of New Delhi

### International Cooperation

NEXCO East has dispatched long-term experts to each of India and Myanmar through the Japan International Cooperation Agency (JICA). Moreover

in FY2017, NEXCO East also received about 340 foreign trainees in Japan through agencies such as the Ministry of Land, Infrastructure, Transport and Tourism and JICA.



JICA experts conducting a site survey for a proposed tunnel (India)



JICA experts attending a seminar on bridge technologies (Myanmar)

### International Exchange

NEXCO East has exchanged technical information for expressways with ASFINAG, which has managed the expressways in Austria since April 2008. Under this program, we exchanged opinions and views about maintenance data in the field of asset management in FY2017.



Technical exchange concerning maintenance data

### International Conferences

NEXCO East collects and transmits information on expressway technologies around the world, through participation in international conferences held by the World Road Association (PIARC), International Road Federation (IRF), and the Road Engineering Association of Asia and Australasia (REAAA), etc.



PIARC International Winter Road Congress (Poland)



Flower and Green Peaceful Highway Garden™ Project (HOKURIKU EXPWY, Yoneyama SA (Inbound))

In today's society, companies that do not confront head-on issues of compliance and workplace environment will not survive.

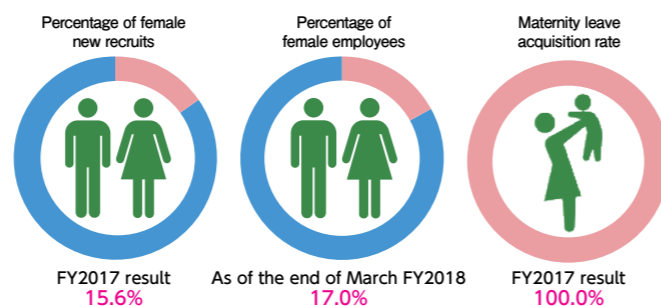
The "E-Shokuba (ES) creation movement" that NEXCO East Group has been engaged in since 2016 aims to create a comfortable place to work and offer ideas on workstyle diversification, while at the same time revolutionize employee consciousness. It is vital that companies today allow their employees to work in innovative ways. We believe that it is only when each and every employee can take the initiative and work with vitality that companies will be able to conduct business activities that meet the needs of society.

We also place great value on communicating with all our stakeholders about the activities that support our business, such as internal controls, accounting practices, financial operations, advertising and CSR, and strive to ensure that these activities are carried out efficiently and properly so that we can realize even more sound management.

## For Society and For Employees

### Active Employment of Female Employees

In the midst of concerns of a decrease in labor forces due to lower birthrates and an aging society, the Japanese government is making efforts to enable women to reach their full potential, as this is necessary to secure the human resources that are going to sustain new growth sectors. As the female demographic of the population has been under-utilized, and as this demographic can become a large source of human resources, the government aspires to increase the female workforce participation rate, by formulating an environment where children can be securely raised by working parents. This is in addition to supporting returning to work after childcare leave and the active promotion of women to positions of responsibility.



Key phrases for the CSR of NEXCO East Group  
"We connect communities and are connected to communities."



### The CSR Ideal to Which NEXCO East Group Aspires

In February 2014, NEXCO East Group formulated the "CSR Declaration," which is the CSR ideal to which NEXCO East Group aspires. We take action for CSR following the slogan, "We connect communities and are connected to communities" to realize our Management Principles and Visions.



Participating in the Yamagata Hanagasa Festival



Traffic safety campaign held at a commercial facility



Biotope preservation activities in collaboration with local high school students

### Vitalization of Regional Communities

NEXCO East Group hosts events to promote sightseeing at rest areas and actively participates in various events hosted in local regions. In addition, we interact with people in local communities through our flower garden promotion and beautification activities.

### Promotion of Traffic Safety

With the cooperation of the Expressway Traffic Police Squad, etc., NEXCO East hold traffic safety workshops and traffic safety campaigns, caters classes to bus companies and towing companies, and provides traffic safety workshops for elderly drivers, etc.

### Environmental Preservation

NEXCO East is engaged in the maintenance of eco roads and implements hands-on eco learning, along with greening and the preservation of biotopes in cooperation with people in local regions.

# Company Profile

Trade Name	East Nippon Expressway Company Limited		
Location of Head Office	Shin-Kasumigaseki Building, 3-2, Kasumigaseki 3-chome, Chiyodaku, Tokyo 100-8979, Japan <Service Area Business Division> MOMENTO SHIODOME Bldg., 3-17, Higashi-Shimbashi 2-chome, Minato-ku, Tokyo 105-0021, Japan	TEL	+81-3-3506-0111
Representative	Toru Obata, President and Chief Executive Officer		
Date of Establishment	October 1, 2005		
Capital	52.5 billion yen		
Number of Employees	2,243 (As of March 31, 2018)*This figure excludes employees from our company assigned to outside the company and includes employees from outside the company assigned to our company		
Business Purpose	To facilitate road traffic via effective new construction, reconstruction, maintenance, repair, and other forms of expressway management, etc., thereby contributing to the healthy development of the national economy and the improvement of the life of the people.		
Business Descriptions	Expressway management and construction business, rest area operation business, parking lot operation business, below-viaduct area utilization business, truck terminal operation, credit card business, internet services business, hotel business, overseas business, etc.		
Hokkaido Regional Head Office	12-30, Oyachinishi 5-chome, Atsubetsu-ku, Sapporo-shi, Hokkaido	TEL	+81-11-896-5211
Tohoku Regional Head Office	Aoba-Dori Plaza, 2-1, Chuo 3-chome, Aoba-ku, Sendai-shi, Miyagi	TEL	+81-22-711-6411
Kanto Regional Head Office	Omiya-JP Bldg., 11-20, Sakuragicho 1-chome, Omiya-ku, Saitama-shi, Saitama	TEL	+81-48-631-0001
Niigata Regional Head Office	Niigata-PLAKA3, 1, Tenjin 1-chome, Chuo-ku, Niigata-shi, Niigata	TEL	+81-25-241-5111

# Board Members

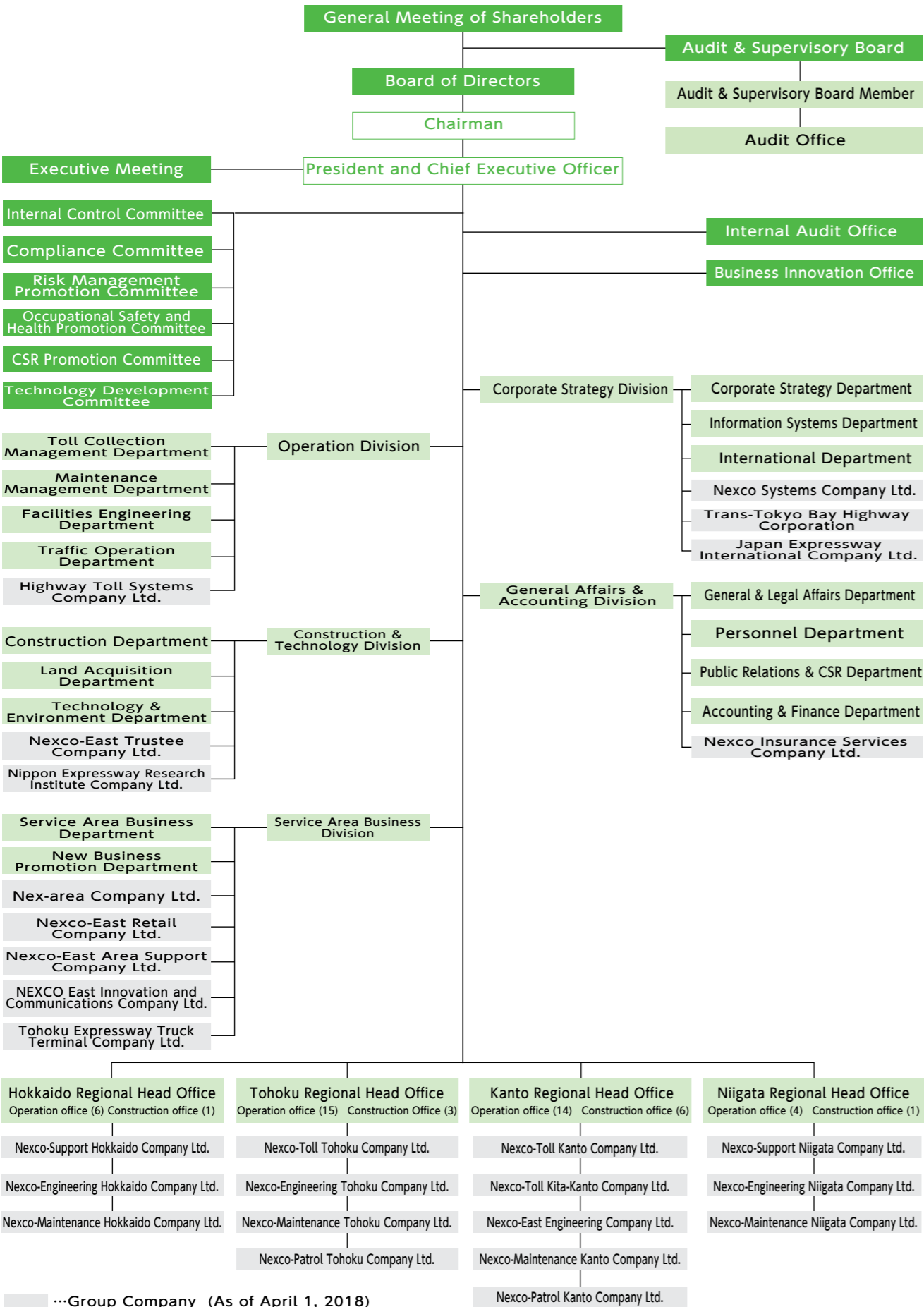
Chairman	Kunie Okamoto	
President and Chief Executive Officer	Toru Obata	CEO
Representative Director and Executive Vice President	Seigo Sakaki	Director of Corporate Strategy Division
Managing Director and Executive Vice President	Motokazu Endo	Director of Operation Division
Managing Director and Senior Executive Officer	Ryuichi Hagiwara	Director of Service Area Business Division
Managing Director and Senior Executive Officer	Masanori Yokoyama	Director of Construction & Technology Division
Managing Director and Senior Executive Officer	Makoto Arakawa	Director of General Affairs & Accounting Division

Audit & Supervisory Board Member (full-time)	Taizo Fujita	
Audit & Supervisory Board Member (full-time)	Noboru Okamoto	
Audit & Supervisory Board Member	Michiaki Ozaki	
Audit & Supervisory Board Member	Keiko Sakurai	

Senior Executive Officer	Takashi Kawazoe	Deputy Director of Operation Division
Senior Executive Officer	Kazuhiro Sawada	Deputy Director of Construction & Technology Division (construction)
Senior Executive Officer	Kaoru Matsusaki	Director General of Tohoku Regional Head Office
Senior Executive Officer	Tomomichi Takahashi	Director General of Kanto Regional Head Office
Executive Officer	Shigemi Oba	Deputy Director of Operation Division & Director of Toll Collection Management Department
Executive Officer	Tsutomu Nakanishi	Deputy Director of Construction & Technology Division (technology)
Executive Officer	Masayuki Okubo	Director of Personnel Department, General Affairs & Accounting Division
Executive Officer	Yoshinori Okoshi	Director General of Hokkaido Regional Head Office
Executive Officer	Hiroyuki Suzuki	Director General of Niigata Regional Head Office

As of July 1, 2018

Organization Chart



List of Expressways Currently Operating

List of National Networks (Expressways) Currently in Business

	Names of roads in service	Length of roads in service (km)	Traffic volume (number of vehicles/day)	Toll income (1,000s of yen/day)
National Expressway	DO-O EXPWY	443.5	116,412	116,404
	SASSON EXPWY	38.3	53,161	21,851
	DOTO EXPWY	206.1	11,119	28,643
	TOHOKU EXPWY	680.5	321,653	507,080
	AOMORI EXPWY	15.6	4,228	1,498
	HACHINOHE EXPWY	81.3	7,169	11,288
	KAMAISHI EXPWY	11.4	2,554	974
	AKITA EXPWY	143.6	20,494	22,176
	YAMAGATA EXPWY	109.8	24,986	21,880
	BAN-ETSU EXPWY	212.7	22,786	44,570
	NIHONKAI TOHOKU EXPWY	91.6	26,209	13,339
	TOHOKU-CHUO EXPWY	27.1	5,108	2,226
	KAN-ETSU EXPWY	246.3	211,409	254,692
	JOSHIN-ETSU EXPWY	203.4	62,437	103,742
	JOBAN EXPWY	300.4	214,454	224,021
	TATEYAMA EXPWY	55.7	78,293	36,080
	HIGASHI-KANTO EXPWY	92.1	195,052	126,218
	SHIN-KOKU EXPWY	3.9	6,288	1,471
	TOKYO-GAIKAN EXPWY	49.2	148,661	70,465
	KITA-KANTO EXPWY	135.0	76,318	78,718
	NAGANO EXPWY	42.7	7,156	24,279
	HOKURIKU EXPWY	195.8	52,712	89,366
Subtotal		3,386.0	1,668,659	1,800,981
General Toll Road	FUKAGAWA-RUMOI EXPWY	4.4	1,970	259
	HIDAKA EXPWY	4.0	5,770	814
	MOMOISHI EXPWY	6.1	5,352	706
	YUZAWA-YOKOTE EXPWY	14.5	6,213	1,896
	AKITA EXPWY	9.5	6,223	1,942
	AKITA EXPWY (Kotooka-Noshiro Road)	17.1	4,448	1,804
	SENDAI-HOKUBU EXPWY	13.5	20,291	7,504
	SANRIKU EXPWY	7.8	46,298	7,566
	SENDAI-TOBU EXPWY	24.8	69,769	24,604
	SENDAI-NANBU EXPWY	12.9	28,596	8,192
	TOHOKU-CHUO EXPWY (formerly YONEZAWA-NANYO EXPWY)	8.8	4,291	1,138
	HIGASHI-MITO EXPWY	10.2	15,145	3,933
	KEIYO EXPWY	36.7	278,587	67,981
	CHIBA-TOGANE EXPWY	16.1	54,166	15,089
	TOKYO-WAN-AQUA-LINE EXPWY	15.1	46,776	38,212
	AQUA RENRAKU EXPWY	7.1	33,566	7,902
	FUTTSU-TATEYAMA EXPWY	19.2	13,973	5,900
	KEN-O EXPWY	216.7	210,586	179,344
	DAISAN-KEIHIN	16.6	136,120	29,745
	YOKOHAMA SHINDO	11.3	126,053	37,667
	YOKOHAMA-YOKOSUKA EXPWY	36.9	105,475	51,867
Subtotal		509.3	1,219,668	494,067
Total		3,895.3	2,888,327	2,295,048

● Length of roads: As of July 1, 2018 ● Traffic volume and toll revenues: FY2017 data  
● The totals for traffic volume and toll revenues may not be consistent because of the rounding of the subtotals.

## List of Expressways under Construction

### New Sections

	Names of routes	Section name	Length of roads that will be in service (km)	Scheduled year of opening
National Expressway	HOKKAIDO-ODAN EXPWY Kuromatsunai-Kushiro Route	Between Yoichi and Otaru JCT	23	2018
	TOHOKU-CHUO EXPWY Soma-Obanazawa Route	Between Nanyo-Takahata and Yamagata-Kaminoyama	24	2018
	KAN-ETSU EXPWY Niigata Route	Between Chuo JCT and Oizumi JCT	10	—
	HIGASHI-KANTO EXPWY Mito Route	Between Itako and Hokota	31	—
General Toll Road	National Road Route 468	Between Kamariya JCT and Totsuka	9	2020*
		Between Taiei JCT and Matsuo-Yokoshiba	19	—
		Between Sakae IC/JCT and Fujisawa	7	2020*
Total			123	

(As of July 1, 2018)

### Widened Sections (excluding projects that add auxiliary lanes)

	Names of routes	Sections Including tentative names for ICs and JCTs	Length of roads that will be in service (km)	Scheduled year of opening	Reference
National Expressway	KAN-ETSU EXPWY Joetsu Route	Between Shinanomachi and Joetsu JCT	38	2018	4-lane expansion
	HIGASHI-KANTO EXPWY Chiba-Futtsu Route	Between Kisarazu-minami JCT and Futtsu-Takeoka JCT	21	2018	4-lane expansion
	JOBAN EXPWY	Between Iwaki-chuo and Hirono	27	2020	4-lane expansion
		Between Yamamoto and Watari	12	2020	4-lane expansion
General Toll Road	National Road Route 6 (SENDAI-TOBU EXPWY)	Between Watari and Iwanuma	2	2020	4-lane expansion
	National Road Route 16 (YOKOHAMA-YOKOSUKA EXPWY)	Between Kamariya JCT and Namiki	4	2020	6-lane expansion
	National Road Route 126 (CHIBA-TOGANE EXPWY)	Between Togane IC/JCT and Matsuo-Yokoshiba	16	2026	4-lane expansion
	National Road Route 468 (KEN-O EXPWY)	Between Kuki-Shiraoka JCT and Taiei JCT	92	2024	4-lane expansion
Total			211		

(As of July 1, 2018)

● The total of the lengths of roads may not be consistent because of the rounding of the subtotals.

● The scheduled date of opening may change due to progress in construction. The names of the expressways, ICs, and JCTs used in this section include tentative names. The construction of general toll roads and the Niigata route of the KAN-ETSU EXPWY are joint projects with the Ministry of Land, Infrastructure, Transport and Tourism (MLIT), and their scheduled dates for completion described here are the target fiscal years for opening as announced by the MLIT.

\*The schedules are for when land acquisitions, etc., based on the *Compulsory Purchase of Land Act* will be smoothly completed.

## Number of Interchanges and Rest Areas

### Interchanges

Number of facilities	Interchanges	<b>439</b> (As of July 1, 2018)
	Smart interchanges	<b>47</b> (As of July 1, 2018)

### Rest Areas

Number of facilities	<b>322</b> Rest areas (of which, 197 have commercial facilities, 125 do not (As of July 1, 2018))
	<b>139</b> Quick charging station (As of July 1, 2018)
Total retail store sales	<b>147.2 billion yen</b> (Results in FY2017)

## Financial Statements

### Key Points Concerning Consolidated Financial Statements

#### Consolidated Balance Sheet

- The majority of assets are highway assets in process, which are road assets prior to being transferred to the Expressway Agency. The majority of liabilities are road-building bonds payable / long-term loans payable liabilities that were procured for the construction of road assets.

#### Consolidated Statement of Income

- In the breakdown of operating revenue, revenue came from toll revenues from expressway business and sales from expressway rest area business, etc., with the majority of revenue coming from toll revenues.
- FY2017 was characterized by an operating loss of 100 million yen caused by responses to heavy snowfalls.
- Regarding the net income attributable to owners of parent, due to the recording of extraordinary income, etc., generated by the return of the substitutional portion of the employee pension fund, this income was 20.8 billion yen.

### Consolidated Financial Statements

#### Consolidated Balance Sheet (March 31, 2018)

(In billions of JPY)

Assets		Liabilities	
Current assets	1,557.2	Current liabilities	289.3
Cash and deposits	139.7	Non-current liabilities	1,338.5
Highway assets in process	1,099.1	Road-building bonds payable / Long-term loans payable	1,236.2
Other current assets	318.3	Other liabilities	102.2
Non-current assets	292.7	Total liabilities	1,627.9
Properties, plants and equipment	240.8	Net assets	
Intangible assets	12.2	Shareholders' equity	240.1
Investments and other assets	39.6	Capital stock	52.5
Deferred assets	1.1	Capital surplus	58.7
		Retained earnings	128.8
		Accumulated other comprehensive income	(16.9)
		Valuation difference on available-for-sale securities	(0)
		Remeasurements of retirement benefits	(16.9)
		Total net assets	223.1
Total assets	1,851.1	Total liabilities and net assets	1,851.1

\*The calculations in the table may not appear to be consistent, as any numbers less than 100 million have been rounded down.

#### Consolidated Statement of Income (From April, 2017 to March, 2018)

(In billions of JPY)

Operating revenue	1,056.4
Operating expenses	1,056.6
Rent expenses on highway assets	601.8
Administration costs of highway business and cost of sales	363.7
Selling, general and administrative expenses	91.0
Operating income	(0.1)
Non-operating income	3.6
Non-operating expenses	0.1
Ordinary income	3.3
Extraordinary income	28.7
Extraordinary losses	0.2
Income before income taxes	31.8
Income taxes etc.	10.9
Net income attributable to owners of parent	20.8

\*The calculations in the table may not appear to be consistent, as any numbers less than 100 million have been rounded down.

## Financial Statements

## ■ Non-consolidated Financial Statements

## ● Non-consolidated Balance Sheet (March 31, 2018)

(In billions of JPY)

Assets		Liabilities	
Current assets	1,552.2	Current liabilities	310.2
Cash and deposits	134.3	Non-current liabilities	1,300.5
Highway assets in process	1,102.0	Road-building bonds payable / Long-term loans payable	1,236.2
Other current assets	315.8	Other liabilities	64.2
Non-current assets	252.2	Total liabilities	1,610.7
Non-current assets	103.6	Net assets	
Non-current assets - related	102.0	Shareholders' equity	194.8
Non-current assets - affiliated	26.6	Capital stock	52.5
Other non-current assets	0.1	Capital surplus	58.7
Investments and other assets	19.8	Retained earnings	83.5
Deferred assets	1.1	Valuation and translation adjustments	(0)
		Total net assets	194.8
Total assets	1,805.6	Total liabilities and net assets	1,805.6

\*The calculations in the table may not appear to be consistent, as any numbers less than 100 million have been rounded down.

## ● Non-consolidated Statement of Income (From April, 2017 to March, 2018)

(In billions of JPY)

Operating revenue	967.9
Toll revenues	837.6
Sales of completed highway construction contracts	129.3
Other sales	0.9
Operating expenses	975.2
Rent expenses on highway assets	601.8
Cost of sales of completed highway construction contracts	129.3
Administrative expenses	244.1
Operating income from highway business	(7.2)
Operating revenue - related operations	54.8
Operating expenses - related operations	53.4
Operating income from related operations	1.3
Operating income - total business	(5.9)
Non-operating income	7.3
Non-operating expenses	0
Ordinary income	1.3
Extraordinary income	28.7
Extraordinary losses	0.1
Income before income taxes	29.9
Income taxes etc.	8.7
Net income	21.2

\*The calculations in the table may not appear to be consistent, as any numbers less than 100 million have been rounded down.

## Group Companies of NEXCO East (As of July 1, 2018)

20 Subsidiary Companies/7 Affiliated Companies

Company Name	Investment Relationship	Area of Responsibility	Business Content	Office Name (Location)
Nexco-Toll Tohoku Company Ltd.	Subsidiary	Tohoku Area	Toll Collection	Head Office and other (Aoba-ku, Sendai-shi and other)
Nexco-Toll Kanto Company Ltd.	Subsidiary	Kanto Area		Head Office and other (Sumida-ku, Tokyo and other)
Nexco-Toll KitaKanto Company Ltd.	Subsidiary	North-Kanto Area		Head Office and other (Omiya-ku, Saitama-shi and other)
Nexco-Engineering Hokkaido Company Ltd.	Subsidiary	Hokkaido Area	Maintenance and Inspection	Head Office and other (Shiroishi-ku, Sapporo-shi and other)
Nexco-Engineering Tohoku Company Ltd.	Subsidiary	Tohoku Area		Head Office and other (Aoba-ku, Sendai-shi and other)
Nexco-East Engineering Company Ltd.	Subsidiary	Kanto Area and other		Head Office and other (Arakawa-ku, Tokyo and other)
Nexco-Engineering Niigata Company Ltd.	Subsidiary	Niigata Area		Head Office and other (Chuo-ku, Niigata-shi and other)
Nexco-Maintenance Hokkaido Company Ltd.	Subsidiary	Hokkaido Area	Maintenance	Head Office and other (Shiroishi-ku, Sapporo-shi and other)
Nexco-Maintenance Tohoku Company Ltd.	Subsidiary	Tohoku Area		Head Office and other (Aoba-ku, Sendai-shi and other)
Nexco-Maintenance Kanto Company Ltd.	Subsidiary	Kanto Area		Head Office and other (Chiyoda-ku, Tokyo and other)
Nexco-Maintenance Niigata Company Ltd.	Subsidiary	Niigata Area		Head Office and other (Nagaoka-shi, Niigata and other)
Nexco-Patrol Tohoku Company Ltd.	Subsidiary	Tohoku Area	Traffic Management	Head Office and other (Aoba-ku, Sendai-shi and other)
Nexco-Patrol Kanto Company Ltd.	Subsidiary	Kanto Area		Head Office and other (Bunkyo-ku, Tokyo and other)
Nexco-Support Hokkaido Company Ltd.	Subsidiary	Hokkaido Area	Toll Collection and Traffic Management	Head Office and other (Atsubetsu-ku, Sapporo-shi and other)
Nexco-Support Niigata Company Ltd.	Subsidiary	Niigata Area		Head Office and other (Chuo-ku, Niigata-shi and other)
Nexco-East Trustee Company Ltd.	Subsidiary	Site survey & management and real estate business, etc.		Head Office and other (Minato-ku, Tokyo and other)
Nex-area Company Ltd.	Subsidiary	Management and operation of commercial facilities at rest areas		Head Office and other (Minato-ku, Tokyo and other)
Nexco-East Retail Company Ltd.	Subsidiary	Operation of directly managed stores at rest areas		Head Office and other (Minato-ku, Tokyo and other)
Nexco-East Area Support Company Ltd.	Subsidiary	Management and inspection of commercial facilities at rest areas and concierge services		Head Office and other (Minato-ku, Tokyo and other)
NEXCO East Innovation and Communications Company Ltd.	Subsidiary	R&D of technologies relating to smart maintenance highways and the advancement of information infrastructure, etc.		Head Office (Minato-ku, Tokyo)
Nexco Insurance Services Company Ltd.	Affiliated Company	Insurance agency		Head Office and other (Chiyoda-ku, Tokyo and other)
Nexco Systems Company Ltd.	Affiliated Company	Development, operation, and management of the mission-critical systems of three NEXCO companies		Head Office and other (Shinjuku-ku, Tokyo and other)
Nippon Expressway Research Institute Company Ltd.	Affiliated Company	R&D for the expressway technologies of three NEXCO companies		Head Office and other (Machida-shi, Tokyo and other)
Highway Toll Systems Company Ltd.	Affiliated Company	Maintenance of the toll collection machines of three NEXCO companies		Head Office and other (Chuo-ku, Tokyo and other)
Trans-Tokyo Bay Highway Corporation	Affiliated Company	Management and operation of the TOKYO-WAN-AQUA-LINE EXPWY and the Umihotaru PA		Head Office and other (Shinagawa-ku, Tokyo and other)
Tohoku Expressway Truck Terminal Company Ltd.	Affiliated Company	Maintenance and operation of the Sendai-minami Truck Terminal and the Koriyama Truck Terminal		Head Office and other (Natori-shi, Miyagi and other)
Japan Expressway International Company Ltd.	Affiliated Company	Expressway investment, consulting, and advisory for overseas road projects		Head Office (Chiyoda-ku, Tokyo)