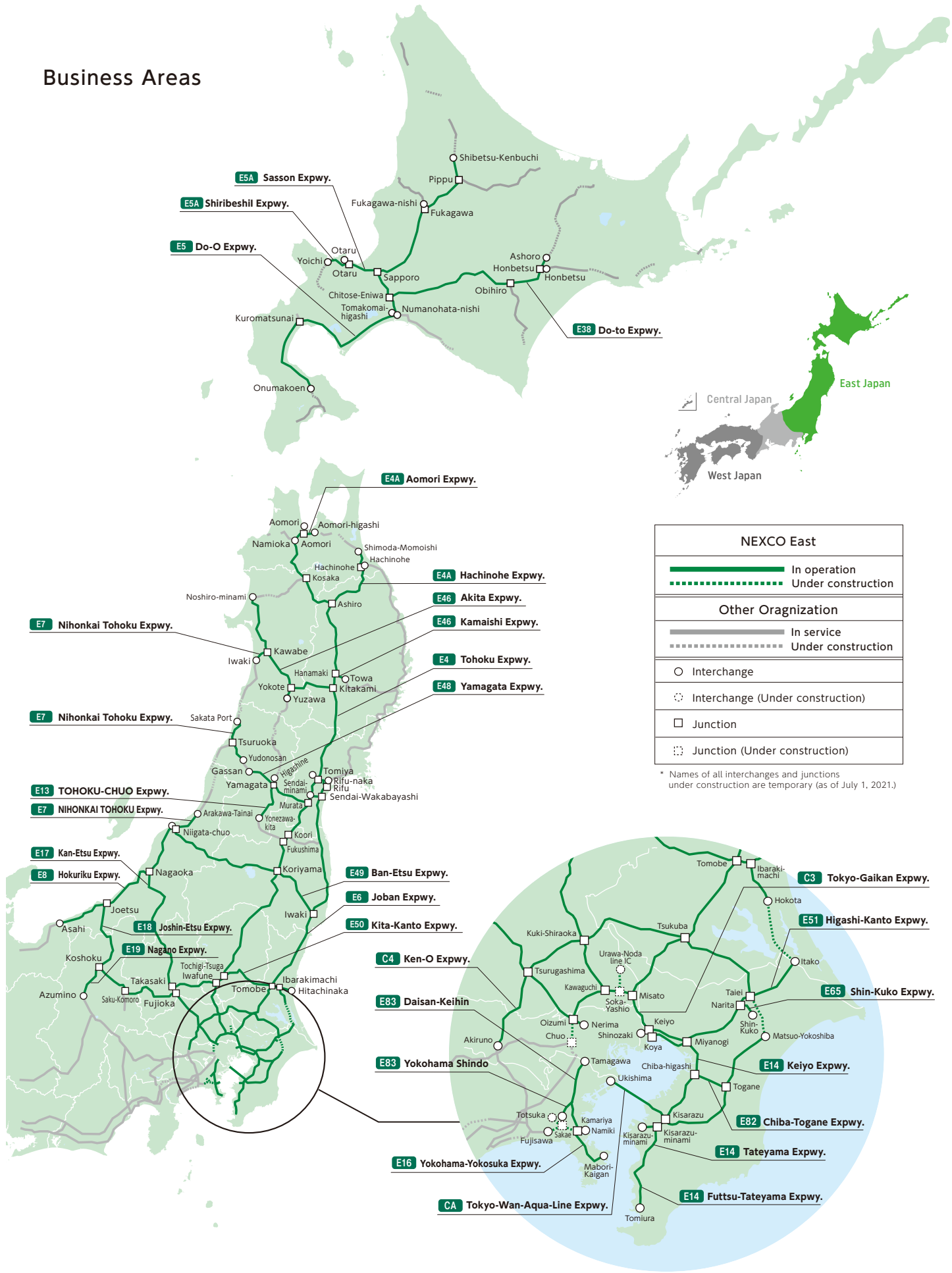
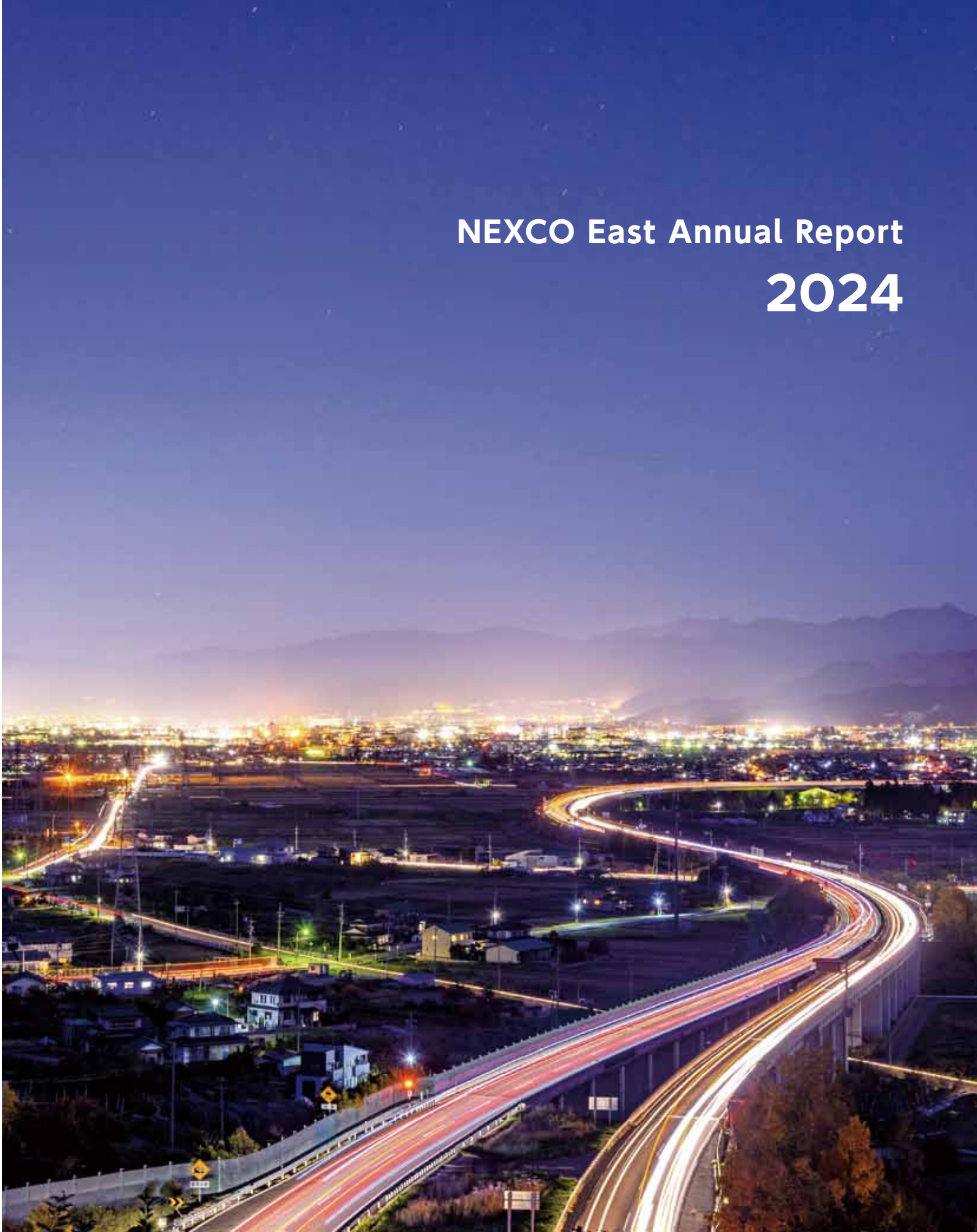


Business Areas



NEXCO East Annual Report
2024



We are connected
with communities
by connecting communities
to connect to the future.

NEXCO East Annual Report **2024**
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NEXCO East Group is engaged in expressway management, construction, service area operation, and expressway-related businesses in Eastern Japan.

We will continue to grow as a company, contributing to all stakeholders by creating "interconnectedness" value through our expressway business toward realizing a sustainable society beyond regions, countries, and generations.

[Editorial Policy of This Report]

The NEXCO East Annual Report is published to inform stakeholders of NEXCO East Group's expressway business and efforts toward the sustainable development of society through the expressway business. The NEXCO East Annual Report can be downloaded from our corporate website.

<https://www.e-nexco.co.jp/en/csr/download/>



[Scope of Report]

NEXCO East and its 31 group companies.


[Reporting period]

From April 1, 2023, to March 31, 2024
(Some activities outside this period are also included.)

History of NEXCO East Group


NEXCO East, established in October 2005, was created through the division and privatization of the former Japan Highway Public Corporation. Together with its group companies, it is engaged in constructing, managing, and operating expressways and motorways in Eastern Japan. We have been in business for almost 70 years, including the history of Japan Highway Public Corporation. We will continue to contribute to developing the Japanese economy by supporting expressways' safety, security, comfort, and convenience, utilizing our accumulated experience and knowledge.

The East Nippon Expressway Company Limited was founded.



NEXCO East, NEXCO Central, and NEXCO West were established under the "Act on Expressway Companies" after the public corporation was split and privatized. (Note: The brand name NEXCO has been used since April 2006.)

"Pasar" was established.



From "a mediocre facility" to "an exceptional facility." "Pasar Makuhari" opened as the first step for NEXCO East's challenges.

Devastated by the Great East Japan Earthquake



The earthquake damaged 20 routes, totaling approximately 870 km of expressways under our management. NEXCO East worked around the clock on emergency repair work, completing temporary repairs that allowed emergency vehicles to pass through approximately 20 hours after the earthquake. Then, general traffic was allowed on almost all routes 13 days after the quake.



Formulation of the Infrastructure Longevity Plan (Action Plan)

NEXCO East Group complied and announced the medium- to long-term approach for addressing aging expressways under its management.

Road Control Center, Kanto Regional Head Office Renewal



The road control center was renovated to the highest seismic standard.

Converting SAs into disaster control bases



Moriya SA (inbound) of the Joban Expressway was opened as a flagship for "making a service area into a disaster prevention base," with not only service area functions but also the role of a disaster prevention base in case of emergency.

Introducing SMH



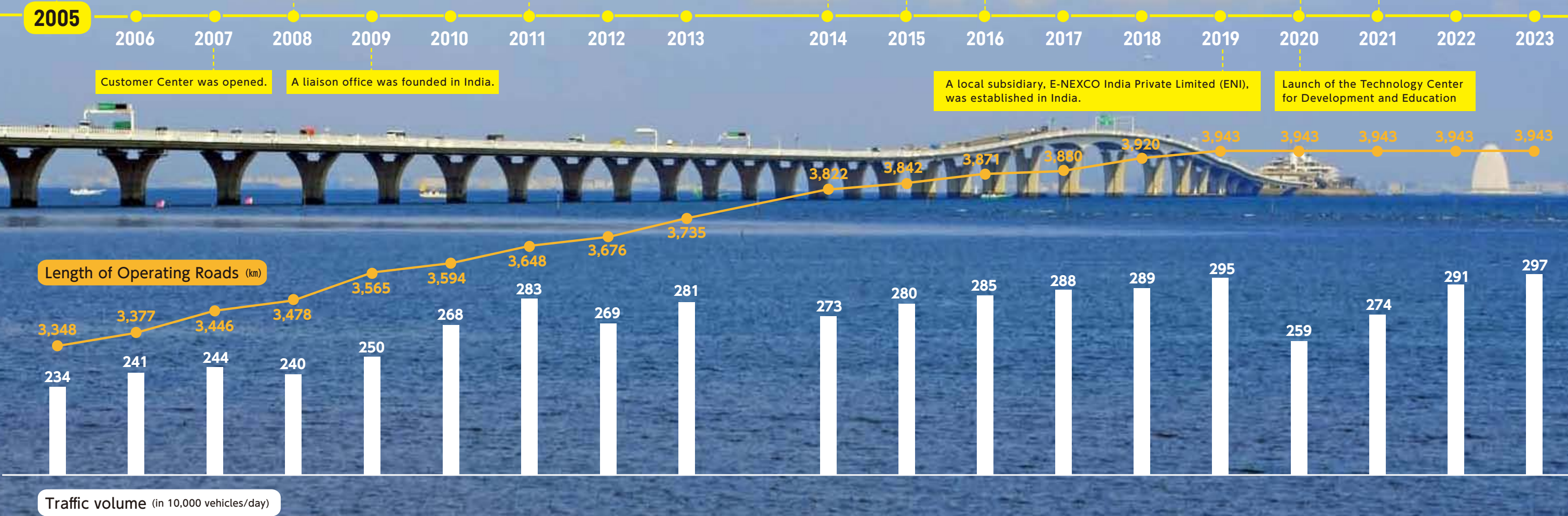
The first phase of the "SMH* Project" was launched, aiming for the optimal match of engineers and ICT (Information and Communication Technology).

*Abbreviation of "Smart Maintenance Highway"

Launch of "moVision"



The "moVision" project, consisting of 31 key projects, was launched as a "Priority Project" to achieve the "vision of next-generation expressways that accelerate the realization of an autonomous driving society."



Top Message



01 Responding to Increasingly Severe and Frequent Natural Disasters

Frequent earthquakes characterize Japan.

Most recently, the Noto Peninsula Earthquake (January 1, 2024) occurred, causing damage, such as road surface drop-offs and cracks, to three sections of the Hokuriku Expressway under our management in Niigata Prefecture. Additionally, National Route 8, running along the expressway, suffered from landslides, disrupting traffic on both sides of Joetsu City.

Our Group employees worked together to respond to this situation, and emergency vehicles could go through within four hours of the disaster. By the evening of the next day, January 2, they were open to all vehicles. In addition, we made sections of the Hokuriku Expressway and Joshinetsu Expressway toll-free to support the disaster-stricken areas.

In recent years, disasters caused by abnormal weather have also increased, in addition to earthquakes. Climate change due to global warming is changing how we think about disaster response.

For example, a stranded vehicle on the Expressway during a severe snowstorm can lead to prolonged traffic jams or road closures. To prevent such incidents, we collaborated with the Metropolitan Expressway and NEXCO Central, linked to our expressways, to implement a widespread "preventive road closure" (approximately 1,300 km, of which approximately 420 km were under our management) before the snowfall in this February in preparation for heavy snow in the Tokyo metropolitan area. This measure prevented significant disruptions, such as many stranded vehicles, but we received a large number of inquiries about traffic information, totaling around 6,000 calls, approximately 11 times the annual average for 2023.

Our customers seemed to have shown a certain level of understanding about the "preventive road closure;" however, we recognized the importance of thorough

publicity through "advance notifications" and the "timing of ending road closures."

02 Maintaining Expressways and Rapidly Restoring Functionality

Maintenance and restoration of expressway functions, including preparation for potential disasters, is a critical issue, and we will enhance our efforts across our entire Group. Here are four key initiatives.

The first initiative is "addressing the aging infrastructure." Our Group has been repairing old roads based on the "Infrastructure Longevity Plan (Action Plan)" (established in fiscal year 2015). The budget for this project is approximately 1.2 trillion yen, and we will carry out thorough renewal work over 15 years.

Meanwhile, survey and inspection technologies are rapidly advancing. For example, technologies like aerial laser surveying to identify disaster risks such as landslides and falling rocks and using electromagnetic waves and ultrasound to discover the inside conditions of structures have emerged. These advancements have enabled us to find new areas of deterioration previously undetectable, revealing that the initial plan alone is insufficient.

The Act on Special Measures Concerning Road Construction and Improvement Law, passed in May 2023 and enacted in September 2023, has been revised. It allows us to extend the toll collection period to 2115 (previously until 2065) and secure funding for these new challenges. We will proceed with a dual approach, including the initial plan and newly identified renewal works.

The second initiative focuses on "Preventive Maintenance and Rapid Post-Disaster Recovery," especially in response to earthquakes.

Many customers are concerned about "preparedness toward an earthquake directly beneath the Tokyo metropolitan area." Regarding preventive maintenance, we have already completed measures to prevent all bridges from falling or collapsing. We believe that there was no significant damage from the Noto Peninsula Earthquake because of these completed measures. Additionally, as a seismic reinforcement measure for rapid post-disaster functionality restoration, we strive to complete the reinforcement of bridges in areas with over 26% earthquake probability of seismic intensity of 6-lower or higher by the fiscal year 2030.

The third initiative is "Network Development."

Expanding the expressway network has immense social significance, as was keenly felt during the Great East Japan Earthquake.

At that time, I was serving as deputy mayor of Kyoto City, and we received a request for assistance with waste disposal at evacuation centers from disaster-stricken Sendai City. In Sendai City, the waste collection companies were also affected by the disaster, resulting in overflowed waste. Upon receiving this request, Kyoto City's garbage collection trucks were immediately dispatched to Sendai City.

Although the Pacific side routes (Tohoku Expressway and Joban Expressway) were damaged immediately after the earthquake, we were able to reach the disaster areas by using the network around Niigata Prefecture (Hokuriku Expressway and Ban-Etsu Expressway). The disaster victims greatly appreciated Kyoto City employees' subsequent garbage collection efforts at evacuation centers. It was a significant realization that the network would be an "emergency lifeline."

The fourth initiative to maintain and restore expressway functions is "Reinforcement of Road Management Response Capabilities." This means being prepared to respond whenever a critical situation arises.

Our Group uses new technologies, such as flying drones to assess landslide damage and infrared cameras to assist nighttime firefighting during wildfires. However, for a quicker response, it is essential to establish cooperative relationships within our Group, with partner companies handling heavy machinery, and with local communities, as well as build a united response capability.

Additionally, the existing standards may no longer be effective with the increasing severity of disasters. For example, the criteria for road closures when raining are based on rainfall amounts. However, with changing rain patterns such as linear precipitation zones, we are exploring the possibility of adopting the "Soil Water Index" (which measures how much water has accumulated in the soil) already adopted by the Japan Meteorological Agency as a new criterion for road closures.



03 Formulating a New "Carbon Neutral Promotion Strategy"

Changes in the business environment surrounding our Group include a growing societal demand for sustainability and the emergence of new social issues, such as addressing logistics problems and autonomous driving. Particularly about sustainability, there has been a shift towards focusing on the sustainability of corporate business activities and addressing broader societal sustainability issues, such as climate change mitigation and human resource development, considering people as capital. One major initiative to address these social challenges is the formulation of the "Carbon Neutral Promotion Strategy." This strategy sets numerical targets based on government goals, aiming to halve CO2 emissions (compared to 2013 levels) by 2030 and achieve carbon neutrality by 2050. We are committed to demonstrating a proactive approach internally and externally.

We will set "to halve CO2 emissions by 2030" as a numerically backed plan in particular and clearly outline what our Group can do to achieve it. For

example, in addition to switching to LED bulbs and installing solar panels in new offices, we are also attempting biomass gas power generation using grass and clippings gathered along expressways. Furthermore, we are shifting our commercial vehicles to electrified vehicles and installing EV fast chargers in service areas (SAs) and parking areas (PAs). Regarding "Scope 3," including the entire supply chain, we assume the power supply configuration will meet government targets. We will promote the 3R (Reduce, Reuse, and Recycle), implement systems that utilize construction companies' technologies to reduce CO2 emissions in procurement, and collaborate with other companies on technological development. As part of our adaptation measures to climate change, we are also working on initiatives, such as expanding to four lanes with high alternativity, elevating interchanges (ICs) at risk of flooding, and relocating management offices serving as disaster operational bases and power supplies to the second floor of the operation office buildings.

04 Making "Supporting Each Individual" the Core of Human Resource Development

We have formulated a "Human Resources Development Policy," believing that fully utilizing human potential as corporate strength contributes to sustainability and resilience.

This policy, particularly mindful of our younger employees, outlines the "model worker profiles," "career development," and "necessary skills" from corporate perspectives. We strongly feel the need to respond to our employees' aspirations.

Since our company involves job transfers within the entire eastern region of Japan, we understand that employees may have some resistance. Circumstances surrounding individuals vary significantly depending on life stages, such as marriage, childbirth, and

elderly care.

We have set "Supporting Each Individual" as one of the pillars of our "Human Resources Development Policy." We will carefully listen to each employee's preferences and provide support to ensure they can lead a company life that accommodates their individual circumstances.

Also, it is crucial for employees to realize how their work contributes to society to boost their motivation. We strive to help employees understand their role in societal contributions by presenting model worker profiles and career development and educating them on the significance of their work through on-the-job training.

05 Addressing New Mobility Needs

Our employee age structure is characterized by a relatively small number of mid-level employees. Therefore, our "Human Resources Development Policy" also focuses on effectively passing senior employees' skills to younger employees.

Finally, we must address the new mobility needs (autonomous driving).

Expressways must support safe and smooth driving where autonomous and non-autonomous vehicles coexist as autonomous driving technology development progresses. Merging and diverging at interchanges particularly pose challenges as they require attention to the front, sides, and rear. Therefore, it is challenging to control solely from the vehicles. How expressways assist them with fallen objects and construction information depends on how swiftly we collect and accurately provide information. In response to this challenge, we have formulated the

"Vision of Next-Generation Expressways to Accelerate the Realization of an Autonomous Driving Society (moVision)." Under this "moVision," we plan to install "multi-functional poles" and begin preparations for a pilot project where the information collected through cameras is provided to vehicles this fiscal year. It is scheduled to commence in certain sections of the Tohoku Expressway in the fiscal year 2026.

The "2024 Problem in Logistics," characterized by a shortage of drivers, is an urgent issue, and the need for autonomous driving is expected to grow. While GPS information to assist autonomous driving requires precise overlay with detailed map data on public roads, expressways can be relatively easily adapted except for tunnels and interchanges. Therefore, expressways are considered a more easily achievable environment for autonomous driving.

06 Pursuing Resilient Expressways

The "Medium-Term Management Plan (FY2021 - FY2025)" was formulated amid the COVID-19 pandemic. However, our business environment is changing as traffic volume and toll revenue have already recovered to pre-pandemic levels. Furthermore, as mentioned, the amendment to the Act on Special Measures Concerning Road Construction and Improvement Law last year has extended the repayment and toll collection periods, and new renewal projects have been added. New challenges, such as growing societal demand for sustainability and measures for the 2024 Problem in

Logistics and autonomous driving, are also emerging. We have reviewed our current Medium-Term Management Plan at the halfway point to respond appropriately and swiftly to these business environment changes.

Our Group will continue to focus on maintaining and rapidly restoring expressway functions while addressing new societal challenges. We are committed to pursuing the realization of resilient expressways that are adaptable to the evolving business environment.

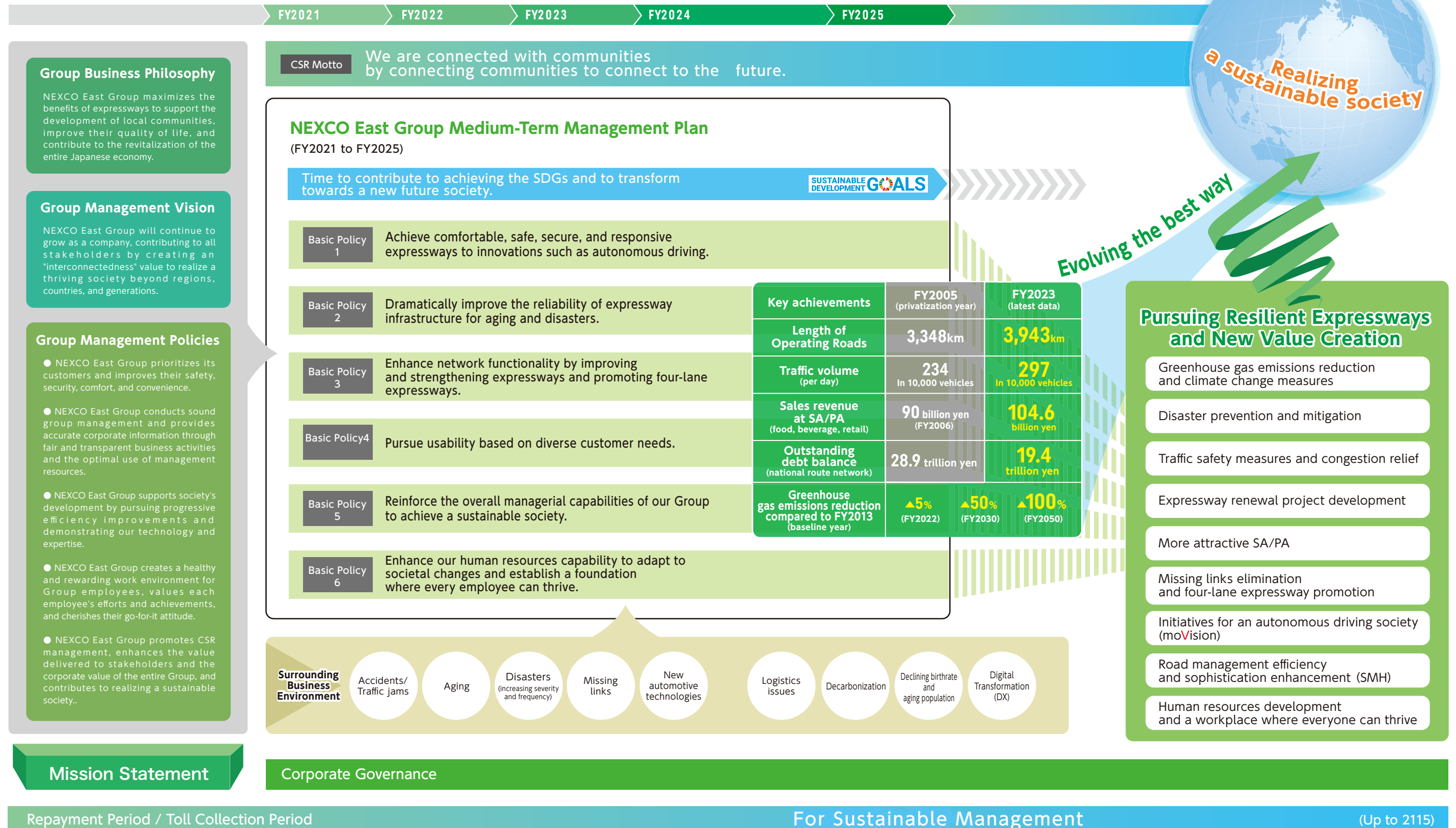
NEXCO East Group Value Creation Story

NEXCO East Group strives to create an "interconnectedness" value and continue to grow as a company that contributes to all stakeholders. It aims to realize a thriving society beyond regions, countries, and generations, with the core management of supporting regional development, improving living standards, and contributing to revitalizing the entire Japanese economy by maximizing the benefits of expressways.

Looking ahead to the future and continually contributing to the realization of a sustainable society, we have added a time aspect to our Corporate Social Responsibility (CSR) motto, "We are connected with communities

by connecting communities," evolving it to "We are connected with communities by connecting communities to connect to the future."

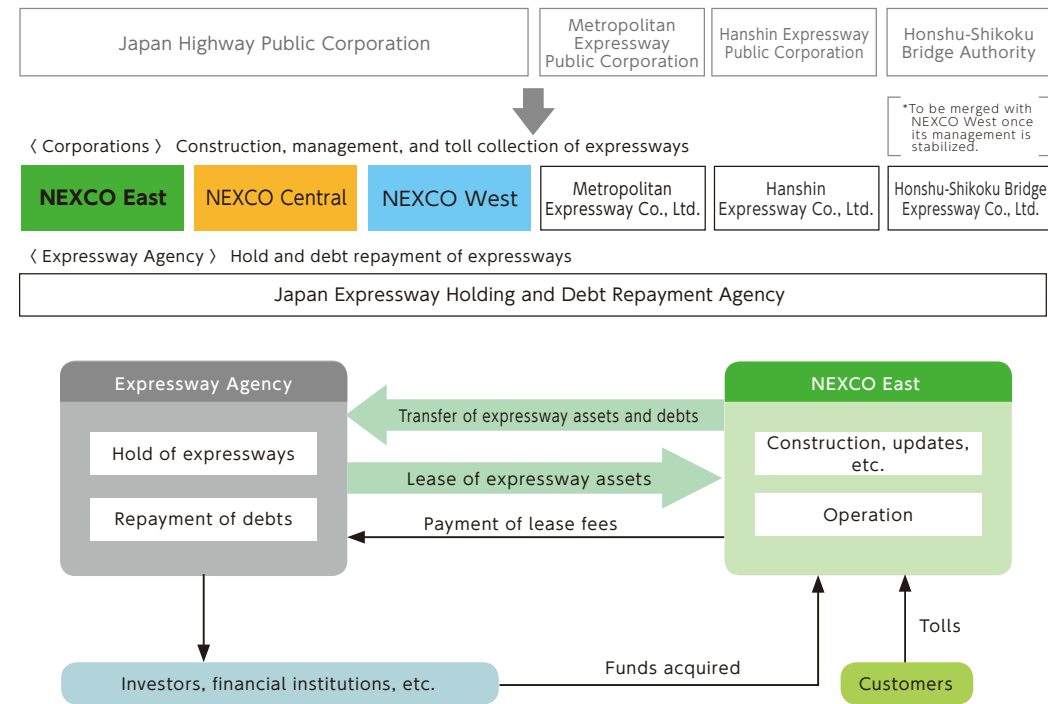
Our "Medium-Term Management Plan (FY2021-FY2025)," a period to "contribute to achieving the SDGs and to transition towards a new future society," will be reviewed in response to changes in the business environment. Towards the final year of the plan, we will promote various initiatives.



Over View

Framework for Expressway Business Operations

Founded in 1956, the Japan Highway Public Corporation was privatized along with other highway-related public corporations. Six expressway companies and the Japan Expressway Holding and Debt Repayment Agency (hereinafter referred to as "Expressway Agency") were established on October 1, 2005. Our company manages and operates the expressway assets leased from the Expressway Agency, and debt repayment is made through lease fees paid to the Expressway Agency. Furthermore, the expressway tolls do not include profit margins. The toll revenue is used for expressway maintenance, management, and various services.



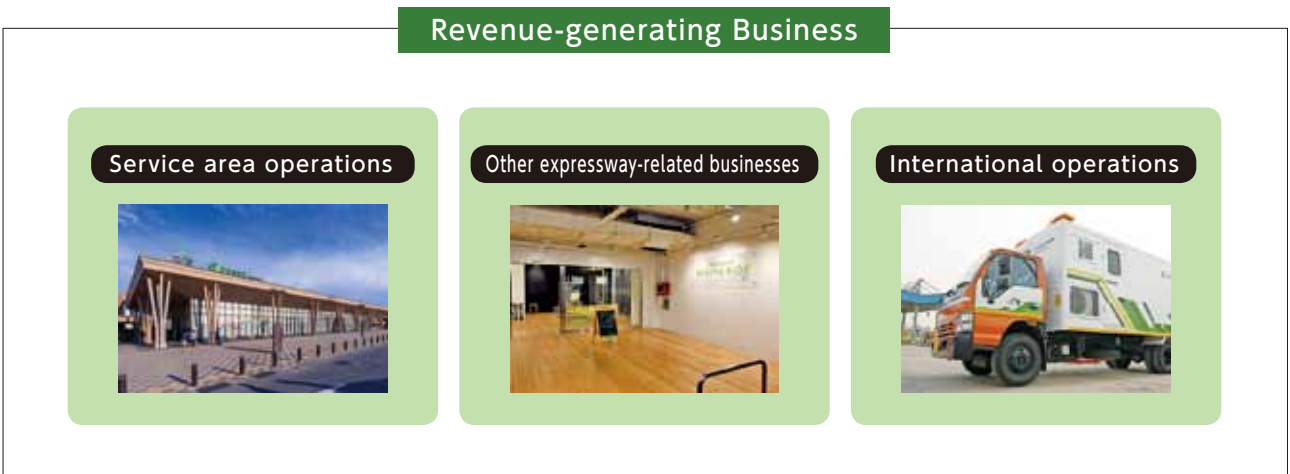
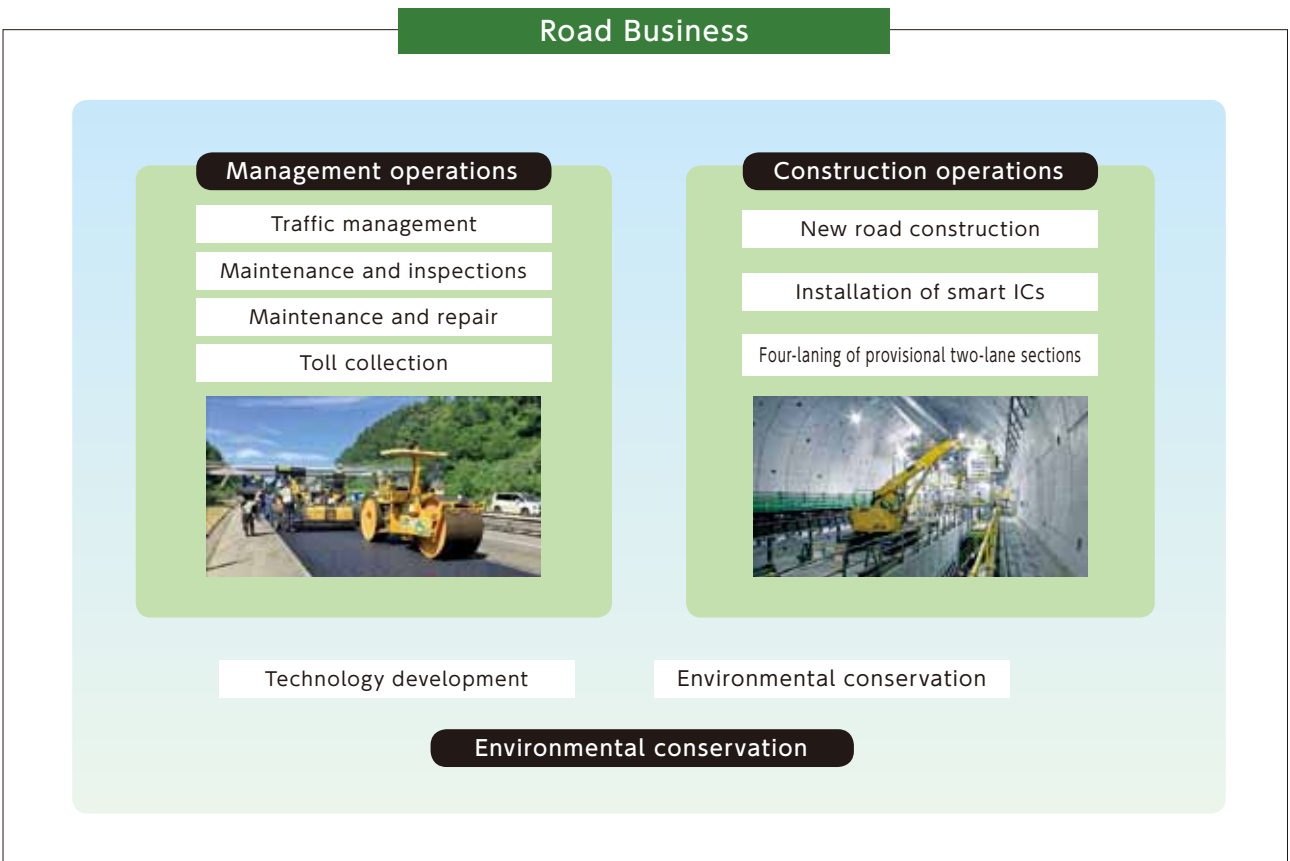
Strong governance created by a close integration with government and policies

The government must hold more than one-third of the voting rights of all our shareholders (currently, the government holds all shares). Our business operations are conducted under strong governance, such as obtaining permits and approvals from the government.

Total Investment	○ The government continuously holds more than one-third of the voting rights of all our shareholders.	[Expressway Company Act, Article 3]
Appointment and dismissal of officers	○ Approval of the selection and dismissal of representative directors, auditors, etc.	[Expressway Company Act, Article 9]
Execution of business operations	○ Approval of business plans	[Expressway Company Act, Article 10]
	○ Approval of matters agreed upon with the Expressway Agency	[Special Measures Concerning Road Construction and Improvement Act, Article 3]
	○ Approval of the terms of use	[Special Measures Concerning Road Construction and Improvement Act, Article 6]
Financial Management	○ Approval of the solicitation of subscribers for corporate bonds or borrowing of funds with a repayment period of more than one year.	[Expressway Company Act, Article 11]
	○ Approval of the transfer or provision of important property as collateral	[Expressway Company Act, Article 12]
	○ Approval of amendments to the articles of incorporation, distribution of surpluses, other dispositions of surplus funds, mergers, divisions, and dissolution resolutions	[Expressway Company Act, Article 13]
	○ Interest-free loans for disaster recovery costs provided by the Expressway Agency	[Expressway Agency Act, Article 12]

Business Overview

We are steadily developing the expressway network and providing safe, secure, comfortable, and convenient expressway services to our customers through our business operations (road and revenue-generating businesses).



For more information on "Business Overview"
<https://www.e-nexco.co.jp/en/activity/>



Organizational Chart:
<https://www.e-nexco.co.jp/en/company/overview/organization/>



Group Companies:
<https://www.e-nexco.co.jp/en/company/overview/group/>



Financial Information

Ensure a stable financial foundation and promote investments to solve social issues.

Toll revenue is used to maintain and manage expressways, provide various services, and pay lease fees to the Expressway Agency.

Meanwhile, funds required for expressway construction and renewal projects are raised by issuing corporate bonds and borrowing from financial institutions.

Consolidated Financial Statements (last five years)

◆ Consolidated Balance Sheet

The assets consist primarily of work-in-progress expressway assets to be delivered to the Expressway Agency. The liabilities consist mainly of expressway construction-related corporate bonds and long-term debts acquired to construct expressway assets.

Consolidated Balance Sheet						(unit:100 million yen)
Account Items		FY2019	FY2020	FY2021	FY2022	FY2023
Assets						
Current assets		9,498	10,073	11,805	13,775	15,807
Cash and deposits		965	1,090	996	1,071	635
Work-in-process expressway assets		6,081	6,212	7,609	9,066	11,103
Other current assets		2,451	2,770	3,199	3,637	4,068
Non-current assets		3,369	3,461	3,538	3,656	3,794
Property, plant, and equipment		2,712	2,798	2,808	2,789	2,792
Intangible assets		188	223	277	322	394
Investments and other assets		468	438	452	544	608
Deferred assets		11	14	18	18	18
Total assets		12,879	13,550	15,362	17,450	19,621
Liabilities						
Current liabilities		2,614	2,395	2,610	3,299	3,280
Non-current liabilities		7,859	8,811	10,397	11,749	13,773
Bonds and long-term loans payables for the construction of expressways		6,806	7,309	9,014	10,365	12,459
Other non-current liabilities		1,053	1,502	1,383	1,384	1,313
Total liabilities		10,473	11,207	13,007	15,048	17,054
Net assets						
Shareholders' equity		2,542	2,444	2,427	2,501	2,588
Capital stock		525	525	525	525	525
Capital surplus		587	587	587	587	587
Retained earnings		1,429	1,331	1,314	1,388	1,475
Accumulated other comprehensive income Total net assets		△ 136	△ 101	△ 72	△ 99	△ 21
Total net assets		2,405	2,343	2,354	2,401	2,567
Total of liabilities and net assets		12,879	13,550	15,362	17,450	19,621

(Calculations indicated on the table may not be accurate since figures are rounded down to the nearest 100 million yen.)

◆ Consolidated Income Statement

A significant portion of operating revenues is derived from toll revenue from expressway business. It also consists of asset gains from newly opened, completed expressways and sales revenues from related companies. Most operating expenses are expressway asset lease fees based on the agreement with the Expressway Agency and the expressway business's management expenses. Furthermore, the cost of completed expressway assets equals the amount of the completed expressway assets in the operating revenue.

The operating profit for FY2023 was 5.5 billion yen, and the net profit attributable to the parent company's shareholders was 8.7 billion yen.

Consolidated Statement of Income						(unit:100 million yen)
Account Items		FY2019	FY2020	FY2021	FY2022	FY2023
Operating revenue		12,643	11,946	10,303	11,086	11,115
Expressway Business		11,817	11,281	9,838	10,495	10,450
Toll income		8,574	7,143	7,416	7,917	8,164
Appreciation of completed expressway assets		3,160	4,058	2,348	2,504	2,265
Other operating revenue		82	79	73	74	20
Related Businesses		891	742	555	672	679
Rest area and parking area business		406	243	248	311	340
Consignment and other businesses		484	498	307	360	339
Elimination of intersegment transactions		△ 65	△ 77	△ 90	△ 81	△ 14
Operating expenses		12,542	12,005	10,351	11,137	11,059
Expressway Business		11,741	11,300	9,871	10,572	10,439
Lease fees for expressway assets		6,118	4,809	5,168	5,579	5,708
Cost of completed expressway assets		3,160	4,058	2,348	2,504	2,265
Administrative expense, etc.		2,462	2,432	2,355	2,488	2,465
Related Businesses		867	783	570	647	634
Rest area and parking area business		384	291	267	288	300
Consignment and other businesses		482	492	302	359	334
Elimination of intersegment transactions		△ 65	△ 77	△ 90	△ 82	△ 14
Operating profit (△loss)		100	△ 59	△ 47	△ 51	55
Expressway Business		76	△ 18	△ 33	△ 76	11
Related Businesses		23	△ 41	△ 14	25	44
Ordinary income (△loss)		137	△ 25	△ 12	△ 17	90
Net profit attributable to owners of the parent company (△loss)		99	△ 97	△ 14	73	87

(Calculations indicated on the table may not be accurate since figures are rounded down to the nearest 100 million yen.)

Note: Our group's business segments and main descriptions are as follows.

Business Segments		Main Contents
Expressway Business		New construction, reconstruction, maintenance, repair, disaster recovery, and other management for expressways
Related businesses	SA and PA business	Construction and management of rest areas and gas stations on expressways
	Consignment Business	New construction, reconstruction, maintenance, and repair of roads based on commissions from the national and local authorities and other projects based on consignments
	Other businesses	Parking lot business, truck terminal business, and others

◆ Consolidated Cash Flow Statement

Cash flow from operating activities is primarily influenced by changes in road assets in progress (inventory assets). Meanwhile, cash flow from financing activities mainly consists of income from issuing road construction-related corporate bonds and borrowings and expenditures from repayments.

Consolidated Cash Flow Statement	(unit:100 million yen)				
	FY2019	FY2020	FY2021	FY2022	FY2023
Cash flow from operating activities	△1,469	△118	△1,007	△564	△2,045
(Including the inventory asset change (△ indicates an increase))	△689	△128	△1,396	△1,456	△2,040
Cash flow from investments	△221	△474	△389	△364	△464
Cash flow from financing activities	1,096	968	1,683	1,324	2,074
(Including income from borrowings and issuing of road construction-related corporate bonds)	4,616	5,099	4,476	4,157	4,514
(Including income from borrowings and issuing of road construction-related corporate bonds)	△3,502	△4,114	△2,774	△2,813	△2,421
Cash and cash equivalents	1,165	1,540	1,826	2,220	1,784

Investments in expressway construction and renewal projects (work-in-progress road assets) and the amount of expressway assets transferred to the Expressway Agency are classified as changes in inventory assets in the cash flow from operating activities.

Funds required for expressway construction and renewal projects are raised by issuing road construction-related corporate bonds and borrowings, reflected in the cash flow from financing activities. After the completion of the expressway assets, the debts incurred for their construction are transferred to (repaid to) the Expressway Agency.

Therefore, the cash flow from operating activities tends to be negative if the investment amount in the expressway construction and renewal (increase in inventory assets) exceeds the number of expressway assets transferred to the Expressway Agency (decrease in inventory assets).

Aiming to solve social issues by securing funds

Contributing to the SDGs through social finance

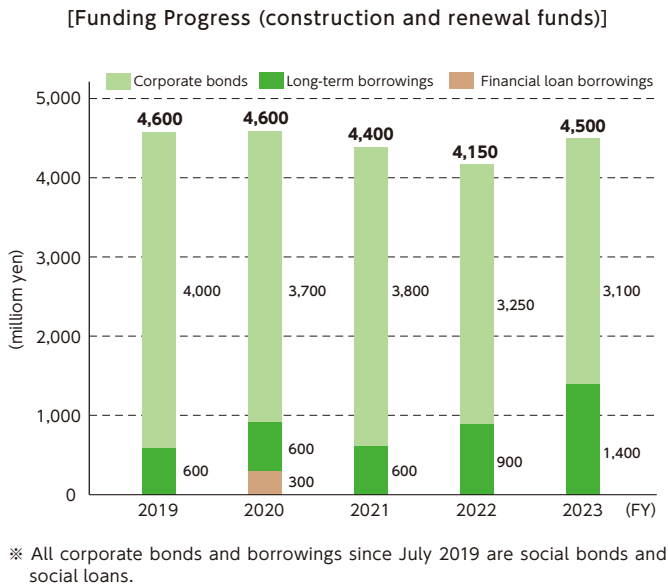
Our company has formulated a social finance framework based on the principles of social bonding set by the International Capital Market Association (ICMA). In June 2019, we obtained a third-party evaluation from Rating and Investment Information (R&I). Funds raised through social finance are used for various projects, such as the expressway construction and renewal projects, which contribute to solving social issues, including regional revitalization, disaster response, traffic safety, and environmental conservation.

Achieving high credit ratings

We have obtained credit ratings from R&I, Moody's Japan, and Japan Credit Rating Agency (JCR), striving to help investors make objective investment decisions. (All of them rated us equivalent to Japanese government bonds.)

Communicating with investors

In FY2023, we engaged in various activities to communicate with our investors, including individual visits, a web seminar on "Regional Revitalization through Sustainable Expressway Network Development," and discussion sessions with local governments. We will continue to promote dialogues with our investors through various investor relations (IR) activities.



<Credit Ratings of e-NEXCO >	
R&I Credit Ratings	AA+
Moody's Credit Ratings	A1
JCR long-term Credit Ratings	AAA



Discussion sessions with local governments

● **Social Finance**…… Social finance is a funding method to address social issues. We raise the necessary funds for projects such as constructing and renewing expressways through social bonds (corporate bonds) and social loans (borrowings). Over 390 investors and financial institutions have made investment and financing commitments.

For more details on "Social Finance": <https://www.e-nexco.co.jp/en/ir/socialfinance/>



To view "Impact Report" (Japanese) :
https://www.e-nexco.co.jp/assets/pdf/ir/impact_report/impact_report_2304.pdf



For Disaster-Resilient Expressways

~ The Mission of Disaster Prevention and Mitigation / Securing "Roads of Life" ~

■ Minimizing Damage and Recovering Expressway Functions Promptly

It is crucial to promptly restore the expressway functionality even if a severe earthquake damages it. Various measures are incorporated into the structure of expressways to prepare for such emergencies. For example, in bridge and overpass sections, measures are taken to reinforce bridge piers and to prevent surface drop-offs and bridge girder shifts caused by earthquakes. In addition, various measures have been implemented for embankment sections to prevent embankment slopes from collapsing, such as removing stagnant water within the embankment.



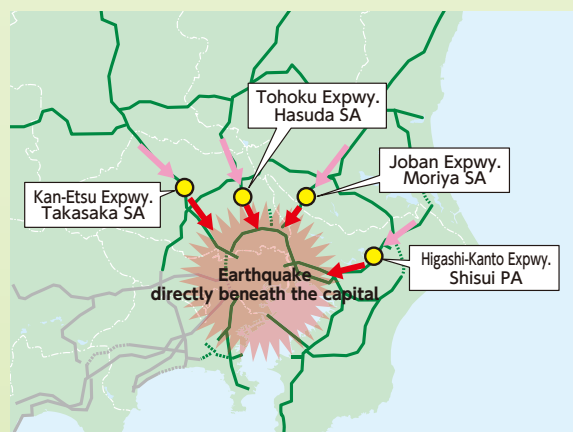
Example of pier reinforcement (steel jacketing) work



Example of bridge collapse prevention device installation

■ Service Areas With Disaster Prevention Functions

In anticipation of a significant earthquake directly hitting the Tokyo metropolitan area, we predict expressway use by several related agencies, such as the police, fire department, Self-Defense Forces, and Disaster Medical Assistance Team (DMAT). Therefore, we have set up four of our most extensive rest facilities on each route designated in the "All-Direction Strategy," the Tokyo metropolitan area epicentral earthquake road clearing plan, as areas with enhanced disaster prevention functions. These enhancements include wells, heliports, emergency supply storage, backup generators, and increased petroleum tank capacities. Furthermore, we are prepared to protect lives by concluding disaster cooperation agreements between infrastructure companies.



A joint training at the Hasuda SA (inbound) on the Tohoku Expressway, where its food court can be utilized as a disaster response headquarters.

■ On-Site Support by Disaster Prevention Experts

The NEXCO East Technology Center for Development & Education has expert engineers with extensive knowledge and experience. In the event of a disaster, the engineers support the prompt restoration by directly advising the on-site employees on technical issues and responses to disasters and emergencies.

■ Securing the "Roads of Life" Through Rapid Inspection and Restoration Work

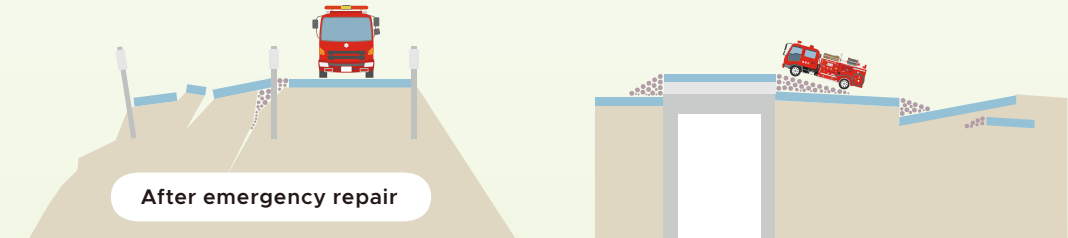
Road restoration is conducted in three stages to serve as the "Roads of Life" for emergency vehicles and transporting emergency supplies to the disaster areas.

Emergency expressway restoration for emergency vehicles aims to be completed within approximately 24 hours after the disaster. We also aim to complete temporary restoration, allowing limited access for general vehicles, within seven days of the disaster.

Restoration in three steps

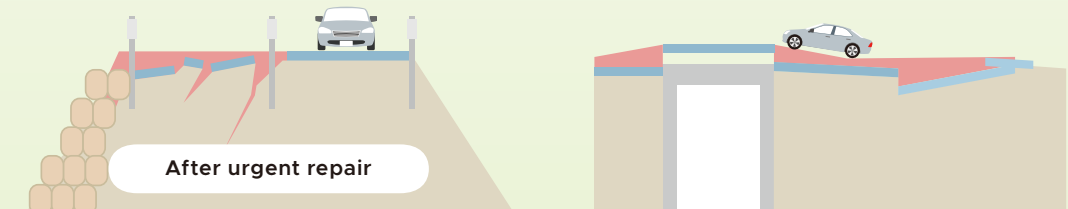
【STEP 1】 Emergency repair (about 24 hours later)

Secure roads for emergency vehicles by placing sandbags, etc.



【STEP 2】 Urgent repair (about 7 days later)

Secure the road surface condition that allows regular vehicles to pass safely under some restrictions.



【STEP 3】 Permanent Restoration

Secure the original service condition of the expressway surface.



(Numbers in red indicate the time from the earthquake to the recovery.)

Restoration of the embankment and road



March 16, 2022: Immediately after the earthquake off the coast of Fukushima Prefecture (Between Kunimi IC and Shiroishi IC, Tohoku Expressway)



March 17, 2022: After emergency restoration (Road closures lifted 16 hours after the disaster)

■ Measures Against Natural Disasters Caused by Climate Change

◆ Hard approach

Measures such as elevating roads are taken to prevent severe damage to expressway facilities caused by water-related disasters, including continuous rainfall from linear precipitation bands, torrential rain, overflow or flooding of nearby rivers, and runoff from outside the expressway.



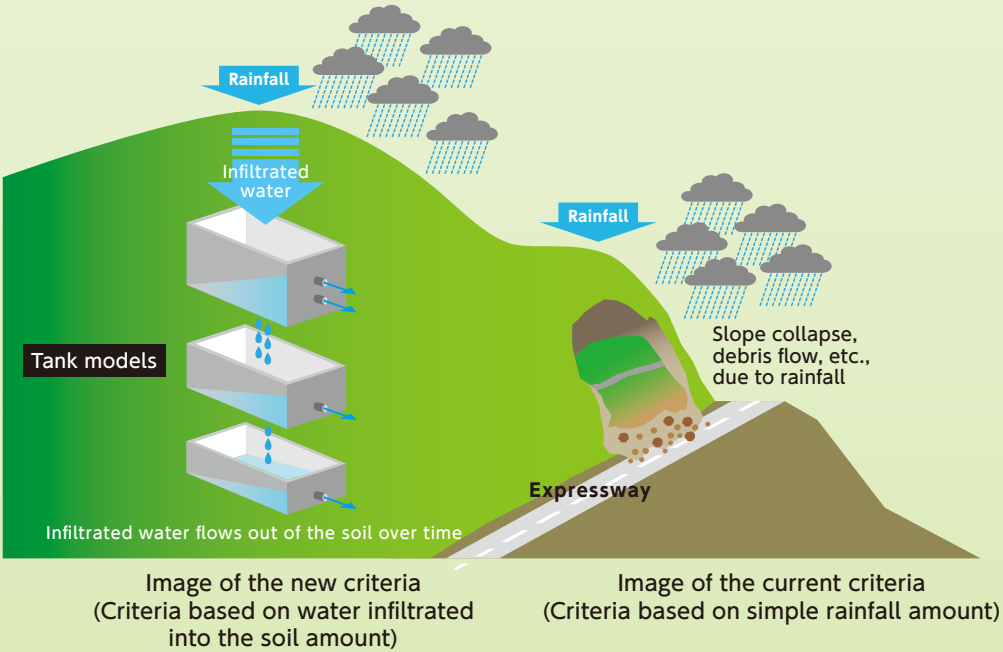
An interchange flooding due to river overflow



Raising the ground level of an interchange

◆ Soft approach

We are considering transitioning to road closure criteria (Soil Water Index) that estimate soil moisture content based on scientific data in order to accurately implement road closures before heavy rain and minimize the duration and frequency of such closures. Moreover, we collaborate with national and local government agencies to provide information on road closure forecasts and expected road closure ending times in the case of severe weather events, such as heavy rain, typhoons, and heavy snow. We are also exploring effective methods to provide information to minimize social impact by helping decision-making for logistics operations and traveling.



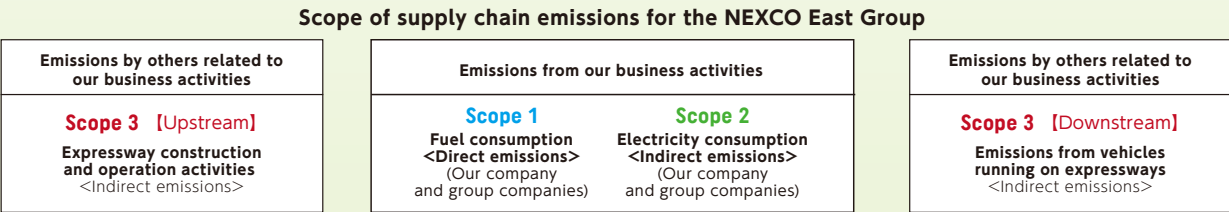
NEXCO East Group Carbon Neutral Promotion Strategy

NEXCO East Group has formulated the "NEXCO East Group Carbon Neutral Promotion Strategy" (hereinafter referred to as "This Strategy") to promote sustainability management and fulfill its mission to continuously support society through expressways. This Strategy encourages the reduction of net greenhouse gas emissions throughout the supply chain. NEXCO East Group is united in its efforts to reduce greenhouse gas emissions by providing smooth road traffic flow through its expressway business. The Group also promotes minimizing energy consumption, creating and utilizing renewable energy, and challenging new technological development in collaboration with industries and other sectors, contributing to achieving carbon neutrality by 2050.

■ Concept of This Strategy

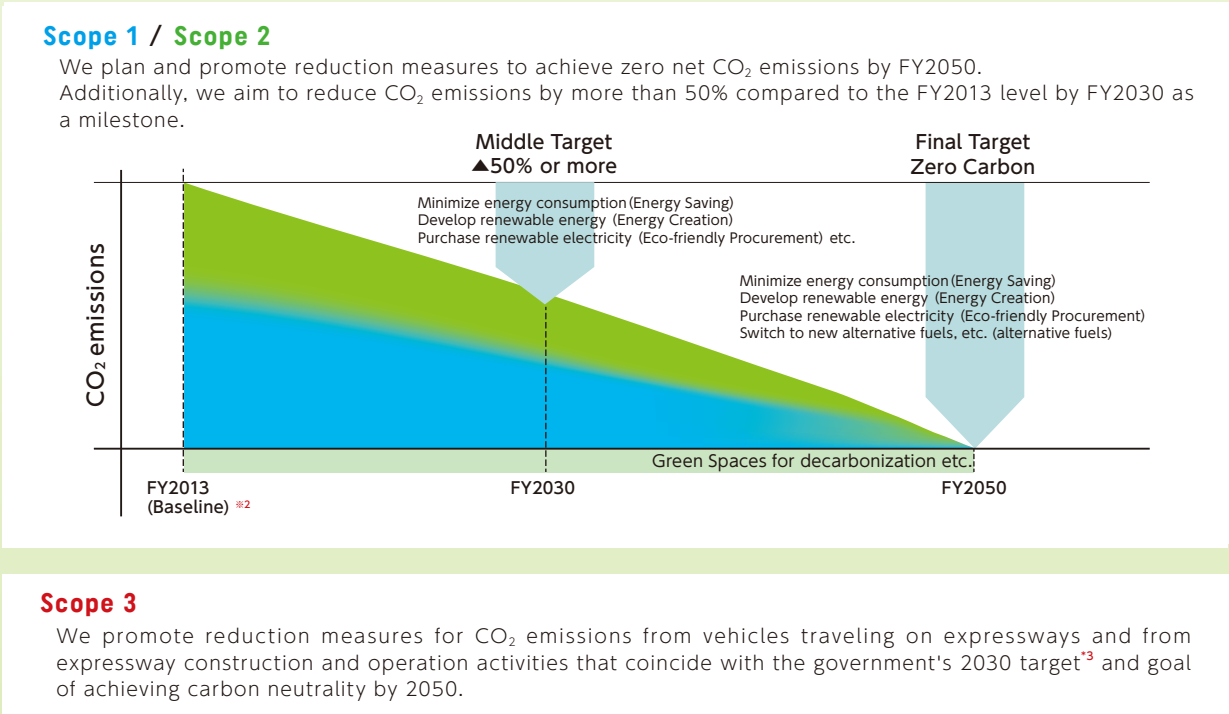
This Strategy targets "supply chain emissions"^{*1}, including not only emissions from the NEXCO East Group's business activities (Scope 1 and 2) but also indirect emissions associated with its business activities (Scope 3).

^{*1} Supply chain emissions are calculated based on the "Basic Guidelines for Calculating Greenhouse Gas Emissions Through the Supply Chain" (Ministry of the Environment).



■ Goals of This Strategy

We set the following goals to plan measures for supply chain emissions reduction and achieve carbon neutrality by 2050.



^{*2} In This Strategy, we will monitor the reduction rate based on the FY2013 emission levels following the Plan for Global Warming Countermeasures, approved by the Cabinet on October 22, 2021.

^{*3} The target for greenhouse gas emissions and absorption is outlined in the Plan for Global Warming Countermeasures. A reduction of 46% compared to the FY2013 level is determined as a goal or benchmark for 2030 (with continued efforts to reach a 50% reduction). Specific goals or benchmarks by the department include a 38% reduction in the industrial department, a 51% reduction in the operations and other departments, and a 35% reduction in the transportation department.

Initiatives to Achieve the Goals

Mitigation measures Efforts to achieve carbon neutrality by 2050

We strive to reduce CO₂ emissions through the following initiatives:

① Minimizing energy consumption (Scope 1/Scope 2)

We will minimize our energy consumption by switching lighting along roads and at service areas (SA) and parking areas (PA) to LED and shifting our vehicles to electrified vehicles, such as hybrid vehicles.

② Creating renewable energy utilizing expressway spaces (Scope 2)

We will create renewable energy by introducing solar power generation equipment and utilize it for NEXCO East Group business activities.

③ Utilizing renewable energy (Scope 1/Scope 2)

We will utilize renewable energy, such as solar power, wind power, and hydropower, as well as hydrogen and biofuels, which are expected to be realized through future technological innovations.

④ Mitigating global warming through CO₂ absorption and fixation by properly maintaining and managing green spaces. (Scope 1/Scope 2)

We will contribute to CO₂ reduction by properly maintaining and managing green spaces and trees planted on expressway embankments and slopes, sustaining their CO₂ absorption and fixation effects.

⑤ Smoothing traffic flow through business activities, such as expressway network development (Scope 3)

We will work to reduce CO₂ emissions from vehicles traveling on expressways by smoothing traffic with expressway network development, four-laning, and installing smart interchanges, and by alleviating traffic congestion with added extra lanes.

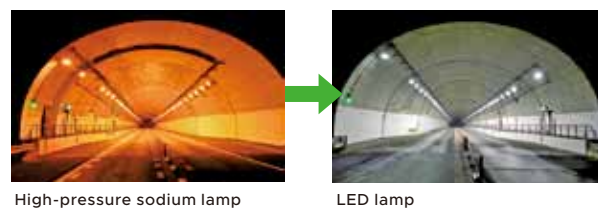
⑥ Promoting to develop and utilize new technologies and methods to achieve carbon neutrality (Scope 3)

We will strive to disseminate and promote CO₂ reduction measures at construction sites by considering and reflecting new specifications in technical standards and collaborating with companies with carbon-neutral technological developments for new expressway construction, renovation, and repair works.

⑦ Promoting the green procurement and 3Rs (Reduce, Reuse, Recycle) for wastes and construction by-products (Scope 3)

We will promote the 3Rs of wastes and construction by-products generated from construction, service areas, and parking areas and work on green procurement of goods and materials used in business activities.

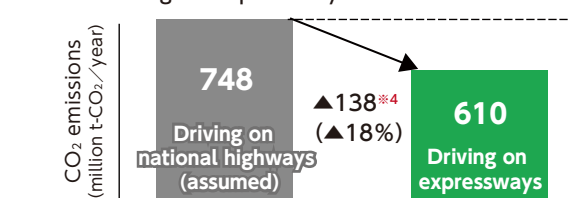
① Switching Tunnel Lighting to LED



④ Planting on expressway embankments

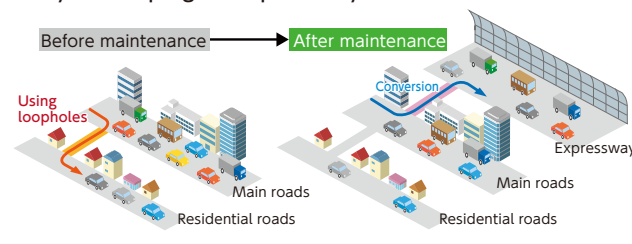


⑤ Expected CO₂ emissions reduction effect from driving on expressways



*4 This is calculated by multiplying the CO₂ emissions per vehicle-kilometer calculated from the emission coefficient on the left by the number of expressway vehicle-kilometers in FY2022. The average speed on national highways is 31.6km/h, and the average speed on expressways is 78.3 km/h.

⑤ Smoothing traffic on national highways by developing an expressway network



01 Expressway Operation Business

Providing Safe, Secure, Comfortable, and Convenient Express Service 24 Hours a Day, Seven Days a Week

In order to ensure the safety of expressway customers, we strive daily to address various issues such as accidents, breakdowns, fallen objects, maintenance, repairs, wrong-way driving prevention, and traffic safety facility enhancement.

Additionally, considering the decreasing workforce, we are advancing the sophistication and efficiency of toll collection.

Protecting Customer Safety with Skilled On-Site Experience

[Road control center]

Our "Road Control Centers," located in four locations, consist of the "traffic control department" and "facility control department," and strive to provide safe, secure, comfortable, and convenient expressways day and night. The traffic control department monitors expressway conditions, responds to abnormal incidents, and provides information to customers. The facility control department keeps tunnels and emergency equipment under constant surveillance.



Road Control Center, Kanto Regional Head Office

[Traffic patrols]

We patrol the expressways 24 hours a day, seven days a week, checking for any abnormalities in the roads or traffic.

In the event of accidents, breakdowns, fallen objects, or other abnormal incidents, we quickly rush to the scene, implement lane restrictions, and respond to the situation, cooperating with the police, fire departments, and other agencies.



Clearing falling objects

[Guidance and enforcement of traffic violations]

We enforce regulations against oversized and overweight vehicles (general restriction values) and vehicles carrying dangerous goods that are prohibited from going through long tunnels. Guidance and enforcement are carried out to prevent such vehicles from traveling on the expressways.

In particular, overweight vehicles are strictly enforced at entrance toll booths since they can severely affect the deterioration of road structures and lead to severe accidents.



Enforcing highway vehicle regulations

Adaptation measures Initiatives to address unavoidable climate change

① Building sturdy and reliable expressways [hard approach]

In recent years, global warming has frequently caused abnormal weather conditions. We strive to build robust and reliable expressways based on new standards to ensure safe and secure use even during severe weather conditions.

② Considering technical criteria and information systems to prepare for disasters [soft approach]

We will strive to utilize technical standards and indicators based on the latest weather data and technical knowledge and will consider introducing systems using information technology.

③ Enhancing disaster response capabilities [soft approach]

Natural disasters can occur at any time and place.

Thus, we will enhance our response capabilities through collaborative training with national and local governments, the Self-Defense Forces, and other related organizations to ensure smooth road traffic during disasters.



Utilizing AI to Reduce Customers' Stress Caused by Traffic Congestion

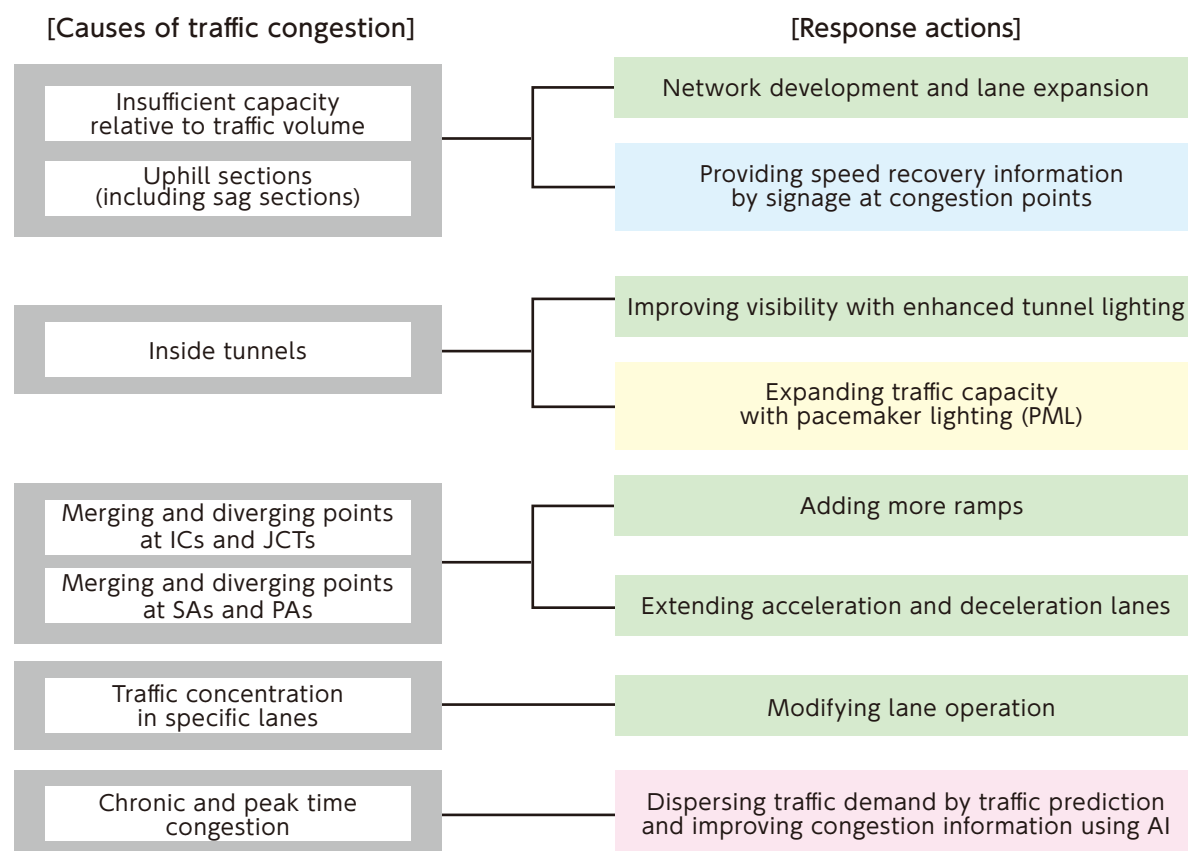
Among the causes of traffic congestion, 73% are traffic concentrations, with 59% occurring on uphill and sag sections.

We are implementing measures, such as adding lanes and controlling speed reduction, to alleviate and mitigate traffic congestion.

We also strive to reduce customers' driving stress by dispersing traffic demand towards advancing traffic prediction (using artificial intelligence).

Concepts of Traffic Congestion Measures

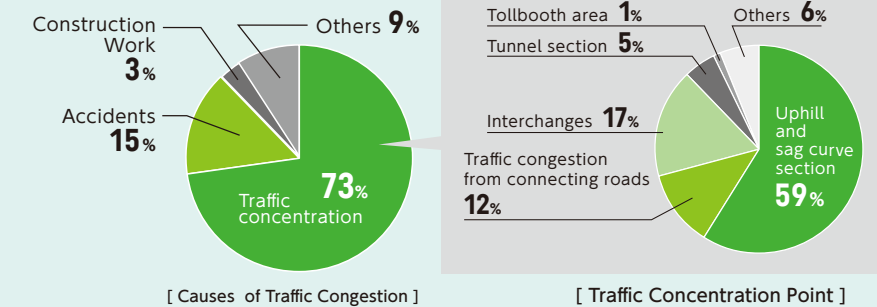
We strive to eliminate and alleviate traffic congestion by implementing hard and soft measures to ensure safe and smooth road traffic for our customers.



For more details on "Expressway Traffic Congestion Measures"* :
https://www.e-nexco.co.jp/en/activity/safety/detail_02.html



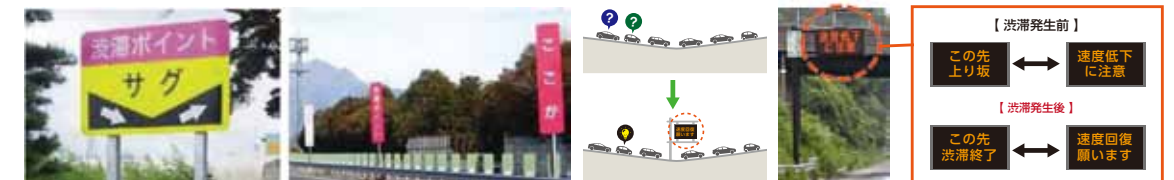
Relevant Data of Traffic Congestion



[Providing speed recovery information via congestion point signs]

Signs are installed at major congestion points to suppress speed reduction and promote speed recovery, effectively enhancing traffic flow.

We have installed signs indicating uphill transition points (left) and signs warning of speed reduction before these points (right).



[Expanding traffic capacity with pacemaker lighting (PML)]

LEDs that blink in the direction of vehicle flow are installed along the shoulder or median to help maintain driving speed and increase traffic capacity.

Timig	Blinking Image									
1	●	○	○	○	○	○	○	○	○	○
2	○	●	○	○	○	○	○	○	○	○
3	○	○	●	○	○	○	○	○	○	○
4	○	○	○	●	○	○	○	○	○	○

LED LIGHT EMISSION PANEL
 Lights flow in the travel direction to assist drivers in maintaining appropriate driving speeds.



[Enhancing traffic information by using AI and traffic demand dispersion by traffic prediction]

● Long-term traffic prediction

In collaboration with Grid Co., we develop and utilize AI technology to predict peak traffic congestion periods and traffic congestion several months ahead.

● Same-day congestion prediction

We have developed AI traffic congestion prediction technology that combines real-time demographic data with past congestion data and traffic engineering knowledge in collaboration with NTT Docomo. We provide estimated travel times and traffic demand forecasts every 30 minutes after 2:00 p.m. for inbound traffic of the Aqua-Line, Kan-Etsu, Keiyo, and Tateyama expressways. This information is updated daily on our website (Drive Plaza) at 1:00 p.m.

You can find more information on AI Traffic Prediction here: (Japanese Site)
https://www.driveplaza.com/trip/area/kanto/traffic/ai_traffic_prediction.html





Safety and Security for the Next Generation

~ Expressway Renewal Project Underway ~

Over 70% of expressways managed by NEXCO East Group will be over 50 years old by 2050.

We have identified significant damage in structures such as bridges and tunnels. In addition, advancements in inspection technology have revealed new areas of deterioration. We are engaging in planned renewal projects, including these newly identified areas, to ensure the safety and security of expressways for the future.

Safety and Security for the Next Generation

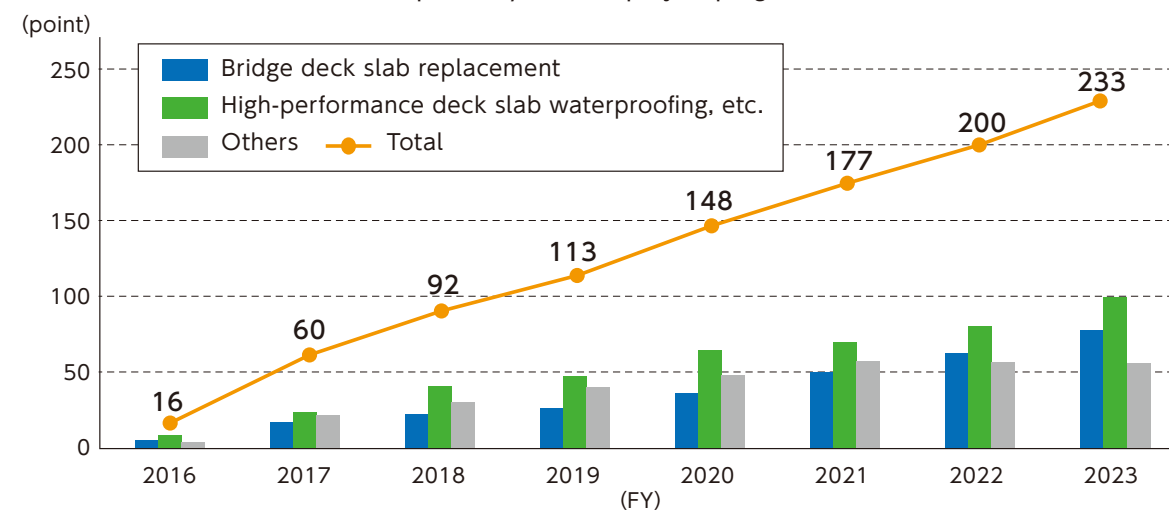
The number of renewal projects in high-traffic areas has also increased in recent years. In these areas, we particularly strive to minimize the impact of traffic congestion on customers by utilizing new technologies and implementing flexible traffic management.



You can find more information on Expressway Renewal Project : (Japanese Site)
<https://www.e-nexco.co.jp/renewal/>



[Expressway renewal project progress]



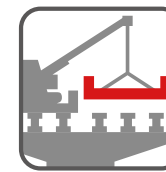
For more details on the "Expressway Renewal Plans for the East, Central, and West"
https://www.e-nexco.co.jp/en/news/important_info/2024/0116/00013348.html



Building Sound Social Infrastructures for the Future Renewal Projects Underway

The proportion of expressways over 50 years old operated by the NEXCO East Group will exceed 20% by 2030 and 70% by 2050. Increased heavy vehicle traffic and the impact of antifreeze are among the leading causes of accelerated infrastructure aging. In particular, viaducts and tunnels have started showing significant deformation. We will engage in systematic renewal projects to ensure the safety of expressways, a vital infrastructure that supports our economy and lifestyles, for the future.

[Construction Details of the Expressway Renewal Project]



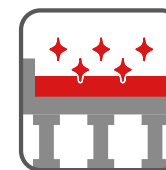
Replacing bridge deck slabs^{*1}

Replace existing deck slabs with concrete slabs of high durability.

^{*1} Deck slab: A structural component that directly supports a vehicle passing through a bridge and transmits the load to the girders.

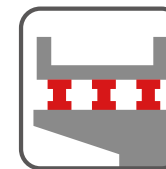


Example of bridge deck slab replacement work



Applying waterproofing membranes to the deck slabs

Apply high-performance waterproofing membranes to prevent deterioration of the concrete slabs.



Reinforcing girders

Add reinforcements to the girders to increase durability.



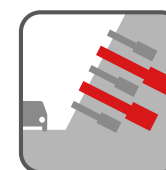
Installing inverted arches^{*2}

Install inverted arches to improve the stability of the structure of the tunnels experiencing excessive force.

^{*2} Inverted arch: A semi-circular-shaped concrete support is installed underneath the road surface to prevent deformation by making the shape of the tunnel circular to distribute stress.



Image of countermeasure construction



Installing ground anchors^{*3}

Install high anti-corrosive ground anchors to ensure the long-term stability of the cut slope area.

^{*3} Ground anchor: Stabilizes the deforming force of a cut slope by driving high-strength steel rods into the slope.

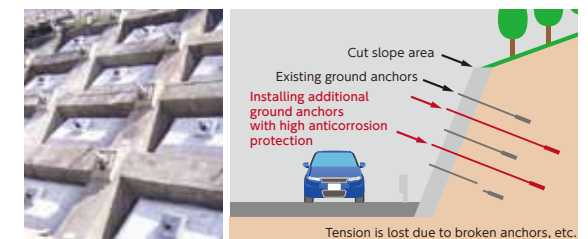


Image of countermeasure construction

You can find more information on the Expressway Renewal Project here :
<https://www.e-nexco.co.jp/en/renewal/>



[Harase River Bridge (Tohoku Expressway, FY2023 project case)]

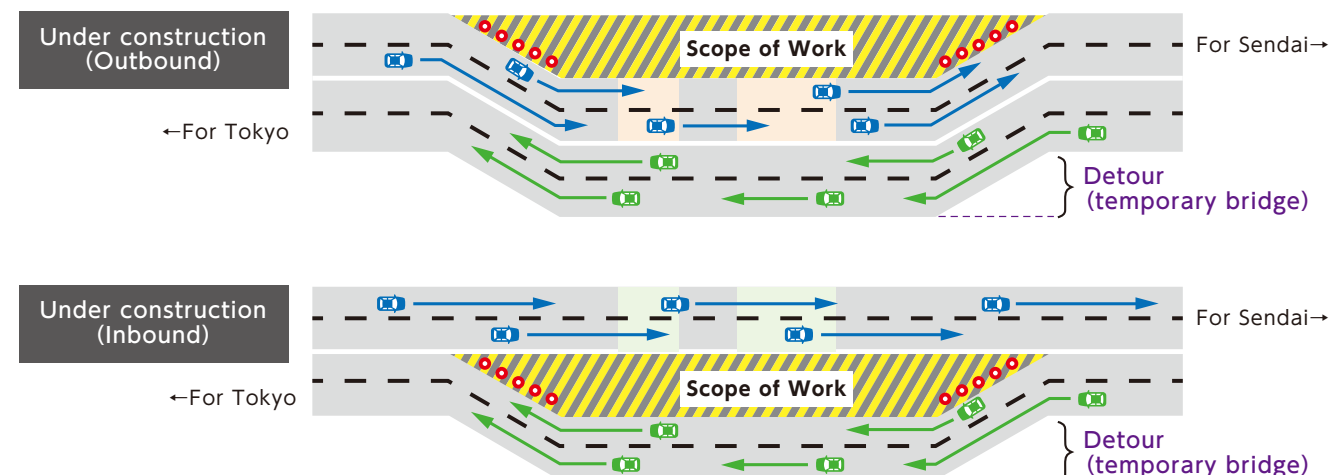
A temporary bypass bridge was installed to ensure a constant four-lane traffic flow during the bridge deck slab replacement work on the Harase River Bridge between the Motomiya IC and Nihonmatsu IC on the Tohoku Expressway.

We will continue to adopt various measures to minimize customer impact, such as the Road Zipper System, which allows flexible lane operation according to traffic conditions.



Bridge deck slab replacement construction (Tohoku Expressway / Harase River Bridge)

[The image of lane operation with a temporary detour]



Evolving Service Areas

~ Creating a Place Where Everyone Feels Joy and Relaxation ~

NEXCO East Group strives to meet customer needs by enhancing the quality of service areas (SA) and parking areas (PA) while accurately responding to societal demands.

We help reduce driving fatigue and lead customers to safe driving by providing comfortable rest and relaxation in SAs and PAs.

Pursuing “Kindness” and “Hospitality”

To ensure all customers feel safe and comfortable using SAs and PAs, we are working on eliminating steps between parking lots and sidewalks, installing accessible parking spaces, and enhancing information services with area concierges, such as acquiring Barrier-Free Mindset Certification and Tourist Information Center Certification (category 1) and installing communication boards and wheelchairs.



Eliminating steps between parking lots and sidewalks



Accessible parking spaces



Area concierge providing detailed guidance to customers.

Our SAs and PAs' information centers have acquired certifications such as the "Barrier-Free Mindset" (Japan Tourism Agency) and the "Tourist Information Center (category 1)" (Japan National Tourism Organization).



For more details on service enhancement in service areas ("Unique, Enticing, and Pleasant" and "Basic Service" areas):

https://www.e-nexco.co.jp/en/activity/service_area/detail_02.html



Pursuing “Functionality” and “Comfort”

We are working to improve the functionality of SAs and PAs facilities and provide comfort during breaks and rests to meet our customers' diverse needs.

As for food and drink, we offer services that can be selected based on customers' circumstances, such as restaurants for leisurely meals and food courts for quick and diverse menus. We also provide services allowing customers to enjoy local ingredients around the SAs and PAs.

Additionally, we are enhancing restroom functionalities as follows: converting Japanese-style to Western-style toilets and installing baby protection seats, large universal toilets with small sinks, toddler toilets, stoma-friendly toilets, and powder rooms. Furthermore, we are working to provide comfort for families with small children by installing diaper-changing spaces, nursing rooms, baby care rooms, as well as shower rooms.



Food courts



Large universal toilets



Diaper-changing spaces



Baby care rooms for limited spaces



Shower rooms

Doctors Supporting Safe Expressways ~ Maintenance and Repair~

Ensuring our customers' comfortable driving experience involves maintaining the road surface and structures, ancillary facilities, and surrounding vegetation in good condition. We continuously strive to maintain healthy expressways with planned repair works and regular maintenance, such as inspections, cleaning, and mowing.



Maintenance works



Repair works

Enhancing Traffic Safety Facilities to Protect Customers from Danger

To avoid traffic accidents, we are implementing measures to prevent wrong-way driving, head-on collisions on provisional two-lane sections, speeding, lane deviation, and pedestrians from entering roads.



Countermeasures for wrong-way driving at a ramp merging section



Leading lane marks (Broken lines)



Center pipe divider at the viaduct section

For more details on "Expressway Traffic Safety Measures":
https://www.e-nexco.co.jp/en/activity/safety/detail_02.html



Improving the Sophistication and Efficiency of Toll Collection

We are introducing automated toll payment machines and remote response systems in anticipation of a decrease in the workforce. Furthermore, we promote cashless and contactless transactions by operating ETC-only toll booths.



Operation center collecting tolls remotely



ETC-only toll booths



Toll collection machine

02 Expressway Construction Business

Supporting Local Development by Enhancing Expressway Functions

As our significant challenges, NEXCO East Group is working toward creating disaster-resistant expressways and strengthening expressway functionality by eliminating missing links (unopened sections where no expressway is available), expanding provisional two-lane sections to four-lanes, and installing smart interchanges (IC). We will steadily improve our network to secure alternative routes during disasters and continue to enhance local communities' quality of life by providing "safe, secure, comfortable, and convenient expressway services."

Improving Quality of Life Through Network Development

[Eliminating missing links]

In the Tokyo metropolitan area, a section between Sakai-Koga and Tsukuba-Chuo ICs on the Ken-O Expressway was opened in 2017, and another section between Misato-Minami IC and Koya Junction on the Tokyo-Gaikan Expressway was opened in 2018. These sections have connected multiple routes linking the Kan-etsu Expressway to the Higashi-Kanto Expressway, enhancing convenience.

We are currently working on sections of the Ken-O Expressway, including the Tokyo-Gaikan Expressway and the Yokohama Kanjo-Minami Expressway.

Eliminating missing links is expected to reduce travel time, revitalize the local economy, and serve as an emergency transportation route during disasters.

[Expanding provisional two-lane sections to four lanes]

Widening provisional two-lane sections to four lanes is expected to alleviate and reduce traffic congestion, prevent serious accidents such as head-on collisions, and reduce road closures during maintenance and repair work or in the event of accidents.

Moreover, we are systematically working on four-laning to improve functionality for safety and security since it will ensure time reliability and traffic functionality during disasters and heavy snowfall.

Example of New Project

[Ken-O Expressway (Yokohama Kanjo-Minami Expressway)]

The Yokohama Kanjo-Minami Expressway is a motorway with a total length of approximately 8.9 km, connecting Kamariya JCT on the Yokohama-Yokosuka Road and the National Route 1. We are currently carrying out this project jointly with the Ministry of Land, Infrastructure, Transport and Tourism. The Kamariya-Shodo Tunnel is one of the world's largest cross-sectional road tunnels constructed using the NATM method.

Kamariya-Shodo Tunnel
 (A large cross-sectional tunnel with a maximum cross-sectional area of 485m² and a width of 29 m)



TOPICS

Promoting "I-Construction" to Enhance Productivity in Construction Projects

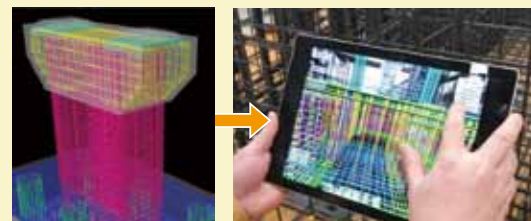
iven the declining working-age population, improving productivity in the domestic construction industry is an urgent issue.

Expressways, essential infrastructure in Japan, are no exception, and the NEXCO East Group is actively adopting "i-Construction" as a member of the construction industry.

At construction sites using ICT technology, we strive to improve construction management efficiency using VR (virtual reality) and AR (augmented reality) and enhance on-site safety with automated construction.

Overlaying structures with 3D design data can efficiently check the consistency between design and on-site construction conditions.

In addition, automated installation of steel supports in tunnel excavation sites reduces the number of people required near excavation points, improving on-site safety.



Create 3D reinforcement drawings and confirm on-site construction conditions.



Reduce the number of personnel required near tunnel excavation points by using machinery for automated construction.

● **i-Construction**An initiative that aims to improve the productivity of the entire construction production and create more appealing construction sites by introducing measures such as "full use of ICT in earthworks."*

* ICT (Information and Communications Technology) is integrated into all earthworks processes, such as "surveying, design, construction planning, construction, and inspection," and it consistently uses 3D data.

You can find the details of i-Construction here :
(Ministry of Land, Infrastructure, Transport and Tourism Website / Japanese site)
<https://www.mlit.go.jp/tec/i-construction/>



Example of Four Lane Projects

[Do-to Expressway]

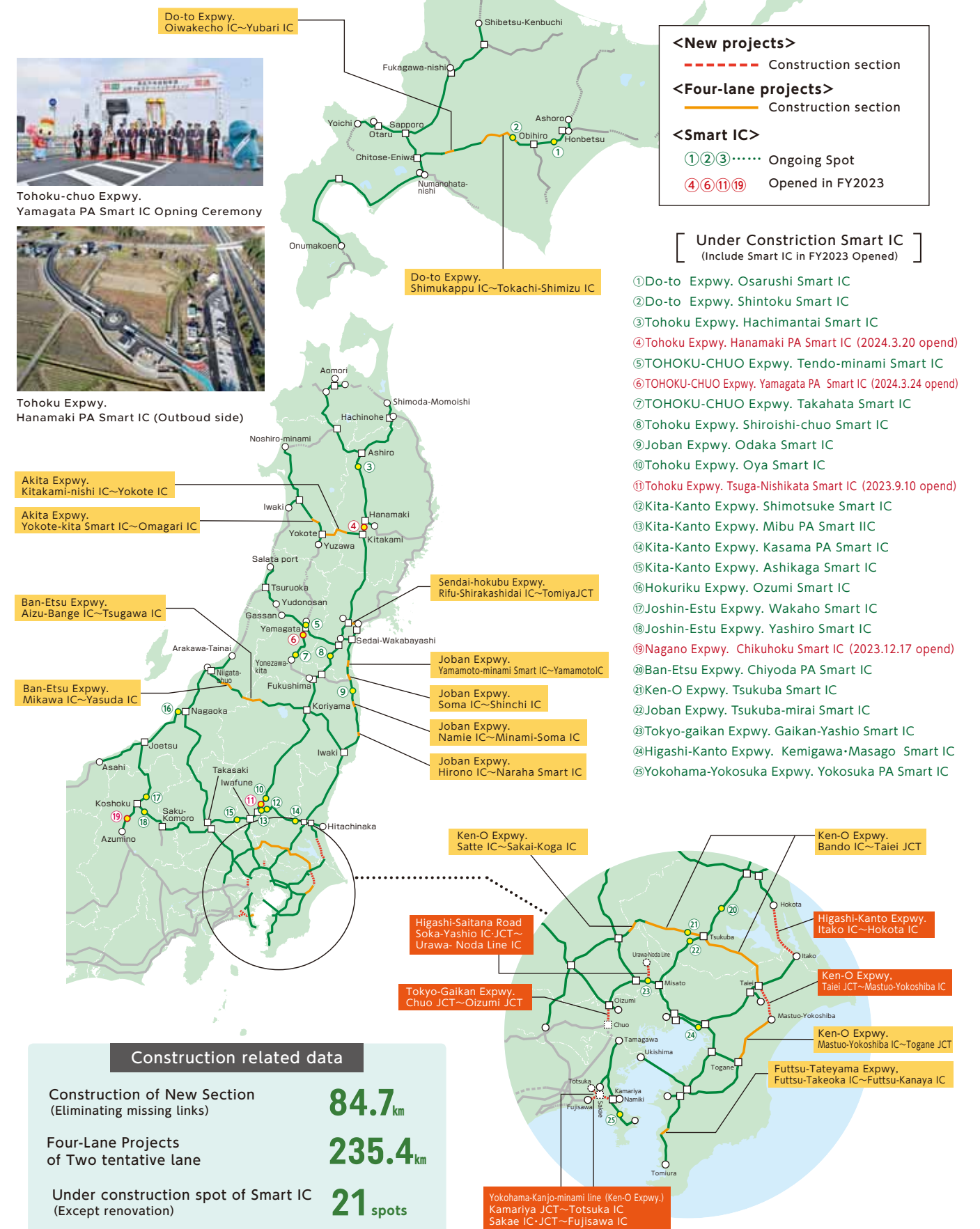
The Do-to Expressway is an expressway that is part of the Trans-Hokkaido Expressway connecting the central and eastern Hokkaido regions. We are currently expanding to four lanes for a 35.4 km section between Shimukappu IC and Tokachi-Shimizu IC. Furthermore, a four-laning project of the 4.1 km section between Oiwakecho IC and Yubari IC was launched in March 2024.



Pekerebetsu River Bridge
(Between Tomamu IC and Tokachi-Shimizu IC, Do-to Expwy.)

■ Ongoing construction projects (as of April 1, 2024)

- ※ Excluding full-scale and large-scale renovation projects for operational smart ICs.
- ※ All IC names are tentative until they are officially decided.
- ※ Only major project sections are indicated.



03 Technology Development & International Business

Adapting to Autonomous Vehicle Technology, Expressways Also Move to the “Next Generation”

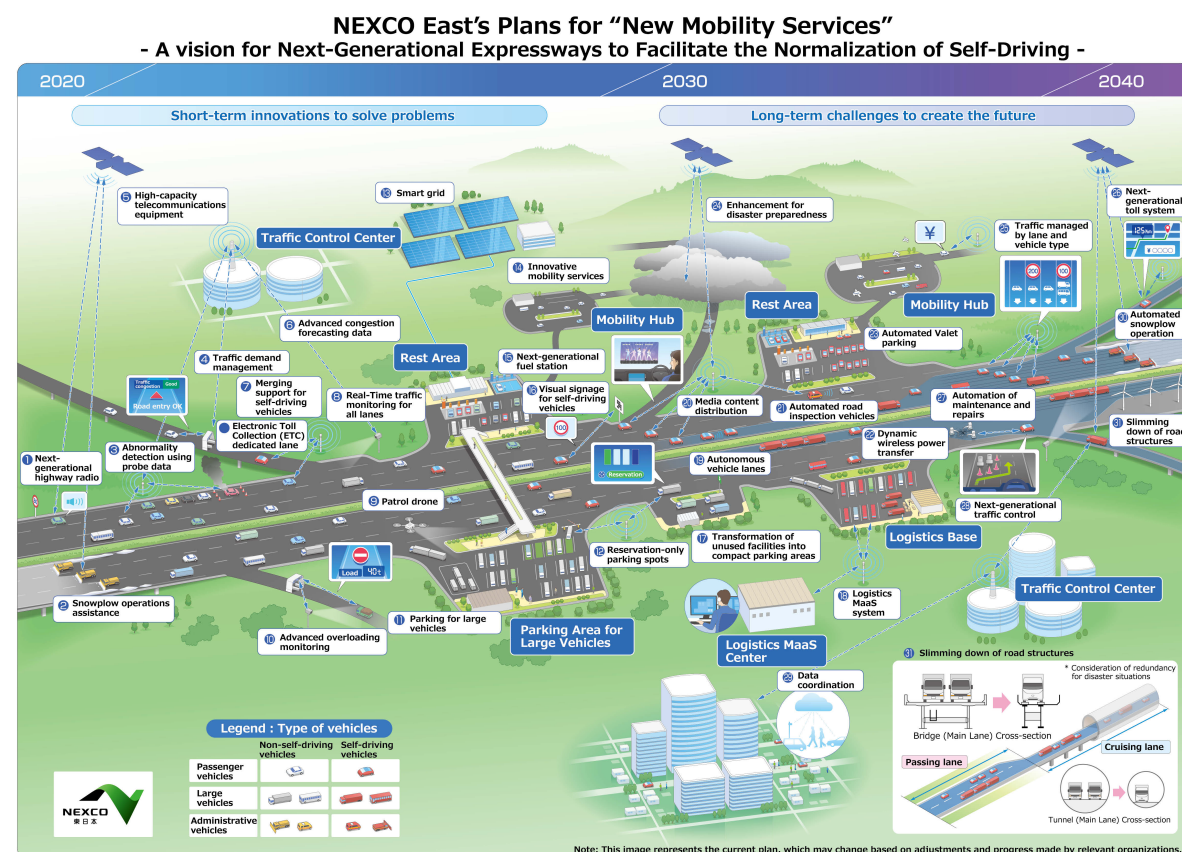
The autonomous vehicle market is expanding as autonomous driving and advanced driving system development and dissemination progress. However, managing the time when autonomous and non-autonomous vehicles coexist on expressways is one of the challenges. NEXCO East Group promotes initiatives to ensure safe and smooth road traffic in the future by facilitating demonstration experiments to establish new technologies.

Vision for Next-Generation Expressways Accelerating the Realization of an Autonomous Driving Society (Concept)

[Promotion of “moVision”]

We have outlined the “Vision for Next-Generation Expressways” and launched “moVision,” a collection of 31 key projects that actualize this vision by providing new mobility services to enhance expressway functions and services and address social issues for an autonomous driving society.

“moVision is a coined word combining “Mobility” and “Vision,” and the logo represents a path leading to the future.



You can find more information on "moVision" here : <https://www.e-nexco.co.jp/en/activity/safety/future/>



Relentless Pursuit of “Road Management Efficiency”

Securing human resources to support expressway maintenance and improving productivity are urgent issues as the working-age population continues to decline.

NEXCO East Group actively utilizes the latest technologies, such as information and communications technology (ICT), robotics, and artificial intelligence (AI), to build a comprehensive maintenance system where technical experts are assisted with these technologies.

This aims to achieve more efficient and advanced road management.

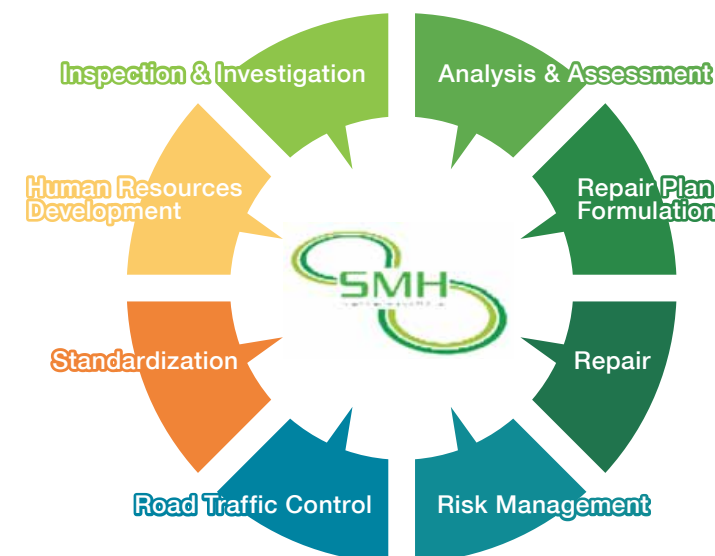
Promotion of the SMH Project

~ Enhancing the Management Operations Productivity ~

[SMH Project Basic Plan]

SMH (Smart Maintenance Highway) is a project that improves the productivity of expressway asset management by using the latest technologies, such as ICT, robotics, and AI. This aims to enhance and streamline operations, standardize decision-making processes in each task, and improve productivity.

You can find more information on SMH here : <https://www.e-nexco.co.jp/en/activity/safety/smh/>



[More efficient and advanced inspection operations using ICT and robotics technology]

We aim to improve the efficiency and sophistication of the entire inspection process, from preparation to data entry, by utilizing robotics technologies, such as inspection support apps and drones. This enables the early detection of damaged areas and swift planning and execution of repairs, leading to improved expressway structural health.



Image of using inspection support applications



Image of bridge inspection using drones



Inspection of the underside of the viaduct deck slab



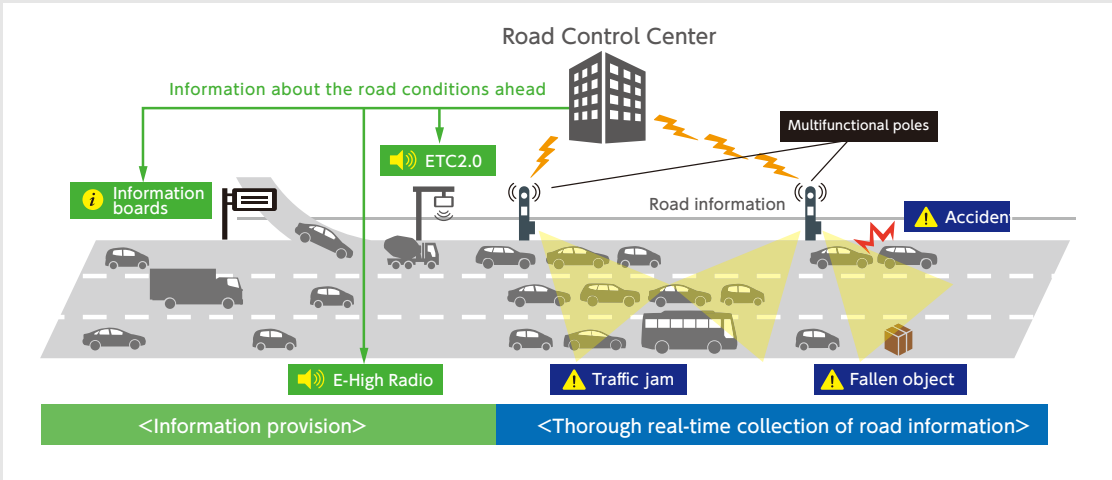
Inspection of tall piers

[Verification Test for the Real-Time Monitoring of the Entire Routes]

We believe collecting and providing information about incidents occurring on expressways, such as accidents and fallen objects, is necessary for autonomous vehicles to drive safely and smoothly. Thus, we will verify the effectiveness of technology in collecting this information comprehensively and in real-time, as well as promptly providing such information.

Overview of Experiment

Multifunctional poles will be installed approximately every 300 meters to collect real-time information about incidents, such as accidents and fallen objects, along the section between the Kanuma and Utsunomiya ICs on the Tohoku Expressway. The collected information will be provided in various ways, such as information boards, ETC 2.0, and the next-generation highway radio, "E-High Radio."



1. The multifunctional poles will collect road information, such as fallen objects and traffic jams, in a comprehensive, real-time manner.
2. The collected information will be sent to the Road Control Center to analyze and automatically generate information such as "Fallen Object Ahead."
3. Information about traveling direction conditions will be provided to individual vehicles (drivers) via E-High Radio, ETC 2.0, and other systems.

● Overview of Multifunctional Poles

- *Equipped with visible light cameras and far infrared cameras.
- *Instantly detects incidents, such as accidents and fallen objects, in the traveling direction regardless of time of day or weather conditions.
- *Some poles are equipped with weather observation devices and other devices.



[Next Generation Highway Radio (E-High Radio)]

E-High Radio is a smartphone app that allows users to obtain information regardless of location, unlike traditional highway radio. It enables them to preemptively avoid dangers from emergencies and make appropriate route selections. Users can not only receive urgent information, including accidents and fallen objects happening in their travel direction, but also play audio alerts. Currently, this service is being tested on three routes in the Chiba area (Keiyo Expressway, Higashi-Kanto Expressway, and Shin-Kuko Expressway). We plan to expand throughout our management area, including the Tohoku Expressway, in the future.



You can download the app from here.

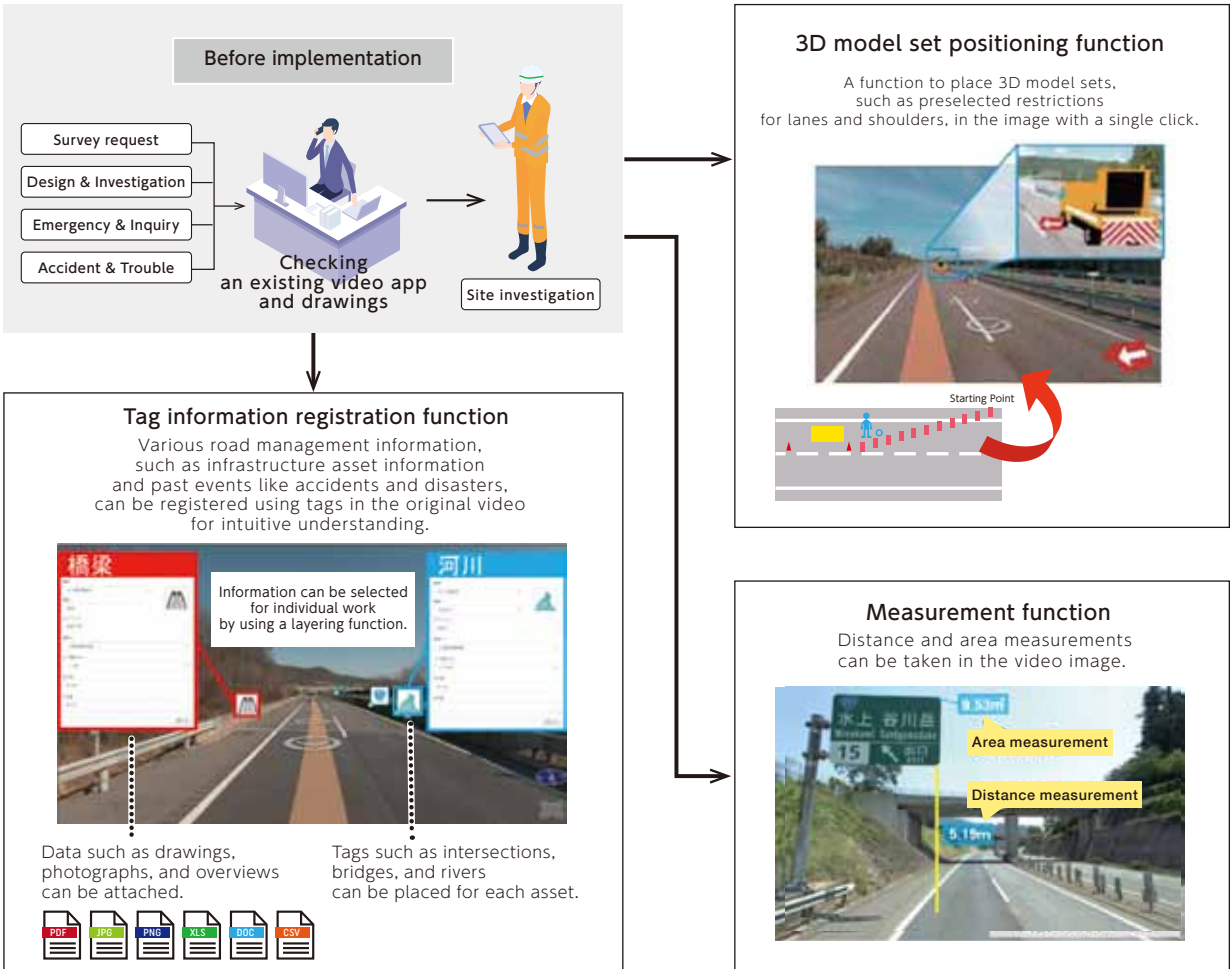


For more information on "E-High Radio": <https://www.driveplaza.com/traffic/e-highwayradio/>



[Realization of smooth road management using omnidirectional road video imaging]

We utilize omnidirectional road imaging to understand the local road conditions quickly. Specifically, such imaging allows us to promptly confirm the pre-disaster conditions and the presence and size of structures in the disaster areas beforehand, thereby speeding up on-site responses. Information about expressway intersection managers and disaster histories can also be registered as tags within the images, contributing to smoother road management. Furthermore, various 3D models can be placed within the images, allowing for driver perspective simulations during lane restrictions and enhancing the safety of the on-site operations.



[More efficient road management using BI tools]

We utilize business intelligence (BI) tools to review the results of daily inspections and surveys and formulate responses to various issues and repair plans in the monthly maintenance planning meetings. Visualizing vast inspection data allows swift repair plan formulation, leading to more efficient road management. Additionally, we are promoting BI tools in expressway facilities and working on preventive maintenance based on trends, such as the number of vehicle breakdowns.



Maintenance planning meetings using BI tools

For details on "Asset Management (Expressway Assets Maintenance)" (brochure/Japanese) : https://www.e-nexco.co.jp/assets/pdf/activity/safety/smh/img_pamphlet_03.pdf



TOPICS

Passing Skilled Techniques and Experience to the Future ~ Development Status of “Advanced Snow and Ice Countermeasures System” ~

While facing the challenges of a declining working-age population and the 2024 construction industry problem, recruiting new workers is crucial, as snowplow operators are also aging. In addition, from an operational perspective, it is difficult for operators to determine the exact position of the snowplows because snow and blizzards make it challenging to figure out the location of the outer road lines or guardrails.

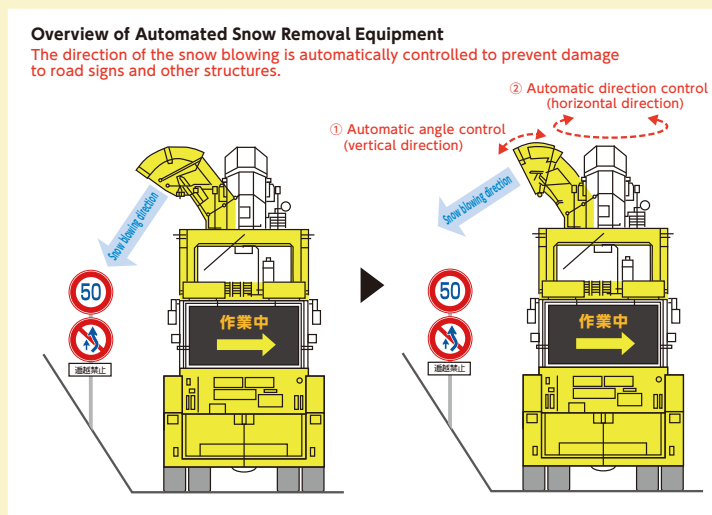
To solve these issues, we are moving ahead with research and development for the automation and efficiency of snow removal operations (ASNOS: Advanced Snow and Ice Control Operation System).

In FY2023, we developed automation technology for rotary snowplows, requiring no skilled driving techniques or experience, and began their operations on the Do-o Expressway (between Iwamizawa and Bibai ICs).



This technology development aims to reduce the number of rotary snowplow operators.

We conducted verifications in FY2023 with two operator operations according to weather and traffic conditions.



Driving test on a main route



For details on “Commencement of Automated Rotary Snowplow Operations”
(News Release / Japanese) :
https://www.e-nexco.co.jp/assets/pdf/pressroom/data_room/regular_mtg/r05/1025/02.pdf



Promoting Environmental Management From the Perspective of SDGs

Each employee needs to have a high level of environmental awareness to enhance high-quality environmental management.

NEXCO East headquarters has obtained ISO 14001 certification and established an environmental committee. Additionally, our employees carry cards stating our environmental policy and action guidelines as a reminder to enhance their environmental awareness, which aims to make us a trustworthy company.

Enhancing Employees’ Environmental Awareness and Improving Their Action Quality

[ISO 14001 Certification (Updated January 25, 2024)]

Our headquarters have been ISO 14001 certified to promote internationally standardized environmental management to achieve the SDGs.

We will continue implementing our environmental management system's Plan-Do-Check-Act (PDCA) cycle and promote ecological conservation and activities.

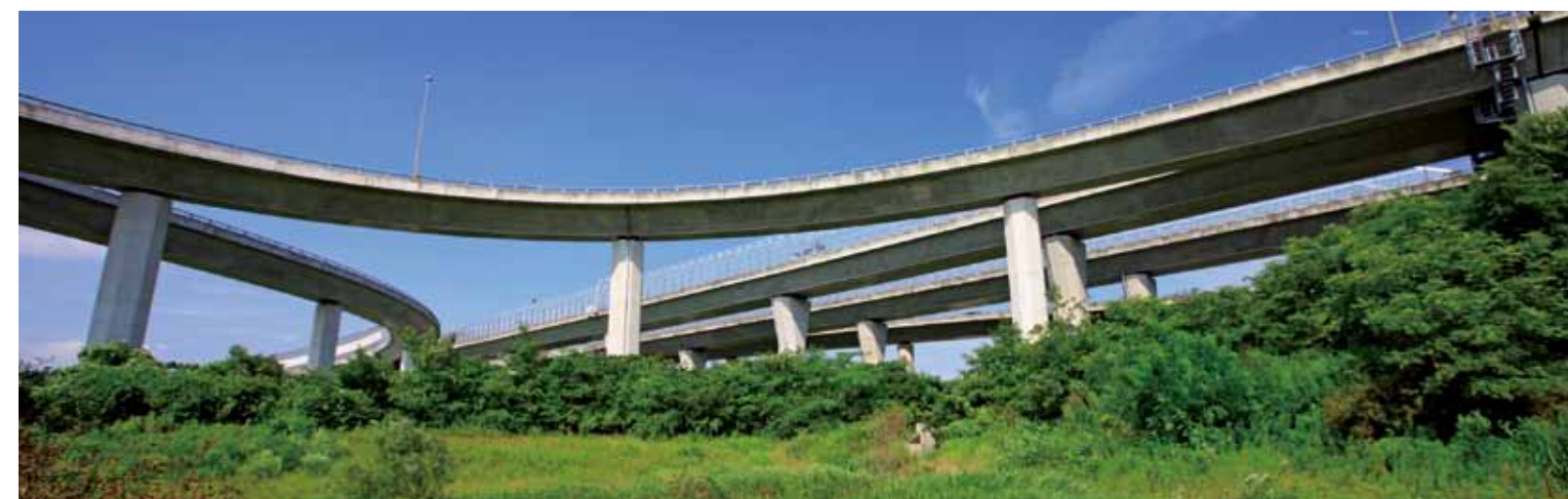
[Internal dissemination of our environmental policy]

NEXCO East Group strives to be a trustworthy company by engaging in global environmental preservation, contributing to forming a recycling-based society and preserving the living and natural environments along expressways as a responsible member of society.

All our employees carry cards stating the “Environmental Policy” and “Environmental Action Guidelines” formulated by our Environmental Committee to enhance their environmental awareness as we strive to be a trustworthy company for environmental measures.



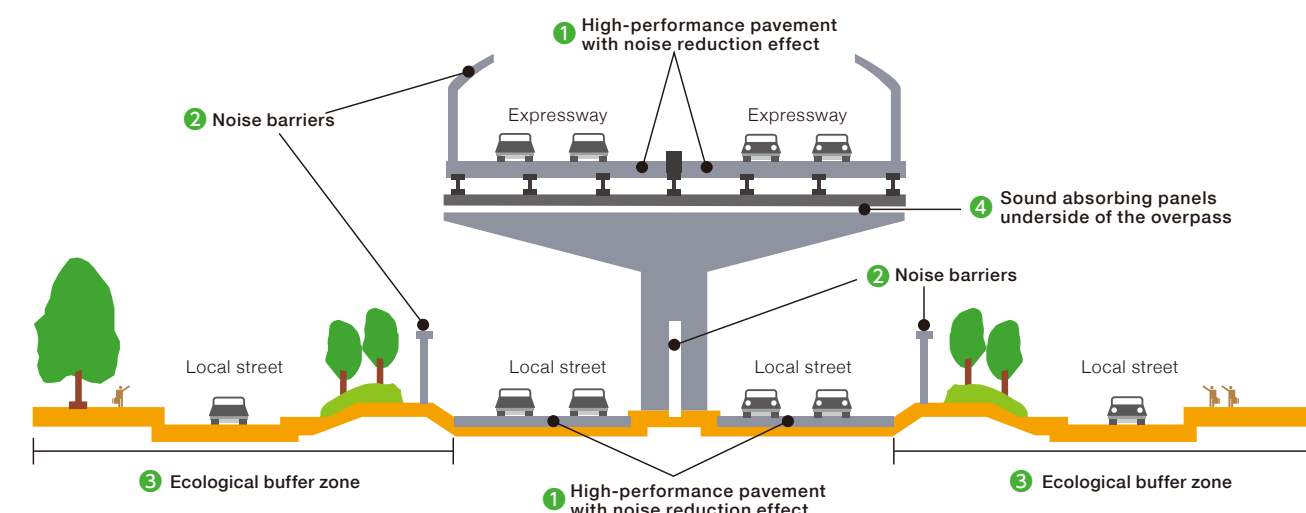
Cards stating the “Environmental Policy” and “Environmental Action Guidelines”



Reducing the Impact on the Living Environment Along Our Expressways

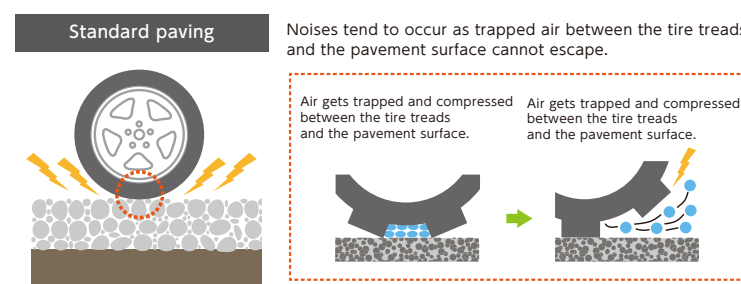
[Noise and landscape measures]

We implement measures such as installing noise barriers and creating ecological buffer zones along the side roads of expressways.



1 High-Performance Pavement

Permeable porous pavement mixture is used in the surface and base layers of the asphalt pavement so that rainwater can be quickly drained from the road surface. This porous surface allows air to escape quickly, reducing driving noise by about 3 decibels.



2 Noise Barriers

Noise Barriers directly block noise from the source and reduce it by sound diffraction.



3 Ecological Buffer Zones

Ecological Buffer Zones provide a 10-20 meter-wide environmental zone outside the roadway. These buffer zones are created to reduce the impact of noise, vibration, and exhaust gases and promote the road's beautification and greening by planting trees and installing noise barriers, sidewalks, and bicycle paths.



4 Sound Absorbing Panels Underside of the Overpass

Sound absorbing panels installed underside of the overpass reduce sound emitted from the overpass and prevent vehicle noise traveling under the overpass from being reflected and diffused.



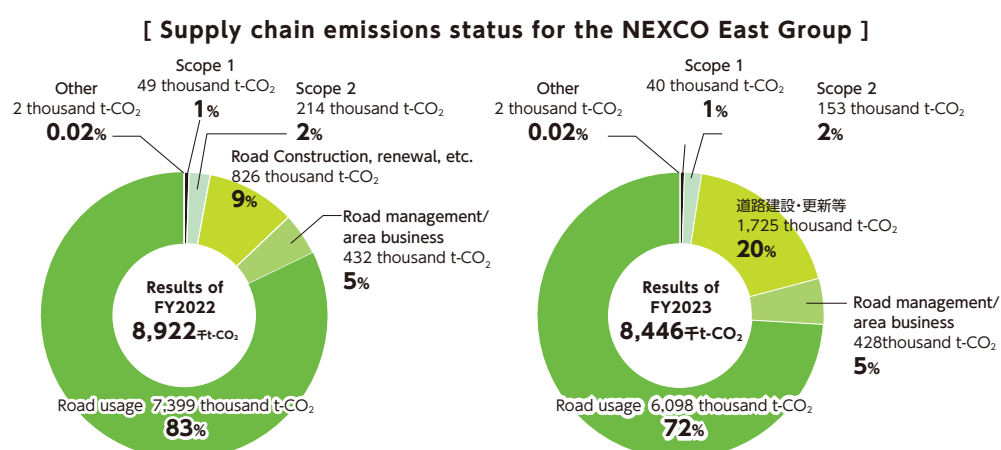
Reducing Greenhouse Gas Emissions Through Energy Saving and Resource Recycling

NEXCO East Group is actively engaging in various initiatives to reduce greenhouse gas emissions, a global challenge centered around the Carbon Neutral Promotion Strategy. In addition to energy-saving, we are challenging ourselves to reduce CO₂ emissions through energy recycling (effective use of resources and recycling).

CO₂ Emissions Status

The actual supply chain emissions* from NEXCO East Group business activities for FY2022 were approximately 8.45 million tons of CO₂. It is about a 5% reduction compared to approximately 8.92 million tons of CO₂ in fiscal year 2013, the baseline year for the government's Plan for Global Warming Countermeasures.

We have formulated the "NEXCO East Group Carbon Neutral Promotion Strategy" and have been working on various measures for global environmental conservation. We will continue to monitor our supply chain emissions and reductions.

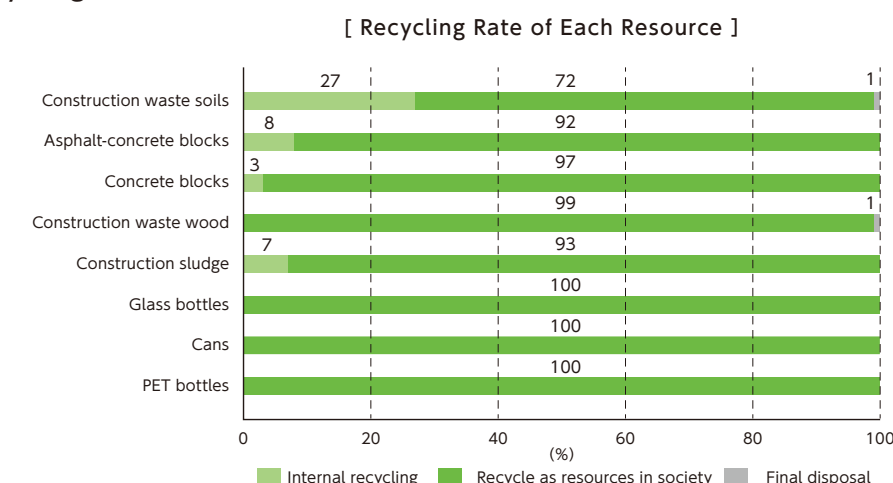


* Supply chain emissions

Supply chain emissions are calculated based on the "Basic Guidelines for Calculating Greenhouse Gas Emissions Through the Supply Chain" (Ministry of the Environment). They cover Scope 1 to 3, which include the following: Scope 1 (fuel use) and Scope 2 (electricity use) are emissions from our business activities, and Scope 3 emissions are from others related to our business activities, including emissions from expressway constructions and operations and vehicles traveling on expressways.

[Construction by-products recycling]

Expressway construction uses large amounts of soil, asphalt-concrete mixtures, and ready-mix concrete. The construction by-products generated from these works are recycled as much as possible into reusable resources to reduce waste and promote resource recycling. We also promote recycling glass bottles, cans, and PET bottles collected from service areas (SA) and parking areas (PA).



[Green Procurement]

We promote the procurement of environmentally friendly goods and services based on the "Act on Promotion of Procurement of Eco-Friendly Goods and Services by the State and Other Entities (Act on Promoting Green Purchasing)" to contribute to a recycling-oriented society.

In FY2023, we purchased all 21 eco-friendly designated procurement items in the office category.



Tomioka Biomass Gasification Power Generation

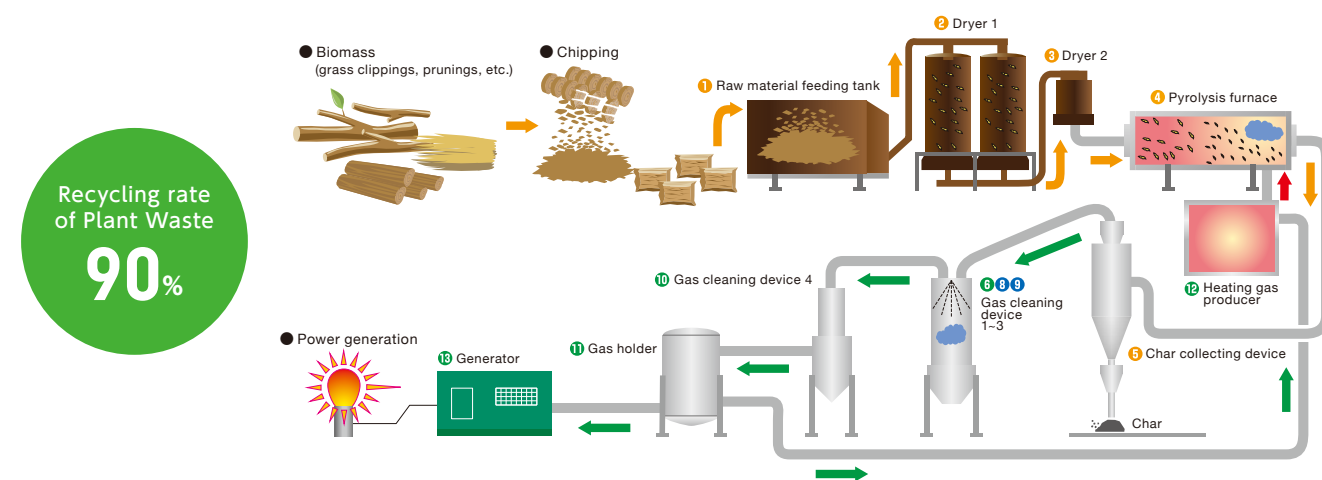
Effective Use of Resources

[Technology Development for Biomass Gasification Power Generation]

We put effort into developing power generation technology that uses plant waste materials (biomass) generated from mowing, tree pruning, and thinning during expressway maintenance.

It generates electricity using the gas from steaming biomass in a pyrolysis furnace, which is then used in expressway-related facilities.

Additionally, char is produced by gasifying the biomass instead of directly burning it. This “char” is actively used as a soil enhancer.



[Composting Plant Materials]

Tree pruning and mowing generated approximately 93,000m³ of plant materials in FY2023.

Approximately 90% of these materials are utilized effectively as “Green Recycling” by being processed at the Tomioka Biomass Gasification Power Plant, reused internally as compost, and utilized externally as compost, wood chips, and biofuel.



Contributions and Challenges to the International Community

NEXCO East Group contributes to the development of other countries by utilizing its expressway technology and knowledge acquired over many years.

In November 2019, we established a local subsidiary, E-NEXCO INDIA PRIVATE LIMITED (ENI), in India, experiencing remarkable economic growth. It conducts surveys on road surface conditions and supports optimal repair plans.

Technological Deployment in India

We have signed a technical advisory agreement with Cube Highways (Cube), India's largest toll road operator, for overall road maintenance and management, including rest facilities. We will continue deploying our technology in India.

Deployment of “E-NEXCO Eye,” the Road Surface Condition Survey Vehicle

“E-NEXCO Eye” is a vehicle that uses lasers and cameras to survey road surface cracks and ruts and measures the International Roughness Index (IRI). It can also collect data while driving at a maximum speed of 100 km/h at night.



Road surface condition survey vehicle, E-NEXCO Eye

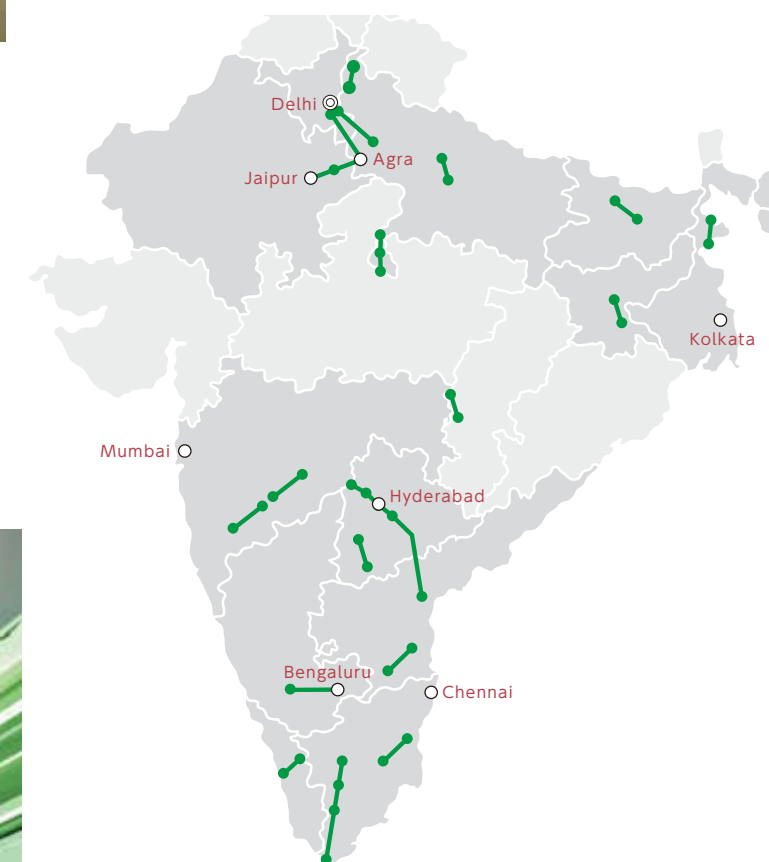
“E-NEXCO Eye” has been surveying the 25 routes on the map below. ENI uses this vehicle to obtain data to formulate efficient road repair plans.

“E-NEXCO Eye” contributes to the realization of safe road spaces in India, where the demand for advanced road management and operations is increasing.

For the promotional video (YouTube) for “E-NEXCO Eye”:
<https://www.youtube.com/watch?v=lePhm60xJnk&t=9s>



Routes under road surface condition measurement operations using “E-NEXCO Eye”

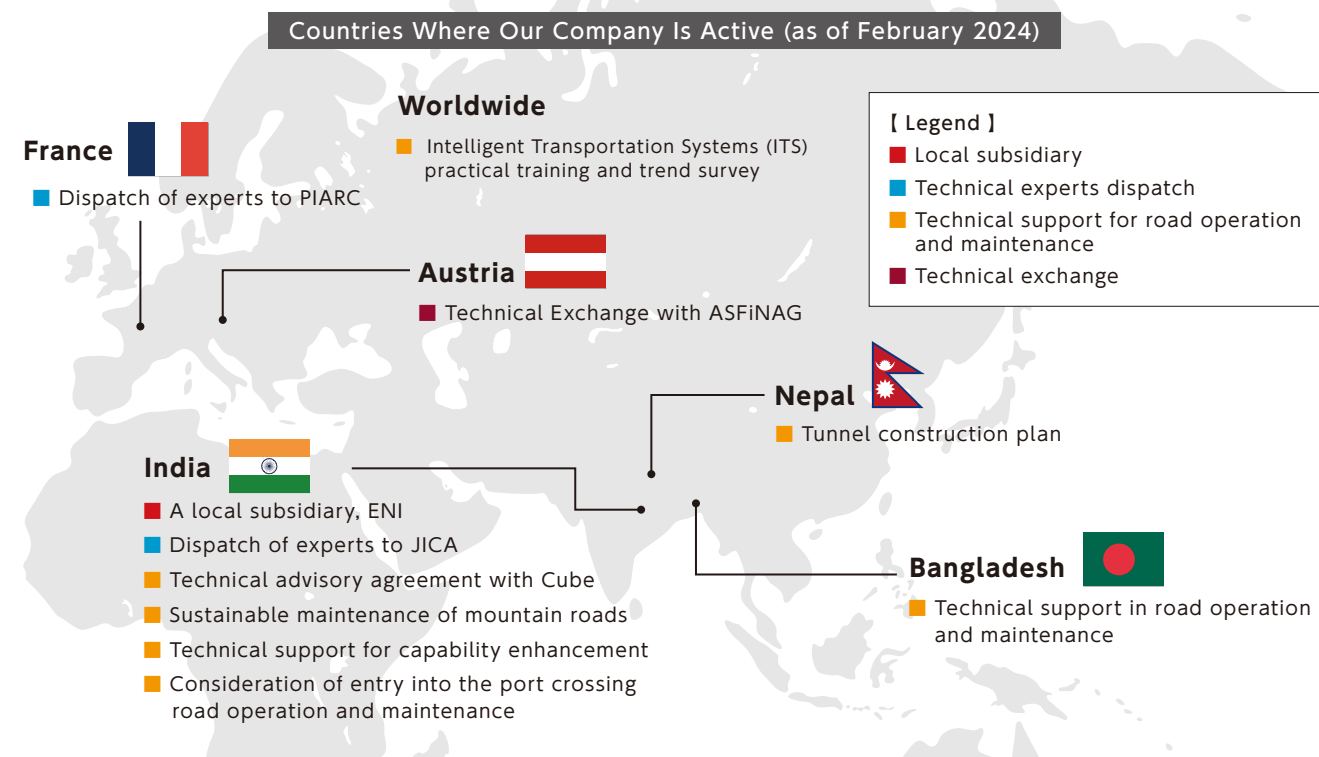


Working Together Towards Social Development ~ Technological Contributions Through International Cooperation ~

Our technology and knowledge, cultivated over many years, are also utilized in consulting services for various foreign countries.

We provide technical support for road operation and maintenance in various countries, aiming at technical cooperation with local government agencies.

We also dispatch technical experts on expressway construction and maintenance to the Japan International Cooperation Agency (JICA) and the World Road Association (PIARC) to help solve local issues. Furthermore, we accept overseas technical trainees.

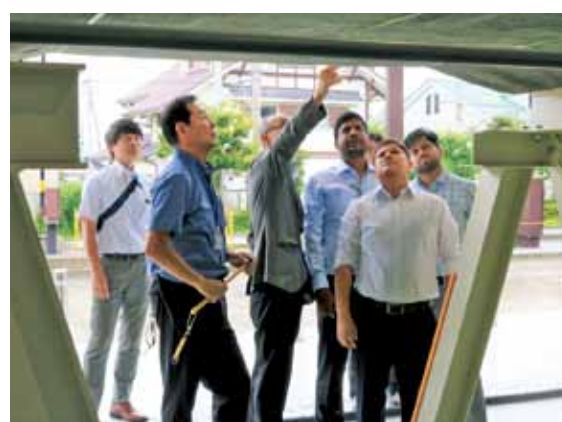


[Technical support for road operation and maintenance in Bangladesh]

We provide technical support to analyze issues and make improvement proposals to the maintenance plans for national highways managed by the Bangladesh Road Transport Authority.

[Consideration of entry into port crossing road operation and maintenance in India]

We are considering entering the technical support business for the Mumbai Bay Crossing Road, which Japanese companies were involved in its construction, by utilizing our knowledge of Japanese road operation and maintenance.



Visit by Bangladesh Road Transport Authority staff to our Technology Center for Development & Education



Mumbai Bay Crossing Road



Enhancing Expressway Quality Through Exchange With Engineers From Around the World

NEXCO East Group addresses various challenges to ensure smooth traffic even in mountains and areas with severe weather conditions. We actively exchange information with engineers worldwide and engage in technical exchanges with expressway companies facing similar problems to solve our challenges, connecting safe, secure, comfortable, and convenient expressways to the future.

Participating in International Conferences Worldwide

We participate in various international conferences and seminars to understand global trends in the expressways business and widely introduce our technology and knowledge globally.

Main conferences attended in FY2023

- * PIARC (World Road Association) World Road Congress
- * REAAA (Road Engineering Association of Asia and Australasia) Conference
- * ITS (Intelligent Transportation Systems) World Congress
- * IBTTA (International Bridge, Tunnel and Turnpike Association) Annual Meeting

Technical Exchange With Austrian Expressway Company

In 2008, we signed a technical exchange agreement with ASFINAG, Austria's only expressway company, to exchange information and technology related to expressway construction and management.

ASFINAG's expressways run through urban areas and the mountains of the Alps, including many structures, such as tunnels and bridges, and snowy regions similar to our expressway areas. Due to the geographical similarities and shared challenges, our collaboration with ASFINAG significantly contributes to expressway development.



Lecture on our business (PIARC)



Engaging in dialogue with ASFINAG head office

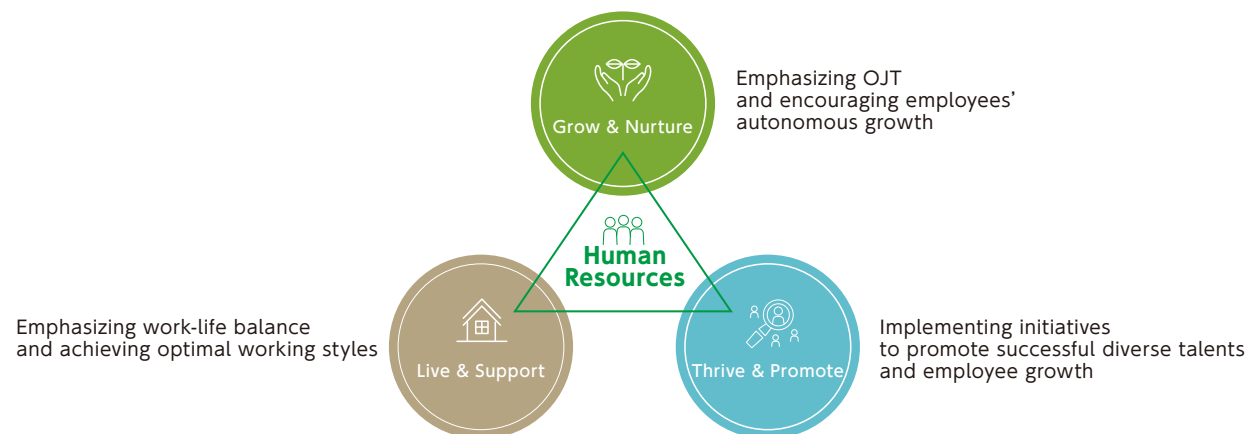
04 For Our Society and Employees

Strengthening human resources development to maximize the abilities and skills of each employee

[Human Resources Development Policy]

It is essential to secure and develop human resources, which are the source of on-site capabilities, to maintain and continuously improve expressways. We have formulated a human resources development policy defining worker profiles, abilities, and skills our company seeks. It also includes human resources development methods and systems to balance job rotation and life stages, aiming at maximizing the abilities and skills of each employee.

Our business area includes various regions, such as the heavily trafficked metropolitan area and regions requiring snow management. Providing the same-level high-quality expressway environment and services to users in all areas is vital. Therefore, we are enhancing human resources development by focusing on on-the-job training (OJT) to help employees grow through job rotations, allowing them to gain experience in various regions. We are also expanding initiatives emphasizing work-life balance, enabling employees to balance their life stages with job rotations and pursue their desired career paths.



- * Enhancing OJT to ensure employees acquire high-level abilities and skills through job rotations
- * Carefully confirming employees' preferences regarding tasks and work locations to achieve optimal job rotations
- * Creating a workplace environment where diverse talents work together to create new value

Human Resources Data		Average overtime hours per employee	
Average age of employees	40.5 years old	Stress check examination rate	27.2 hours/month
Average years of employment	16.5 years	Average number of vacation days taken per employee	99.2%
Gender wage gap ^{※1}	68.7%	Childcare leave acquisition rate for female employees	26.0 days/year
Percentage of women among newly hired employees ^{※2}	17.9%	Childcare leave acquisition rate for male employees	100%
			42.4%

^{※1} Permanent employees: 66.7% Temporary employees: 63.4%
^{※2} Percentage of female employees joining the company from April 1, 2024
^{※3} Total of annual paid holidays, special summer leave, special shorter-hour promotion leave, special company foundation anniversary leave, and other special leaves.

Creating a Vibrant Work Environment Where Everyone Can Thrive

NEXCO East Group has been certified as a Health & Productivity Management Outstanding Organization since FY2019. We actively work on improving work environments and promoting our employees' health maintenance and enhancement. We will continue to provide a work environment where employees feel fulfilled through health and productivity management®*.

* Health and Productivity Management® is a registered trademark of the Non-Profit Organization KenkoKeiei.

Promoting Women's Engagement

[To increase the ratio of female employees]

We formulated and publicly announced the "General Employer Action Plan Based on the Act on Promotion of Women's Participation and Advancement in the Workplace," covering the five years from April 1, 2020, to March 31, 2025. Additionally, we strive to achieve goals outlined in this action plan, such as hiring female employees to achieve a 30% female in new hires and forming a network for female employees. We assign female employees to recruitment roles, establish working groups, and hold roundtable discussions to invigorate opinion exchange among female employees.

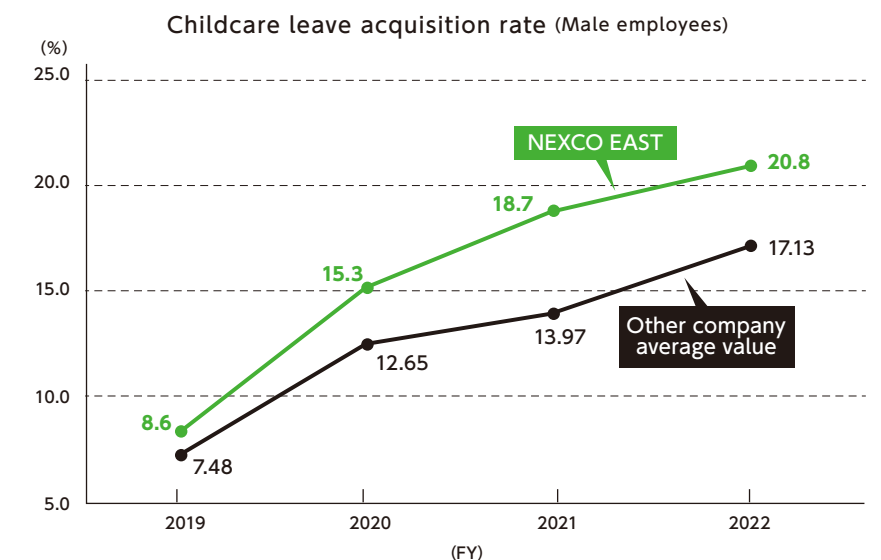
We are also improving the work environment by improving female staff restrooms, including nap rooms, changing rooms, and shower rooms.



[Childcare support]

Although 100% of our female employees take childcare leave, we strive to create a good work environment for all employees while raising children by increasing the number of male employees on childcare leave.

We have introduced a system that exempts both male and female employees from transfers until their children reach the age of three.



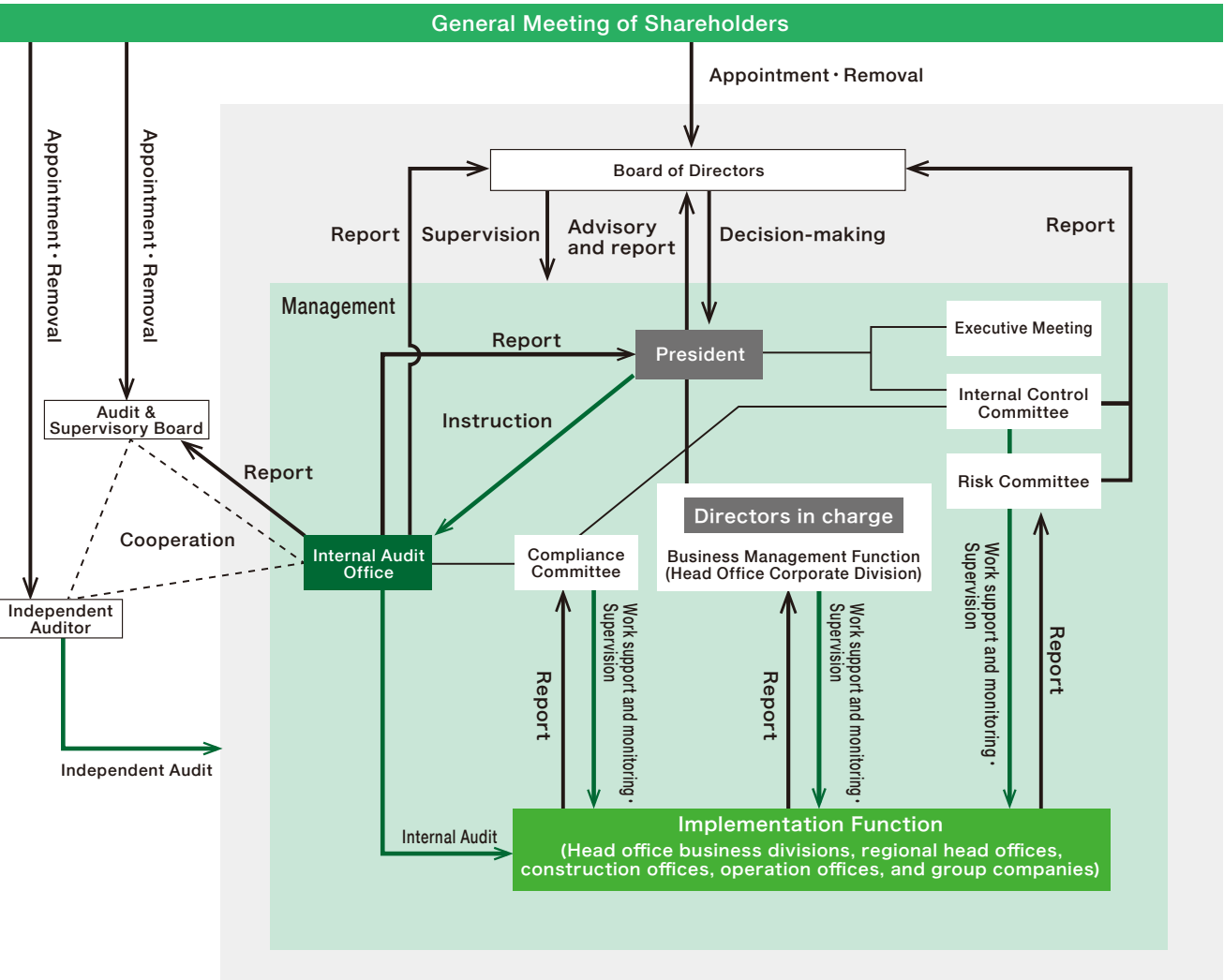
Promoting Senior's Engagement

We have implemented the "Career Shift Change System" that allows senior employees with the desire and capability to work to utilize their experience and knowledge at the frontline. Since FY2022, we have also been gradually raising the mandatory retirement age by one year every two years, up to 65. Additionally, we have introduced a reappointment system that allows employees to continue working until age 65, even after their mandatory retirement.

Strengthening Governance and Promoting Healthy Management

EXCO East Group prioritizes our customers' safety and sustainably provides safe, secure, comfortable, and convenient expressway spaces. Thus, we strive to achieve faster and more appropriate decision-making in business execution by making the enhancement of corporate governance one of our most significant issues.

[e-NEXCO Group Corporate Governance System]



Company Overview

Company Name			
Location	Shin-Kasumigaseki Building, 3-3-2, Kasumigaseki, Chiyoda-ku, Tokyo 100-8979 TEL:03-3506-0111 (Service Area Business Division) MOMENTO SHIODOME 6th floor, 2-3-17, Higashi-shimbashi, Minato-ku, Tokyo 105-0021		
Representative	Fumihiko Yuki, President and CEO	Capital Stock	525 billion yen
Founded	October 1, 2005	Number of Employees	2,573 (as of March 1, 2024. Excluding outgoing external secondees and including incoming external secondees)
Business Objectives	To contribute to the sound development of the domestic economy and improvement of people's lives by facilitating smooth road traffic through effective construction, renovation, maintenance, repair, and other operation of expressways.		
Business Description	Operation and construction business of expressways, service area business, parking lot business, underpass utilization business, truck terminal business, credit card business, online business, hotel business, overseas business, etc.		

Hokkaido Regional Head Office	5-12-30, Oyachinishi, Atsubetsu-ku, Sapporo 004-8512	TEL:011-896-5211
Tohoku Regional Head Office:	JR Sendai East Gate Building, 1-1-1, Tsutsujigaoka, Miyagino-ku, Sendai 983-8477	TEL:022-395-4002
Kanto Regional Head Office	Omiya JP Building, 1-11-20, Sakuragi-cho, Omiya-ku, Saitama 330-0854	TEL:048-631-0001
Niigata Regional Head Office	Niigata PLAKA3, 1-1, Tenjin, Chuo-ku, Niigata 950-0917	TEL:025-241-5111



List of Executives

Managing Directors



Koichiro Watanabe
Chairman



Fumihiko Yuki
President and
Chief Executive Officer



Tomomichi Takahashi
Representative Director,
Executive Vice President and
Director of Construction Division



Satoshi Iseda
Managing Director,
Senior Executive Officer, and
Director of Corporate Strategy Division



Yutaka Shiina
Managing Director,
Senior Executive Officer, and
Director of General Affairs &
Accounting Division



Hiroyuki Tanaka
Managing Director,
Senior Executive Officer, and
Director of Operation



Hideo Yoshimi
Managing Director,
Senior Executive Officer, and
Director of Service Area &
New Business Division



Akiyo Miyakawa
Managing Director

Auditors



Ryuji Sato
Auditor (full-time)



Yasunori Kuroda
Auditor (full-time)



Hironori Kawauchi
Auditor (full-time)



Noriko Yagasaki
Auditor

Executive Officers



Yoichi Chida
Senior Executive Officer,
Director of Technology &
International Division

Senior Executive Officers	
Hideo Umeki	Director General of Tohoku Regional Head Office
Toshihiro Matsuzaka	Director General of Kanto Regional Head Office
Officers	
Toshiya Ueda	Operating officer, Deputy General Manager of Technology Headquarters and General Manager of Technology and Environment Department
Yoshimasa Kumano	Executive Officer, Deputy Director of Operation Division
Yasuaki Kaneda	Operating officer, Deputy General Manager of Management Business Headquarters and General Manager of Maintenance Department
Sayuri Higashiyama	Executive Officer, Director of Internal Audit Office
Toshiaki Harashima	Executive Officer, General Manager of Human Resources Department, General Affairs and Accounting Headquarters
Takehiko Sato	Executive Officer, General Manager of Accounting and Finance Department, General Affairs and Accounting Headquarters
Keiichi Hori	Executive Officer, Director General of Hokkaido Regional Head Office
Hitoshi Sakuma	Executive Officer, Director General of Niigata Regional Head Office

(As of July 1, 2024)

* Koichiro Watanabe (Chairman) and Akiyo Miyakawa (Managing Director) are part-time outside directors.
* Yasunori Kuroda (Auditor), Hironori Kawauchi (Auditor) and Noriko Yagasaki (Auditor) are outside auditors.

【 Cover Story 】

「 Life and Expressways 」

The cover photo is of the Nagano Expressway (between Koshoku JCT and Omi IC) under the NEXCO East Group management.

We selected this photo as it embodies our CSR keyword, “We are connected with communities by connecting communities to connect to the future,” and conveys to all stakeholders how our expressways are integrated into daily life.

The entire Nagano Expressway was opened in 1993 and used in various scenes, such as daily life, tourism, and businesses. Furthermore, it has shortened the distance between major cities in Nagano Prefecture, contributing to expanding living and economic areas.



【 Corporate Website 】

On Corporate website, corporate information about expressway business and initiatives of the NEXCO East Group are posted.

(About information on expressway services, please visit "Dorapla E-NEXCO Drive Plaza" (<https://www.driveplaza.com>))

Corporate website
<https://www.e-nexco.co.jp/en/corp/>



Dorapla E-NEXCO Drive Plaza
<https://en.driveplaza.com/>

