

Development of networks and hubs to support the flow of people and goods

- Connecting people and regions -

It is necessary to ensure the safe and smooth movement of people and goods throughout the country in order to respond to the creation of a multi-nuclear country and stable logistics by correcting the concentration in Tokyo. In order to build a national arterial road network that ensures speed and accessibility, we will work on the development and functional enhancement of high-standard roads. We will also promote measures to strengthen modal connections by developing transportation hubs, counter-congestion, and support logistics.

Express services between cities

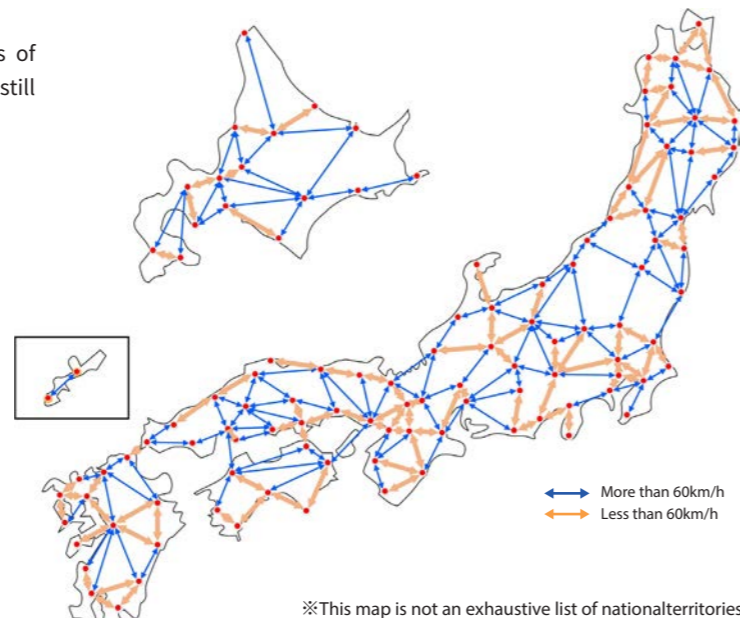
Japan is still lagging behind other countries in terms of inter-city speed, with about 40% intercity(90/208 links) still less than 60 km/h.

■ Status of inter-city travel speed

(Note) Method of calculating the speed of inter-city communication Covers 113 cities and 208 links. Calculated using ETC2.0 (2018 small car) travel speed data.

<Ref.> Average speed of inter-city communication in other countries

Japan	Germany	France	UK	China	Korea
62km/h	95km/h	96km/h	80km/h	79km/h	60km/h



※This map is not an exhaustive list of national territories.

Accessibility to airports and harbors

Airports and seaports are bases for the wide-area movement of people and logistics, but about half of them (82/170) still require 10 minutes or more from high-standard arterial roads

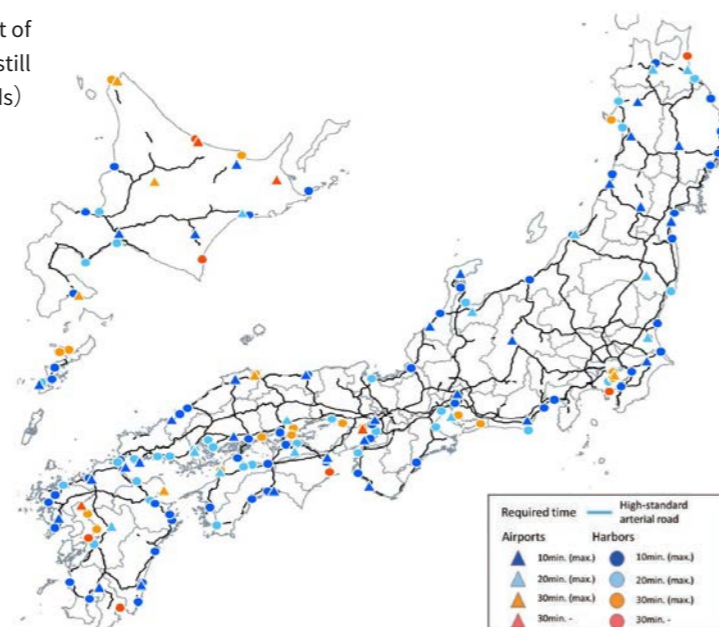
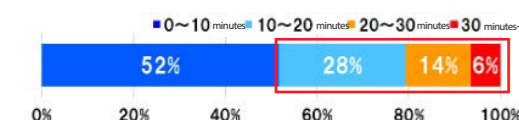
■ Access to major airports and harbors

* Major airports and ports: base airports and jet airports, international strategic harbors, international hub harbors, and important harbors.

* Travel times are calculated from ETC2.0 data for 12 hours during the daytime on weekdays in FY2019

Time required from IC

Approx. 50% requires more than 10 minutes



Construction and functional enhancement of the road network

- Development based on the new wide-area road transportation plan

To improve productivity and regional revitalization, etc. by facilitating and smoothing human and logistics flows, we will promote functional enhancements by surveying and improving road networks based on new wide-area road transportation plans formulated in each region.

Maintenance based new wide-area road transportation plans

Background / data

- A shift from concentrated unipolar to a multipolar socio economic model (Ref.1) is required
- Improving productivity in logistics is an urgent issue, as the shortage of truck drivers, who are essential workers, is becoming apparent
- The effectiveness of road development needs to be evaluated in line with the actual situation, taking into account changes in freight transport and mobility, etc.

Based on The "New Wide-area Road Transportation Plans (Ref.2) formulated in each region, promote functional enhancements by systematically surveying and improving road networks, while also utilizing individual subsidy programs for Important Logistics Roads

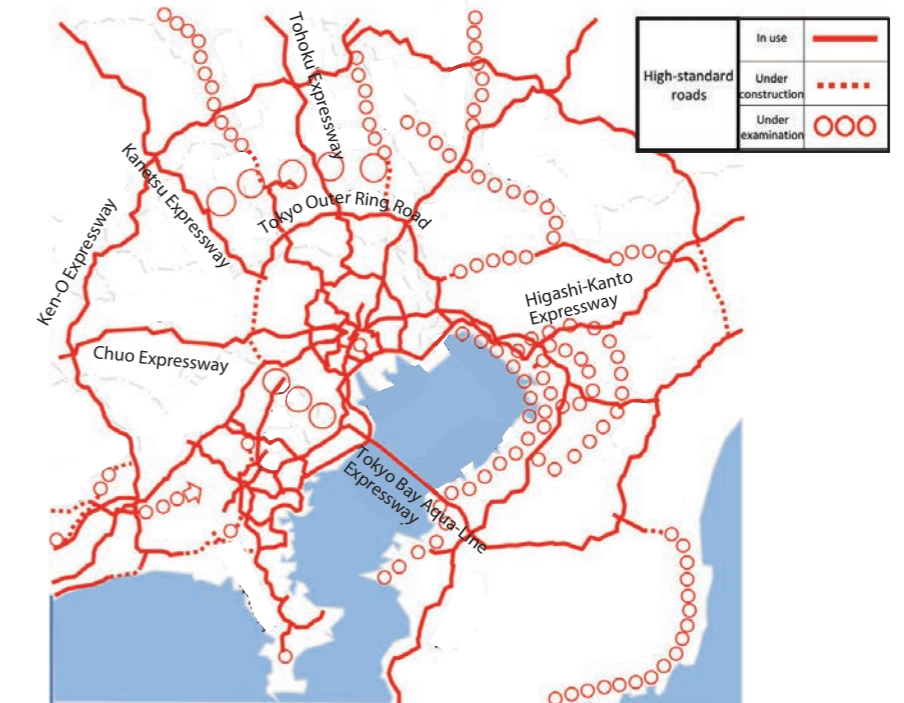
- Rate of inter-city express delivery by road (2019→2025) : 57%→63%
- Development rate of ring roads in the three major cities (2020→2025) : 83%→89%

Expanding the sections on Important Logistics Roads where special vehicle permits are not required for international marine container trucks (40ft long) (Ref.3)

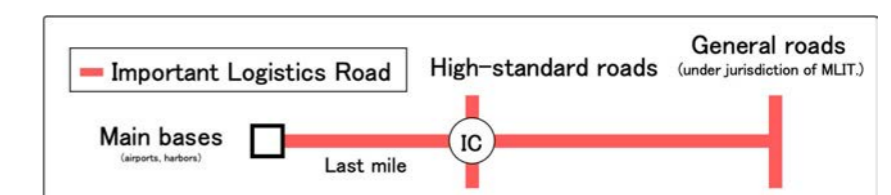
Based on performance indicators (Ref.4) for Important Logistics Roads, effectively and efficiently promote the elimination of obstacles, etc.

Conduct research on methods to understand and evaluate various effects of road maintenance based on changes in mobility, etc.

■ High-standard roads in the metropolitan area (New wide-area road transportation plan)



■ Image of Important Logistics Road



Ref. 1: Grand Design and Action Plan for the New Capitalism (cabinet resolution made on June 7, 2022)

Ref. 2: The plan consists of a wide area road network plan, a transportation and disaster prevention base plan, and an ICT transportation management plan. Versions for prefectures, ordinance-designated cities, and blocks (formulated by regional development bureaus, etc.) have been formulated by July 2021.

Ref. 3: Designated approximately 31,300 km of road sections that do not require permits for international maritime container trucks (40ft long) (as of July 2022)

Ref. 4: Indicators to evaluate services provided by Important Logistics Roads (logistics, congestion, safety, deterioration, etc.)

Construction and functional enhancement of the road network

- Strengthening access to the network from transportation and logistics hubs

To improve accessibility from transportation and logistics hubs to expressways and other networks, we support the development of Smart IC and access roads.

Promote a smart IC system directly connected to private facilities, which allows the private sector to initiate and bear the burden of development.

Background / data

- The number of expressway interchanges in Japan is 1,521 (managed by expressway companies, including those under construction, excluding smart IC)
- The average spacing between expressway interchanges in Japan is approx. 10 km, which is about twice that of free expressways in the flatlands of Western countries.
- Access to major airports and seaports from high standard arterial road interchanges is 10 minutes or more in about half of cases.
- Smart IC: 150 open, 54 under construction
- Smart IC directly connected to private facilities: 2 locations opened in Japan (Awaji-Kita Smart IC, Taki Vison Smart IC)

All figures are as of September 30, 2022

In order to promote more efficient logistics, regional revitalization, improved convenience, and enhanced disaster prevention functions, the need for Smart IC will be examined in the regions, and the development of Smart IC will be promoted

Focused support for the development of access roads in

■ Effect of Smart IC development (Tamura Smart IC)

- Smart Interchanges will improve accessibility to expressways and surrounding businesses.
- Companies locating in the vicinity, creating approximately 300 new jobs.



conjunction with the development of interchanges, ports, airports through individual subsidies.

Promote the development of smart IC directly connected to private facilities through interest-free loans to private business operators and exemption from registration and license tax.

■ Construction of an IC with direct connection to the private sector (Awaji Kita Smart IC)



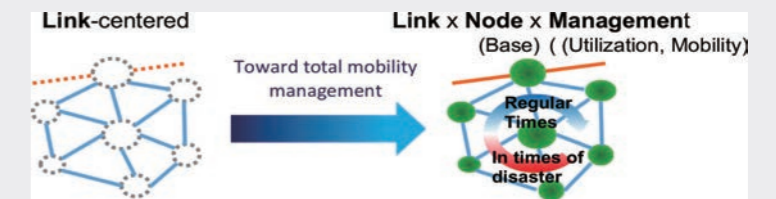
Strengthening the functions of transportation and disaster prevention centers

- Development based on the new wide-area road transportation plan

In addition to strengthening the link functions of the road network, we will promote efforts to strengthen the functions of nodes, such as transportation and disaster prevention centers, in order to respond to the introduction of diverse mobility and increasingly severe disasters.

Background / data

- From the Link-Centric Era to the Link x Node x Management Era
- Number of representative stations (nodes) developed (all as of August 2022)



Michi-no-Eki (Roadside rest area): 1,198 stations. Disaster Prevention Michi no Eki: 39 stations
 Bus terminals (Busta): 1 in service, 6 in operation
 SA/PA: 884 locations (3 NEXCO companies, Metropolitan Expressway, Hanshin Expressway, Honshi Expressway)

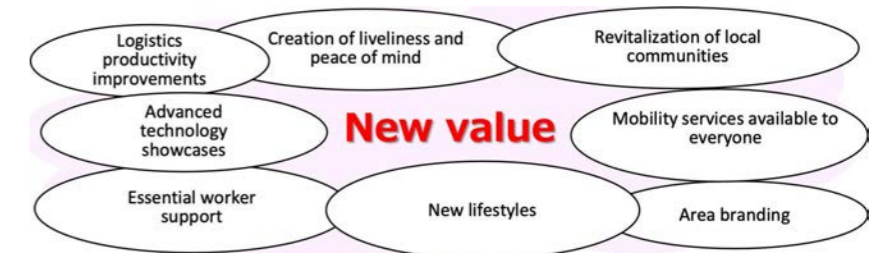
Develop measures to create new value, such as improving logistics productivity and creating liveliness and peace of mind, through the promotion of public-private partnerships

For SAs and PAs, study the possibility of utilizing PFI methods to improve functions other than the rest function. Also, support the development of parking lots that are integrated with electric vehicle charging facilities, base facilities for autonomous vehicles.

Conduct surveys on public involvement in relay transportation hubs and cargo handling spaces

Promote the enhancement of base functions by utilizing systems such as specified vehicle stopping facilities (Ref.1) and Disaster Prevention Base Parking Areas (Ref.2)

■ Future direction of the "base" policy



Relay hubs for trunk logistics Logistics relay base (Connect Area Hamamatsu)	Bases delivering the power of expressways to communities and towns Hasuda SA Outdoor parking Sales of local products	Central hub of community and town activity Local farmers play a central role in operating a base for local activity (Roadside rest area (Michi-no-Eki) "Uchiko Fresh Park Karan")
A base for mutual support in both normal times and times of disaster Activity base in time of disaster in the 2016 Kumamoto Earthquake: Roadside rest area "Asobo no Sato Kugino"	A hub for new mobility with a focus on urban areas 	Locations connecting non-autonomous and non-autonomous driving

Ref. 1: Under the revised Road Law of 2020, dedicated terminals for buses, taxis, trucks, and other vehicles (specified vehicle stopping facilities) were positioned as road accessories
 Ref. 2: The system was established by the Road Law revised in 2021

Strengthening the functions of transportation and disaster prevention centers

- Nationwide expansion of the Busta Project

We will promote the Busta project to enhance connections between various modes of transportation (modal connect) and create new road spaces.

Promote the introduction of public transportation systems, such as BRT, that contribute to reducing the environmental burden and revitalizing local communities.

Background / data

- Busta Shinjuku consolidates express bus and cab stops (opened in 2016).
- Guidelines (Ref.1) were compiled as a reference for planning the functional enhancement of transportation hubs (April 2021).
- BRT is being introduced and studied nationwide, and is in operation at 28 locations (as of April 2022, including trial operations)

Busta project business development and deepening of initiatives

In addition to Busta Shinjuku, the Busta Project is being promoted in six areas nationwide, including Shinagawa West Exit and Sannomiya station in Kobe

Study on qualitative and quantitative evaluation methods for the effects of functional enhancement of transportation hubs

Promote the introduction of public transportation systems such as BRT

Promoted the introduction of public transportation systems by disseminating guidelines(Ref.2) for local governments that outline the BRT study process, support menu, case studies, and linkage with mobility hubs

Focused support for the improvement of local public transport operating environments as defined in local government transportation and community development plans

Major areas of study and progress in the Busta Project

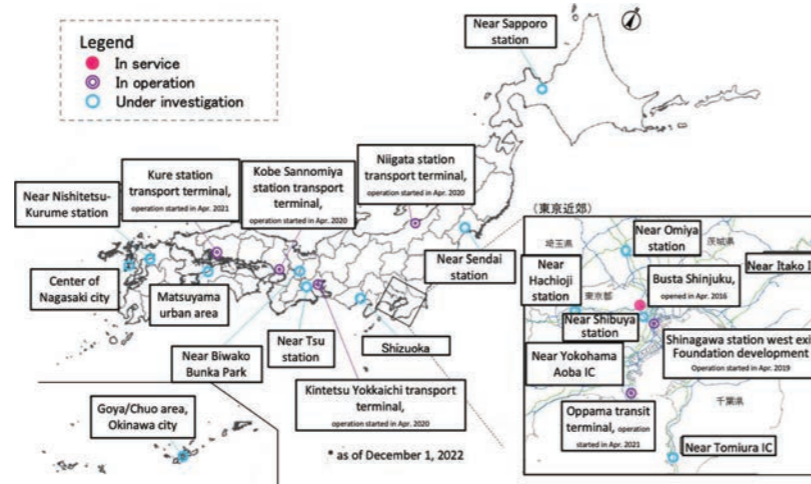


Image of enhanced traffic nodal function



Example of BRT



Ref. 1: Planning Guidelines for the Functional Enhancement of Transportation Hubs (Ministry of Land, Infrastructure, Transport and Tourism, Road Bureau)
 Ref. 2: Guidelines for the Introduction of Regional Public Transport (BRT), etc. Utilizing Road Space (Ministry of Land, Infrastructure, Transport and Tourism, Policy Bureau, City Bureau, Road Bureau)

Development of ICT transportation management

Promote the sophistication of data acquisition and utilization, which is the foundation for effective and efficient implementation of road traffic demand control (TDM) etc. using ICT, and promote problem solving through data-driven management.

Advanced traffic data acquisition and utilization

Background / data

- Expanding market for traffic-related data and accelerating development of telematics services in the private sector
- Approx. 90% of new car sales are expected to be connected cars by around 2035

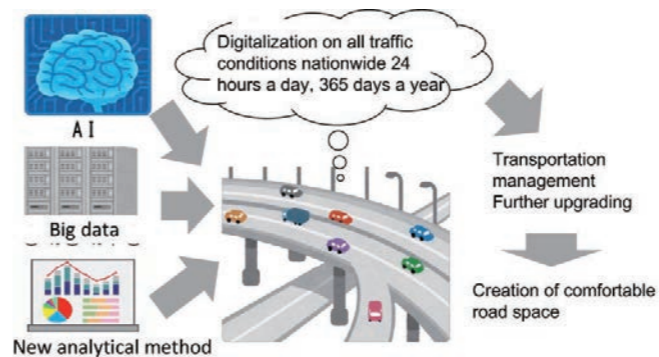
Establish a system for constant observation of traffic conditions by FY2027 by upgrading observation and estimation methods, and make traffic volume and other data open

utilizing big data such as constantly-monitored traffic data and ETC2.0

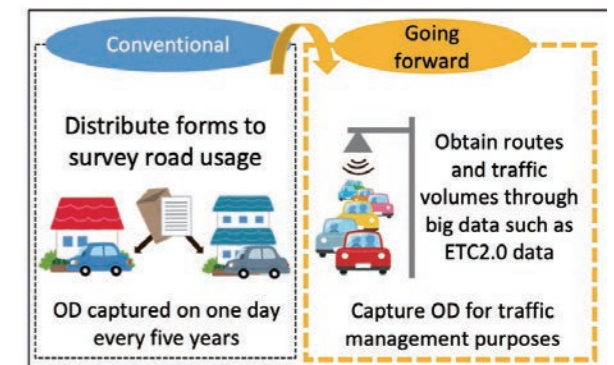
Review the conventional nationwide road and street traffic condition survey and establish a new road traffic survey system by

Promote initiatives to advance ICT traffic management by utilizing the forum of the Regional Road Economy Strategy Study Group (Ref.2)

Continuous observation system



New road traffic survey system



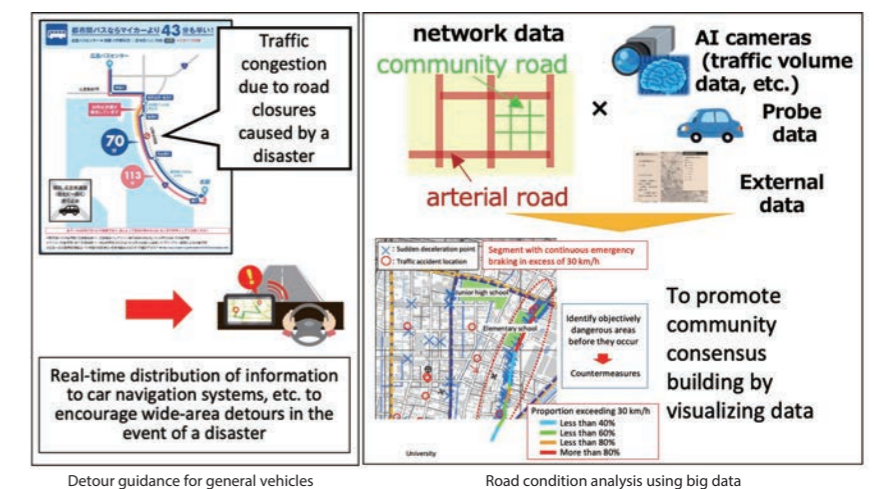
Problem solving through data-driven management

Promote collection and centralization of data in order to promptly implement disaster transportation management (Ref.3) after a disaster

Promote use of big data for effective and efficient traffic safety planning and community consensus building

Promote intangible and tangible measures for further effective utilization of traffic capacity based on analysis of current conditions and causes of traffic congestion.

Image of data-driven management



Ref. 1: Fuji Keizai, "Future Outlook for Connected Car, V2X and autonomous Driving Related Markets 2021"
 Ref. 2: Based on the opinions of experts, conduct research on regional economic revitalization strategies and social experiments/implementation using road space
 Ref. 3: Implemented through the Disaster Traffic Management Study Group consisting of the Ministry of Land, Infrastructure, Transport and Tourism, police, local governments, expressway companies, academic experts, and related organizations.

Efficient and effective traffic jam countermeasures

In order to maximize road network functionality, strengthen cooperation with local governments and promote EBPM (Ref.1) in congestion countermeasures and the speeding up of the PDCA cycle through data-driven management

Background / data

- Approximately 9,000 major congestion points (as of September 2022) identified by the national traffic congestion countermeasures council based on the latest traffic data, etc.
- Annual congestion loss per person is approx. 40 hours, which is equivalent to approx. 40% of the time spent driving/riding (approx. 100 hours).

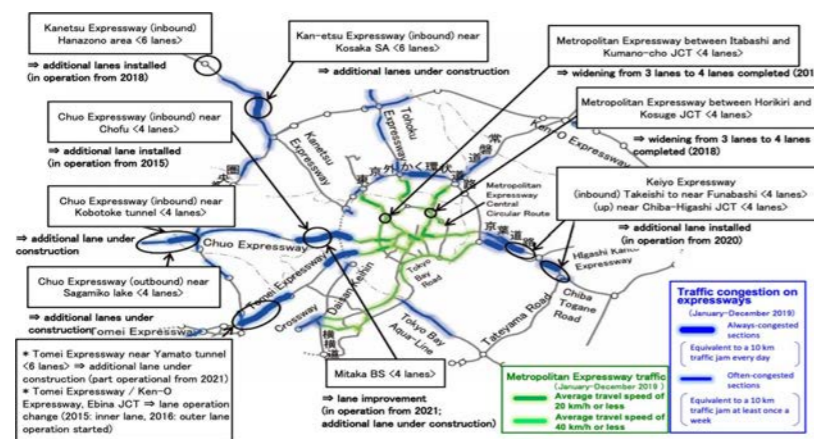
Promote efficient and effective intangible and tangible measures tailored to the current situation and causes of traffic congestion through data-driven management

To ensure smooth traffic on Important Logistics Roads, continue to request road traffic assessments (Ref.3) to be conducted by facility owners along the road

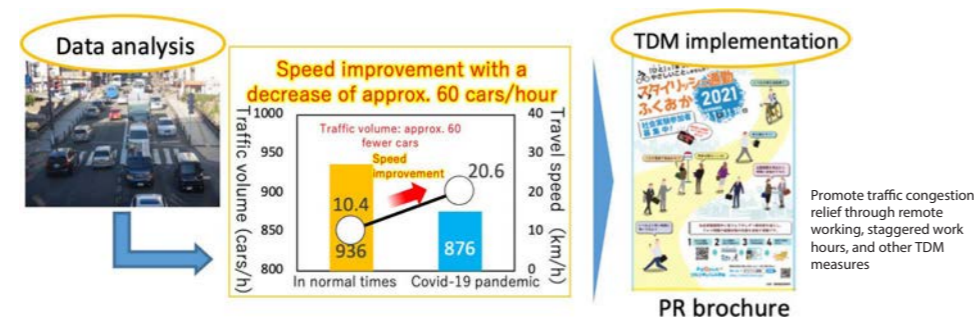
Strengthen cooperation with truck, bus etc. user groups at the council on congestion countermeasures (Ref.2) to promote quick-acting countermeasures, and study more efficient and effective measures based on monitoring results

Promote traffic congestion countermeasures in all prefectures through traffic demand management (TDM) using big data, etc.

Examples of congestion countermeasures through data-driven management



Implementation of pinpoint countermeasures using big data on expressways in the Tokyo metropolitan area (12 locations in project)



Effective TDM by analyzing critical points of traffic volume at times of congestion based on traffic data before and after the covid-19 pandemic, and by targeting the number of vehicles to reduce peak hour traffic (Fukuoka Prefecture)

Ref. 1: Evidence-based policy making
 Ref. 2: Established in each prefecture, etc., for road administrators, police, local governments, user groups, etc., to identify major congestion points in the region, and to study and implement countermeasures, including intangible and tangible
 Ref. 3: By predicting the impact on the surrounding traffic before siting and implementing countermeasures, facilities can be located without disturbing existing traffic, and additional countermeasures considered if traffic situation deteriorates after siting

Introduction of toll measures to optimize traffic flow

Based on the interim report of the Committee on National Arterial Road (Ref. 1), we will promote studies such as the introduction of a new toll system to build a sustainable expressway system.

In order to use expressways more wisely, we will consider the full-scale introduction of tolls based on congestion.

Review of metropolitan area tolls

Background / data

[July 2015: Three Wise Principles of Tolls]

- (1) A fair toll structure based on the level of usage
- (2) A simple and seamless toll system that transcends management entities
- (3) A strategic toll system to optimize traffic flow

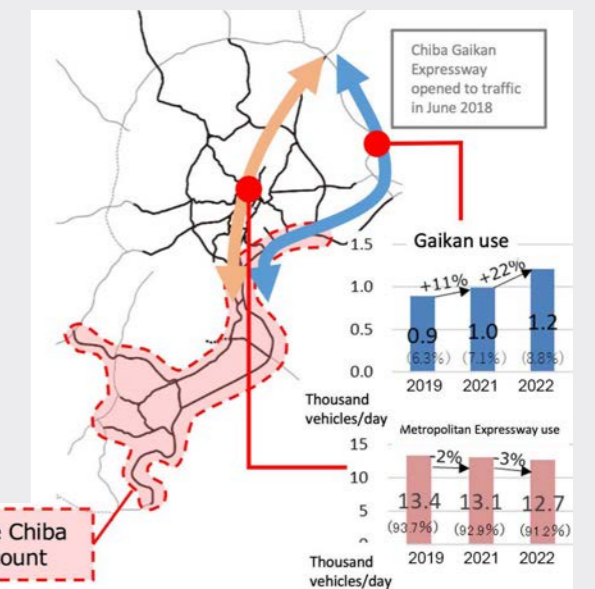
Sequential toll rate revisions in the Tokyo, Kinki, and Chukyo regions

[April 2022: Revision of expressway tolls in the Tokyo metropolitan area]

- Revision of maximum tolls
- Introduction of discounts for detours via the Chiba Gaikan Expressway
- Introduction of late-night discounts etc.

- Long-distance use of Metropolitan Expressway decreased, while short-distance use increased
- Late-night use of Metropolitan Expressway increased significantly amid an increase in overall traffic volume
- Increased use of Chiba Gaikan Expressway, bypassing central Tokyo

Areas eligible for the Chiba Gaikan detour discount



Main initiatives based on the Interim Report

Implement a review of discounts to address the main current issues regarding nationwide toll discounts

- Removal of holiday discounts during peak periods (year-end / New Year, Golden Week, O-Bon vacation) in light of intensifying traffic congestion, etc.
- Review of the late-night discount system, such as making only the portion of travel during the discount period eligible for the discount and expanding the discount period accordingly, will be implemented in FY2024, taking into account vehicle waits at toll booths

Promote the introduction of a toll system that is proportional to the distance traveled in order to relieve chronic traffic congestion on expressways in metropolitan areas.

There will be full-scale introduction of congestion-based toll rates (discounts and surcharges) in metropolitan areas.

Continuation of measures to expand volume and frequency discounts

Continuation of measures to expand volume and frequency discounts for motor carriers using ETC2.0

(Implemented until the end of March 2024 through supplementary budget for FY2022)

Ref. 1: Official announcement on August 4th, 2021

Logistics support in the road sector

We will promote road-related initiatives to achieve “simple and smooth logistics”, “bearer-friendly logistics”, and “strong and flexible logistics” in line with the outline of comprehensive logistics measures approved by the Cabinet in June, 2021.

In order to improve the working environment of drivers who support logistics, we will promote the expansion of parking spaces for resting facilities, efforts to promote the use of relay transportation, and efforts to promote the use of double-trailer truck to save manpower.

Ensure truck drivers have reliable rest opportunities

Background / data

- Lack of parking spaces for large vehicles has become a problem on expressways
- According to the standard for improvement of working hours for truck drivers, a rest period is required every four hours of driving (penalties will be applied starting from 2024).

In addition to the expansion of the number of parking spaces, there will be an introduction of dual-use spaces that can be used by both standard and large vehicles.

Number of large vehicle parking spaces expanded by the three NEXCO companies		
Construction in FY2020	Construction in FY2021	FY2022 -2024 Construction Plan
Increased by around 750	Increased by around 900	Increase of approx. 1,500 (planned)

Conducted demonstration test of parking space reservation system

Study on securing rest opportunities for drivers, conducted by an expert committee of the Expressway Agency and expressway companies

Image for dual use spaces



■ A parking lot reservation system that ensures drivers have a reliable opportunity to rest.

Demonstration tests confirm effectiveness of relay transportation
Promote the development of bases that contribute to practical application and dissemination

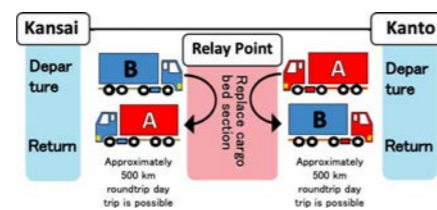


Image of relay transportation



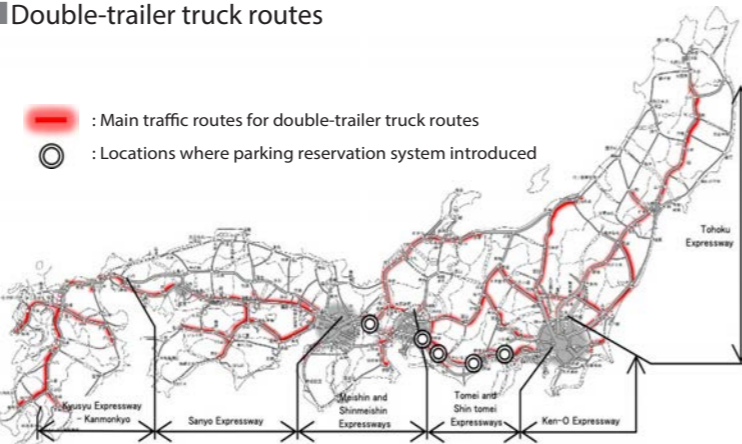
Demonstration experiment using roadside rest areas (Michi-no-Eki) (Hokkaido)

Promote the use of double-trailer trucks to save manpower

Background / data

- 13 operating companies, 207 licensed units (as of the end of September, 2022)
- Double-trailer truck priority parking: 238 spaces (as of the end of September, 2022)

■ Double-trailer truck routes



In November 2022, routes covered by double-trailer trucks were expanded (before expansion: approx. 2,050 km, after expansion: approx. 5,140 km)

Development of parking spaces to accommodate double-trailer trucks, demonstration of a reservation system, etc.

Promote 6-laning of Shin-Tomei and Shin-Meishin Expressways

Promote 6-laning of Shin-Tomei and Shin-Meishin to increase productivity by improving logistics efficiency.

Developing a new mobility and sharing use environment

In light of the emergence of electric kickboards, automated delivery robots, and the growing need for their use, we will promote the development of roads that contribute to the convenience of new mobility services

In light of the shift in usage patterns from ownership to sharing, we will promote the sharing of bicycles, automobiles, and other vehicles.

Providing environment for new mobility usage

Background / data

- In April 2022, the revised Road Traffic Act was enacted, establishing a new vehicle classification for electric kickboards as "specified small motorized bicycles" and for automatic delivery robots as "remote-controlled small vehicles"



Electric kickboard



Automated delivery robots

Photo courtesy of Council for Area Development and Management of Otemachi, Marunouchi, and Yurakucho, Luup, Inc., ZMP Inc.

Promote the development of riding space for bicycles and electric kickboards to ensure the safety of all road users, including new mobility

Consider support such as providing data on width, necessary for automated delivery robots to travel

Promote the use of sharing

Background / data

- The number of cities with full-scale introduction of shared bicycles increased from 87 (end FY2016) to 170 (end FY2020). (Ref.1)
- Number of domestic car sharing scheme members increased from about 2.25 million (2021) to about 2.64 million (2022), or about 400,000 in a year (Ref.2)

Promotion of shared cycle services

Further promote the spread of shared bicycles by providing know-how to local governments through guidelines (Ref.3) and visualizing the effects of their introduction

Use of road space for car sharing

Based on the results of social experiments (Ref.4) using road space as car sharing stations, guidelines were established for nationwide deployment



Car sharing (Highway 1, Otemachi Station ST)



Cycle sharing (Shizuoka City, Shizuoka Prefecture)

Ref. 1: According to Ministry of Land, Infrastructure, Transport and Tourism, City Bureau
Ref. 2: According to Foundation for Promoting Personal Mobility and Ecological Transportation
Ref. 3: To be established in FY2022

Ref. 4: Install and operate car sharing stations on roads with high transfer convenience from public transportation, and verify vehicle usage and the effect of improved convenience (near Otemachi Station on National Highway 1 and near Shimbashi Station on National Highway 15)

Support for the diffusion and promotion of autonomous driving

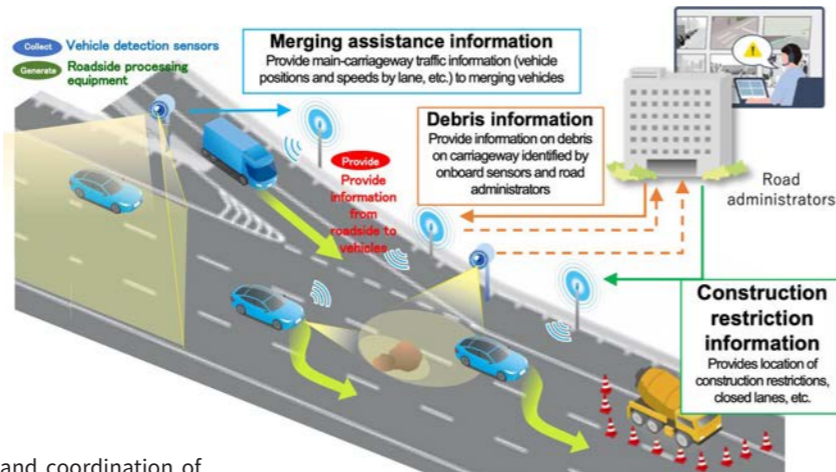
Focused support local government that aim to develop communities and regions utilizing autonomous driving, and promote joint research with the private sector toward the realization of autonomous driving on expressways.

Creation of road environment necessary for autonomous vehicles

Background / data

- [Government target] Realization of Level 4 autonomous driving on expressways by 2025

Promote joint research through public-private partnerships on methods to provide information such as guidelines for managing lane markings and advance signage (lane-merging information, construction restriction information) in order to realize safe and smooth autonomous driving on expressways.



Conduct demonstration experiments on provision of lane-merging information on expressways, utilizing the results of joint research.

Promote next-generation ITS and construction and coordination of platforms for efficient and effective information generation

Regional support using autonomous driving

Background / data

- [Government Target] Realization of regional unmanned autonomous driving services in about 50 locations by FY2025, and more than 100 locations nationwide by FY2027
- Conducted demonstration experiments of autonomous driving services at a cumulative total of 18 roadside rest areas (Michi-no-Eki), with full social implementation at four of them (Kamikoani, Okueigenji Keiryu no Sato, Miyama City Yamakawa Branch, and Akagi Kogen)

Focused support for the development of a driving environment based on development community plans utilizing autonomous driving, and technical support for planning driving space.

Conduct surveys, studies, and demonstration experiments on traffic safety measures and provision of information on road traffic conditions from infrastructure for the realization of urban autonomous driving services

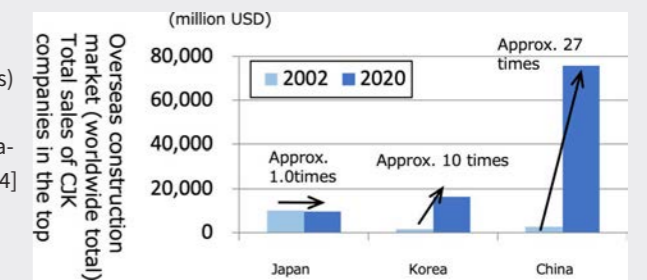


Export infrastructure systems in the road sector

In order to capture the global demand for infrastructure, we will work together with the public and private sectors to promote the acquisition of overseas road projects based on the “Strategy for Overseas Development of Japanese Infrastructure Systems 2025” [Ref. 1] and the “Strategy for Overseas Development of the Road Sector (Ref.2)

Background / data

- Demand for transportation infrastructure (road, rail, ports, airports) in Asia will be US\$520 billion/year (2016-2030) [Ref. 3]
- In the overseas construction market, Chinese and Korean companies have been rapidly increasing their orders in recent years. [Ref. 4]

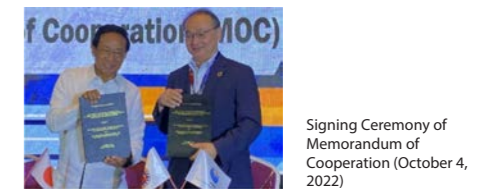


In accordance with the “Act on Promotion of Japanese Companies' Participation in Overseas Social Infrastructure Projects”, we promote the overseas development of Japanese companies together with expressway companies.

We provide support and encouragement to obtain O&M projects [Ref. 5] for tunnels and bridges to be constructed with loans in yen

Examples of tendering support

Conclusion of MOC for cooperation over tunnels (Philippines)
Further strengthen ties with Japanese expressway companies by sharing O&M technologies and holding workshops on the occasion of the groundbreaking of the first full-scale road tunnel (Davao Bypass) in the Philippines



Examples Overseas Development by Expressway Companies

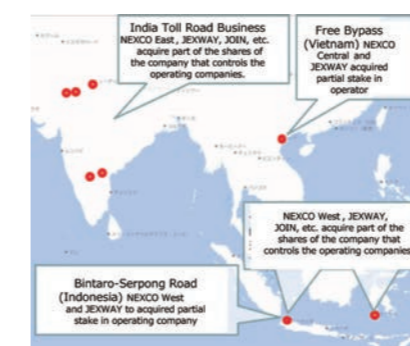
Non-Destructive Inspection of Structures (US) NEXCO
West Japan established NEXCO-West USA, Inc. to enter the bridge inspection business in the U.S.A. and to investigate advanced technologies. They received orders for non-destructive point infrared camera inspection of concrete slabs using an infrared camera, etc.



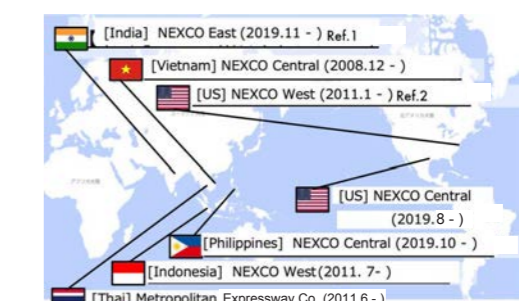
Technical assistance for road operation and maintenance (Bangladesh)
JV including NEXCO East received an order from the Asian Development Bank (ADB), the first Japanese expressway company to receive an order from the ADB



Major participation road PPP projects



Overseas offices of expressway companies



In addition to the above, group companies Central Nippon Exis Company and Hanshin Technical Laboratory have established subsidiaries in Taiwan and China, respectively

Ref. 1:Decided by the Keiyo Infra Strategy Council in June 2022, the Strategy is based on the "Strategy for Overseas Development of Japanese Infrastructure Systems 2025," which includes the formulation of sector-specific action plans and the creation of multiple layers of action KPIs, plus specific measures
Ref. 2: Decided by the Keiyo Infrastructure Strategy Council in February 2019 Ref. 3: Asian Development Bank Meeting Asia's Infrastructure Needs
Ref. 4:ENR's The Top International Contractors (2003,2021) Orders received by top companies in terms of global market share for each year, as calculated by ENR's questionnaire and aggregated by country. Subject companies vary each year. Ref. 5: O&M: Operation & Maintenance