# WHITE PAPER ON LAND, INFRASTRUCTURE, TRANSPORT AND TOURISM IN JAPAN, 2019

**Ministry of Land, Infrastructure, Transport and Tourism**

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## Part II Trend in MLIT Policies

## Column



※ Maps used in this white paper may not necessarily indicate Japanese territory comprehensively.

# Part II

# Trend in MLIT Policies

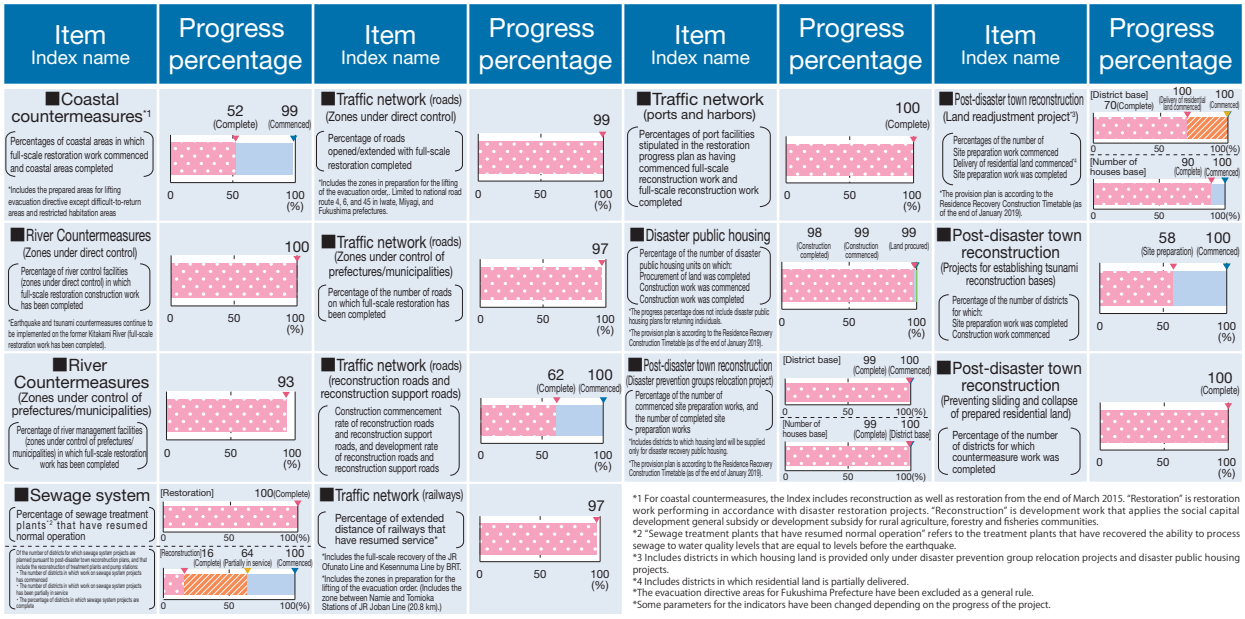
# Chapter 1 Initiatives towards Restoration and Reconstruction from the Great East Japan Earthquake

## Section 1 Current Status and Measures Towards Restoration and Reconstruction

Accelerating restoration from the Great East Japan Earthquake is one of the top priorities of the MLIT. Although the number of refugees has decreased from the initial 470 thousand individuals at the time of the earthquake, around 48 thousand people[Note 1] currently lead lives in evacuation in approximately 997 municipalities[Note 2] throughout 47 prefectures. Although the restoration of infrastructure for everyday life, reconstruction of houses, and revitalization of industry and livelihoods are progressing steadily, it is necessary to provide detailed support to cope with the diversifying needs of the regions and individuals concerned. The MLIT will come together as a united body through the Regional Development Bureau, the District Transport Bureau, the Japan Meteorological Agency, and the Japan Coast Guard, etc., to take measures at their respective work sites by the completion of the recovery period in 2020.

Restoration and reconstruction of basic infrastructure such as ports and roads, and reconstruction of houses is progressing steadily and we will continue to ensure we promote these measures. Furthermore, we will provide indirect support, such as by maintaining and securing public transportation and promoting tourism in the disaster-affected areas. In particular, as the promotion of tourism is important for the restoration of livelihoods in disaster-affected areas, we have been engaging in careful and detailed initiatives to encourage people to visit Tohoku, such as initiatives to eradicate rumors, according to the situation in each prefecture. We are providing support as necessary to establish special reconstruction and revitalization zones, etc., for the recovery and reconstruction of Fukushima.

**Figure II-1-1-1** Status of Progress Towards Full-scale Restoration and Reconstruction of Public Infrastructures (as of the end of January 2019)




Source) MLIT

Note 1 47, 892 individuals. As of April 9, 2019. Reconstruction Agency study.
Note 2 As of April 9, 2019. Reconstruction Agency study.

# Section 2 Steady Recovery and Reconstruction of Infrastructure and Transportation

## (1) Outline

For the public infrastructure under the jurisdiction of the MLIT, we are steadily working toward transitioning to full-scale restoration and reconstruction based on the project plan and progress schedule. We will continue our endeavors now and in the future to achieve a full recovery of northeastern Japan as soon as possible, while staying mindful of requests from other disaster-stricken areas.

## (2) Coastal Countermeasures

Restoration and reconstruction work for coastal levees has begun in 664 districts and had been completed in 400 districts, of the shores of the 670 districts until the end of March 2019. The approximately 40 km of national construction area (including the section for which the national government will cover disaster recovery) had been completed along its entire length at the end of March 2017. During construction, whenever possible we are incorporating structural modifications so that the effects of the levees will persistently demonstrate their capabilities, even when they are struck by tsunamis. In Iwanuma City and Yamamoto Town, Miyagi, we have constructed the coastal levees integrated with levees and vegetation planted. We also actively use disaster waste for coastal levee material, while paying careful attention to the surrounding landscape and natural environment during reconstruction.

## (3) River Countermeasures

Full-scale restoration work to secure pre-earthquake safety levels has been completed for the affected river management facilities in zones managed by the national government. Building on this, we are implementing the necessary earthquake and tsunami countermeasures, and aim to complete them by the end of FY2021. In addition, full-scale restoration work has been completed in approximately 90 percent of locations in zones under control of prefectures/municipalities.

## (4) Sewage System

With regard to wastewater treatment plants, all 124 damaged plants have now been restored (excluding three plants within the Fukushima evacuation order area and two plants that have been decommissioned). Also, in regards to the 984 km of sewer pipes affected by the disaster, 915 km was fully restored as of the end of March 2019. We will continue to work in accordance with the reconstruction plan and aim for the earliest possible restoration and reconstruction.

## (5) Countermeasures against Sediment Disasters

We will push ahead with countermeasures against sediment disasters in Iwate, Miyagi and Fukushima prefectures, where sediment disasters occurred at the time of the Great East Japan Earthquake.

## (6) Roads

(1) In regard to expressways, the Joban Expressway, which was fully opened to traffic on March 1, 2015, is frequently used. The Joban Expressway also encourages companies to move in the area along this expressway in Hamadori, Fukushima, which generates employment in this area. Work on the conversion of parts of the Joban Expressway into a four-lane highway and the addition of lanes is expected to be completed within the Reconstruction and Revitalization Period. Additional interchanges (Okuma IC and Futaba IC) were scheduled for development in June 2015, and Okuma IC was opened on March 31, 2019. (2) In regard to the national highways that are under direct control of the MLIT, full-scale reconstructions were basically completed by the end of FY2012. Furthermore, the major disaster areas were reconstructed based on the restoration plan, including the bridges on national road route 45 and other structures. (3) In regard to the reconstruction of roads/support roads, to contribute to the post-disaster reconstruction of afflicted areas, the goal is to complete reconstruction as soon as possible using the Project Promotion Process (PPP), which makes use of the private sector's technological skills. Projects were planned for a total of 550 km of roads and support roads, including the section opened after the Great East Japan Earthquake. Over 90% (503 km) of the roads have opened or have moved a step forward toward reopening. In FY2018, the entire Tohoku-Odan Expressway (Kamaishi– Hanamaki) with a total length of the approximately 80 km was opened.

### (7) Railroads

Of the railways that were damaged by the Great East Japan Earthquake, the Sanriku Railway resumed full operations in April 2014, the Ishinomaki Line in March 2015, and the Senseki Line in May 2015. Regarding the Ofunato Line and the Kesennuma Line, the BRT[Note] has been operating as a temporary restoration measure to secure public transportation, and acceptance of full-scale restoration by BRT was agreed for the Ofunato Line in December 2015 and for Kesennuma Line in March 2016.

As for the Yamada Line, JR East and relevant parties, including local government bodies, agreed to transfer the management of the line from JR East to Sanriku Railway in February 2015. Restoration work began in March 2015, and the line was reopened on March 23, 2019, as the Sanriku Railway Rias Line. As a result, the only railway line with zones where service is still suspended is Japan Railways East Japan Joban Line.

With regard to the Joban Line, the policy to resume operations for the entire line in the future was decided in March 2015. In March 2016, the goal became to open the entire line by the end of FY2019. Of the sections that were not operating, the section between Haranomachi and Odaka stations reopened in July 2016, the section between Soma and Hamayoshida stations reopened in December 2016, the section between Odaka and Namie stations reopened in April 2017, and the section between Tomioka and Tatsuta stations reopened in October 2017. In addition, the goal is to open the remaining section between Namie and Tomioka Stations by the end of FY2019.

### (8) Ports/Harbors

With regard to ports and harbors, the breakwaters at the ports of Soma and Kamaishi, and disaster restoration of major port facilities, was completed in FY2017. Port/harbor facilities that are foundational to the economic recovery, such as quay walls and breakwaters, have been repaired. The Japan Coast Guard plans to complete the restoration of the incomplete 3 (as of March 2019) of the 158 aids to navigation that were damaged by the Great East Japan Earthquake, in concert with the restoration of ports, harbors and breakwaters.

Meanwhile, maintenance of the sea area landfill sites of the Sendai Shiogama and Ishinomaki ports zone and the Ibaraki and Hitachi-Naka ports zone is underway in order to advance the disposal of disaster waste produced by the Great East Japan Earthquake. In addition to the landfill disposal conducted since FY2012, we began providing international distribution terminals in Sendai-Shiogama Sendai Port District in FY2017 for use as port facilities needed for the formation of distribution centers and energy-import centers supporting the economies of the disaster-affected areas. We are also working with private business operators to maintain facilities such as quay walls and breakwaters in the Port of Onahama and other areas.

## Section 3 Promoting Post-Disaster Town Reconstruction and Securing Stability of Residency

To give the disaster victims a prospect as to when they will be able to secure a residence, we are working on the promotion of post-disaster town reconstruction and securing the stability of residency, taking into account the "Residence Recovery Construction Timetable" that organizes the prospects for the provision of building lots for private residences and the completion of disaster public housing based on reports from local governments. As the reconstruction projects progress full-scale in the disaster affected areas, we need to compensate for the lack of personnel and know-how in the disaster affected municipalities to help the projects progress smoothly.

For these reasons, in addition to supporting the progress of projects by providing personnel support to disaster affected local governments, implementing procurement methods for relieving the burden of procurement operations in disaster affected local governments, and utilizing the Urban Renaissance Agency, we also disseminate information by providing technical support through notifications regarding procedures for the efficient execution of reconstruction projects and by posting the "Reconstructive City Development Index", an online website for compiling support initiatives.

### (1) Promoting Post-disaster Town Reconstruction

For post-disaster town reconstruction, various projects are being carried out, such as the Disaster Prevention Group Relocation Project, which helps people whose homes are in zones considered unsuitable for residence, and the Disaster

**Note** Abbreviation for Bus Rapid Transit, meaning a bus transportation system that is faster and more punctual than regular route buses by operating buses on bus-only roads.

Urban Area Land Recovery and Readjustment Project, which supports comprehensive town building by combining work on public facilities, such as building sites and roads, with site reconstruction work on tsunami disaster-affected urban areas, as well as the preparation of building sites for relocation to higher ground.

As of the end of March 2019, the Disaster Prevention Group Relocation Project had secured the consent of the Minister, which is a statutory procedure required for starting the project, for all 330 districts in which implementation of the project was planned under the Residence Recovery Construction Timetable; all districts have started site preparation work and 329 districts have completed such work. As for Disaster Urban Area Land Recovery and Readjustment Project, project approval was obtained and construction work started in all 50 districts under the Residence Recovery Construction Timetable, and 44 of those districts have completed site preparation work.

### (2) Securing Stability of Residency

For victims who are able to build or obtain housing on their own, interest rates are lowered for disaster recovery housing loans provided by the Japan Housing Finance Agency. Disaster recovery housing loans are also provided to victims who only suffered damage to real estate. Pre-existing loans are given up to five-year extensions on payments and payment deadlines, and interest rates are lowered for such loans when the borrowers meet certain criteria.

Victims who face difficulties in building or obtaining housing on their own are being provided public housing (disaster public housing) by local governments. In addition to distributing grants to offset the cost of maintenance in these facilities and expenses resulting from lowering rent for victims, we are devising special arrangements concerning the requirements for occupant qualification and assignment of housing facilities.

Moreover, in response to the Fukushima No. 1 Nuclear Power Plant accident, we plan to secure stability of residency for refugees residing in evacuation order areas (evacuees or returnees) by implementing similar measures as disaster victims when moving into disaster public housing.

**Figure II-1-3-1 Development Status of Disaster Public Housing (March 31, 2019)**

| Prefecture | Procuring of land | Design started | Construction started | Construction completed | Overall plan |
|---|---|---|---|---|---|
| Iwate Prefecture | 5,833 houses<br>216 districts | 5,833 houses<br>216 districts | 5,727 houses<br>214 districts | 5,672 houses<br>210 districts | 5,833 houses |
| Miyagi Prefecture | 15,823 houses<br>443 districts | 15,823 houses<br>443 districts | 15,823 houses<br>443 districts | 15,823 houses<br>443 districts | 15,823 houses |
| Fukushima Prefecture | 8,122 houses<br>190 districts | 8,027 houses<br>188 districts | 7,917 houses<br>184 districts | 7,867 houses<br>183 districts | 8,122 houses Note |

(Note) - The plan number is from the Residence Recovery Construction Timetable (as of the end of March 2019).
- Regarding Fukushima's disaster public housing, the overall plan is not finalized for disaster public housing for returnees from evacuation due to the nuclear disaster.
Source) MLIT

## Section 4 Securing Local Public Transportation and Promoting Tourism

### (1) Securing Local Public Transportation

In regards to local public transportation, which suffered damage from the Great East Japan Earthquake, we are implementing exceptional measures, such as mitigating the auxiliary requirements for the Regional Public Transportation Securement, Sustentation, and Improvement Projects to support the securing and maintaining of local public transportation systems, such as buses, and to share taxis in disaster affected areas. Specifically, these measures support the securing and maintaining of inter-regional mainline bus transportation networks, as well as community bus transportation for daily commutes between evacuation shelters, temporary housing, remaining settlements, and hospitals, shops, and public agencies.

### (2) Reviving Tourism

The number of international tourists slumped due to the effects of the Great East Japan Earthquake. In order to restore the number to previous levels, we have set a target of 1.5 million guest nights for international visitors in total in the six prefectures of the Tohoku region by 2020. Following on from their efforts in 2017, the Japan Tourism Agency and the Japan National Tourism Organization (JNTO) conducted intensive promotion of the Tohoku Region, including dissem-

inating information that highlights the appeal of the Tohoku region via global media, inviting media and travel agents from each market to the region, conducting joint advertising campaigns, and encouraging online travel agents to send tourists to the region, as a global destination campaign aimed at major overseas markets and featuring the Tohoku Region.

In addition, initiatives to attract tourists from overseas by capitalizing on the effects of the rapid increase in inbound tourism to Japan, in order to accelerate the recovery of disaster-affected regions through tourism, are supported by the Subsidy for Tohoku Tourism Revival established in FY2016. Initiatives include providing more fulfilling activities during tourists' stay (e.g. experiential programs conducted according to proposals made by the local communities), and creation of an environment suitable for receiving foreign travelers.

As a result, according to the Overnight Travel Statistics Survey by the Japan Tourism Agency, the total number of guest nights for international visitors in 2018 in the six prefectures of the Tohoku region (preliminary figure) was 1.214 million nights. The number increased by 25.6% from the previous year, which shows large growth compared to the 8.4% increase for the whole of Japan.

Furthermore, to facilitate the earliest possible recovery of Fukushima Prefecture to the greatest possible extent, including domestic tourism, we are supporting tourism-related businesses that contributed to the efforts for disaster recovery and reputation damage control, such as domestic promotions and a project to revive educational travel implemented by the prefectural government.

## Section 5 Ensuring the Smooth Execution of Reconstruction Projects

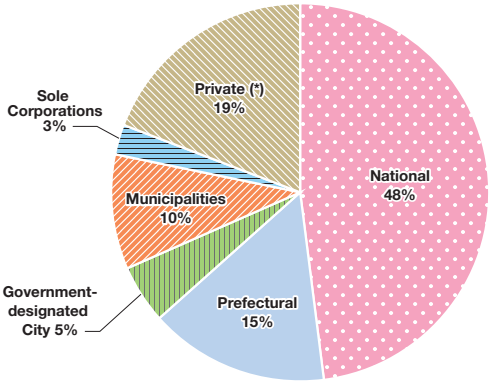
The restoration/reconstruction projects for the disaster areas are moving forward steadily and the home rebuilding/town reconstruction is basically progressing according to the "Residence Recovery Construction Time Table".

The MLIT has been taking necessary measures to assist the smooth execution of reconstruction projects by cooperating with the institutions concerned and related industries in "Restoration Acceleration Meetings" (held 9 times since March 2013) and the "Council to Secure Execution of Reconstruction Projects" (held 9 times since December 2011). In order to set predetermined prices that reflect current market prices, the unit price of design work for public works in the three affected prefectures has been raised seven times since April 2013, and reconstruction production rates, which are based on construction works conducted, and the reconstruction coefficient were introduced.

Furthermore, the MLIT is also working on measures to ensure smooth execution of projects for public building construction, such as disaster public housing, schools, government offices, and hospitals. These measures include the reflection of current market prices and the actual status of construction sites at predetermined prices, such as by continuing the special measure on standard construction expenses for disaster public housing and promoting the use of the construction and repair cost estimation method developed by the MLIT for the reconstruction of public buildings, as well as by providing individual consultation with care at the public buildings construction inquiry desk.

**Figure II-1-5-1 Consultation at Public Buildings Construction Inquiry Desk (Nationwide Total)**

**Breakdown of Organizations using Consultation Service (April 2018 to March 2019) (nationwide)**




* Private: Private orderers, design offices, construction business operators, etc.

**Breakdown of Use of Consultation Service by Content (April 2018 to March 2019)**

| Content of Consultation | Total Number of Consultations (nationwide) | Total Number of Consultations (Tohoku jurisdiction) |
|---|---|---|
| Planning and budget measures | 305 | 72 |
| Order and implementation (design, quantity survey, bidding process and construction administration) | 1,102 | 55 |
| Conservation | 704 | 79 |
| Other | 181 | 12 |
| Total | 2,292 | 218 |

Inquiries on consultations should be directed to the public buildings construction inquiry desk on the MLIT website or to hqt-eizensoudan@gxb.mlit.go.jp.

Source) MLIT

## Section 6 Reconstruction and Revitalization of Fukushima

After the Tokyo Electric Power Fukushima No. 1 Nuclear Power Plant accident, the number of people instructed to evacuate from the evacuation zones was approximately 23,000 individuals[Note 1] (according to studies by the Cabinet Office), while the total number of refugees in Fukushima Prefecture, including self-imposed evacuees, climbed to approximately 40,000 individuals[Note 2] (according to studies by Fukushima Prefecture). Evacuation directives have been lifted in most restricted residential zones and zones that are ready for the lifting of the directives. It is necessary to promote the creation of an environment conducive to return and further deepen strategies to support return and support for new lifestyles, as well as to expand initiatives aimed at rebuilding businesses, livelihoods and lives, and achieving self-sufficiency.

In areas where return has been deemed to be difficult, a system of plans has been established under the Revised Act on Special Measures for the Rebirth of Fukushima, which was promulgated and enacted in May 2017, to promote the rebuilding and recovery of Special Reconstruction and Revitalization Zones, with the aim of lifting evacuation orders and making resettlement possible within about five years. In 2018, Iitate and Katsurao villages became subject to reconstruction plans for Special Reconstruction and Revitalization Zones, joining Futaba, Okuma, Namie, and Tomioka towns, and work has begun in those areas. The MLIT is working to restore and reconstruct infrastructures in accordance with the Timetable and to revive tourism. In addition, within the framework of the amended Act on Special Measures for the Rebirth of Fukushima, measures are taken so that we can carry out infrastructure improvement projects on behalf of municipalities and provide support for the establishment of new downtown areas in Special Reconstruction and Revitalization Zones, so that allowing people to live in them.

## Section 7 Building Tsunami-resistant Communities by Learning from the Great East Japan Earthquake

Based on the lessons learned from the Great East Japan Earthquake, in December 2011 the Law for Tsunami Disaster Prevention District Building was established and put into effect. This law is based on the thinking that even when a maximum level tsunami occurs, people's lives are the number one priority, and the promotes building districts that are well fortified against tsunami disasters with the concept of multiple defenses that combine structural and non-structural measures.

The MLIT provided technical advice related to the enactment of the aforementioned law to support local governments in building communities resistant to tsunamis, published guidance documents regarding the settings for tsunami flood suppositions, and is providing technical support, including consultation for inquiries related to tsunami flood suppositions.

As of the end of March 2019, 36 prefectures had announced tsunami flood suppositions for maximum class tsunamis. Furthermore, tsunami disaster prone areas have been designated in twelve prefectures, and of these, Izu City in Shizuoka Prefecture has been designated a special disaster prone area. Plans (promotion plans) have been created to generally promote the creation of tsunami disaster caution zones in 12 municipalities.

In the disaster affected areas, 24 districts are proceeding with recovery efforts using the Law concerning the Construction of Tsunami-resistant Communities, like making city planning decisions regarding the Tsunami-resistant Urban District Forming Facility by Building a Housing Complex (as of the end of March 2019).

In addition, in order to further promote the building of tsunami-resistant communities that can cope with various tsunami, we set up the Support Team for Tsunami-Resistant Communities in December 2018 as a cross-department, one-stop service providing consultation and proposals.

Going forward, we must take into consideration the characteristics of the entire region and using the existing public facilities to combine 'structural' measures like sea embankments with 'non-structural' measures like evacuation drills to further proactively advance the construction of tsunami-resistant communities to protect the lives of citizens.

Note 1 As of April 1, 2019.
Note 2 As of April 2019.

# Chapter 2 Deploying Land, Infrastructure, Transport and Tourism Administration Tailored to Urges of the Times

## Section 1 Driving the Implementation of a National Land Policy Package

Taking the "Grand Design of National Spatial Development Toward 2050", published by the MLIT in July 2014, into consideration, in August 2015 changes to the Second National Spatial Strategy (National Plan) and the National Land Use Plan (National Plan) for roughly the next 10 years were adopted through a Cabinet decision. In March 2016, the National Spatial Strategies (Regional Plans) were adopted through a decision of the Minister of Land, Infrastructure Transport and Tourism.

The National Spatial Strategies (National Plan) have the basic vision of building convection-promoting national land that creates new value by generating active movements of people, goods, money, and information between regions (convection) by refining regional individualities that are varied in a society whose population is in serious decline. Also, as national and regional structures for creating convection, plans were laid out for the formation of compactness and of networks that connect compact regions capable of providing various services necessary for everyday life with traffic and telecommunications networks. These efforts should contribute to the realization of a balanced development of national land that is suitable in the coming age and to leveraging the unique individualities of nature, culture, and industries specific to each region.

The Fifth National Land Use Plan (National Plan) aims at land use to enhance resilience, sustainability and prosperity in our country.

In order to give consideration to effective comprehensive policies under both plans, the four technical committees that were established within the National Land Development Council plan promotion task force considered policies for national land that promotes convection, and reported their findings to the National Land Development Council and plan promotion task force. In addition, promotion of Regional Cooperation Projects based on characteristics and resources of each of the eight regional blocks around Japan, as defined in the National Spatial Strategies (Regional Plans), is ongoing, and support is being provided for the creation of early examples. Furthermore, the formulation and modification of the National Land Use Plans (prefectural and municipal plans) continue to progress, and investigations and assistance are being implemented toward their promotion.

# Section 2 Measures, etc., against Aging Social Infrastructures

## (1) Measures against aging social infrastructure

Going forward, it is anticipated that Japanese infrastructure that was built during or after the period of rapid economic growth will deteriorate at the same time (Figure II-2-2-1). It is necessary to ensure the safety and security of citizens, and to reduce and standardize the total cost of maintenance and replacement, by maintaining and replacing infrastructure that will deteriorate in a systematic manner.

With this in mind, in November 2013, the Basic Plan for Extending Service Life of Infrastructure was devised as a whole-of-government initiative. It is a basic plan that indicates courses of action for systematic maintenance and replacement, etc.

Based on this plan, the MLIT devised the MLIT Plan for Extending Service Life of Infrastructure (action plan) in May 2014 ahead of all other ministries and agencies. The plan emphasizes preventative maintenance to clarify medium to long-term courses of action, in order to thoroughly promote maintenance and replacement of infrastructure under the jurisdiction of the MLIT.

At present, according to the action plan, managers of each facility conduct inspections and repairs, etc., and strive to conduct systematic maintenance and replacement, such as by devising life extension plans (individual facility plans) that include specific policies for each individual facility.

The MLIT will continue to work on measures to tackle aging infrastructure in a focused and systematic manner so that the required infrastructure will be sustainably maintained.

**Figure II-2-2-1 Present Status of Aging Social Infrastructure**

Of all the infrastructure that was built after the rapid growth period of the nation's economy, including highway bridges, tunnels, rivers, sewage systems and ports and harbors, the proportion of those facilities that will reach 50 years of age or older will expand at an accelerating pace.

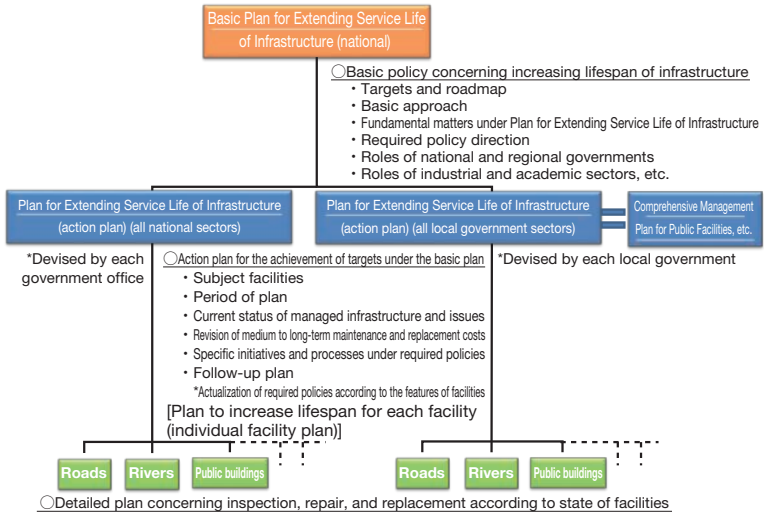
* The status of aging facilities is not uniformly determined by when they were initially built, but varies depending on where they are located, how they have been maintained and managed and so on. For convenience's sake, an actual age of 50 years after initial construction is used as a measure of aging.

<<Percentage of social infrastructure that is 50 years old or older>>

| | March 2018 | March 2023 | March 2033 |
|---|---|---|---|
| Highway bridges [about 730,000 bridges[Note 1] (2 m long or longer)] | Approx. 25% | Approx. 39% | Approx. 63% |
| Tunnels [about 11,000 tunnels[Note 2]] | Approx. 20% | Approx. 27% | Approx. 42% |
| River management facilities (such as water gates) [about 10,000 facilities[Note 3]] | Approx. 32% | Approx. 42% | Approx. 62% |
| Sewerage pipes [Total distance: approx. 470,000 km[Note 4]] | Approx. 4% | Approx. 8% | Approx. 21% |
| Port and harbor quays [Approx. 5,000 facilities[Note 5] (4.5 m deep or deeper)] | Approx. 17% | Approx. 32% | Approx. 58% |

Note 1: Of the approximately 730,000 highway bridges, approximately 230,000 bridges for which the year of initial construction is unknown have been excluded from the calculation of percentage. (FY2017 total)
Note 2: Of the approximately 11,000 tunnels, approximately 400 tunnels for which the year of initial construction is unknown have been excluded from the calculation of percentage. (FY2017 total)
Note 3: State-managed facilities only, including approximately 1,000 facilities whose year of initial construction is unknown. (Since records generally exist for facilities built within the last 50 years, facilities whose year of initial construction is unknown are sorted out as being approximately 50 years of age or older.) (FY2017 total)
Note 4: Including approximately 20,000 km of piping whose year of initial construction is unknown. (Since records generally exist for facilities built within the last 30 years, facilities whose year of initial construction is unknown are sorted out as being approximately 30 years of age or older and their length proportionally distributed in the ratio of construction by documented number of years elapsed.) (FY2017 total)
Note 5: Approximately 100 quays whose year of initial construction is unknown have been excluded from percentage calculations. (FY2017 total)
Source) MLIT

**Figure II-2-2-2 System of Plans to Increase Lifespan of Infrastructure**



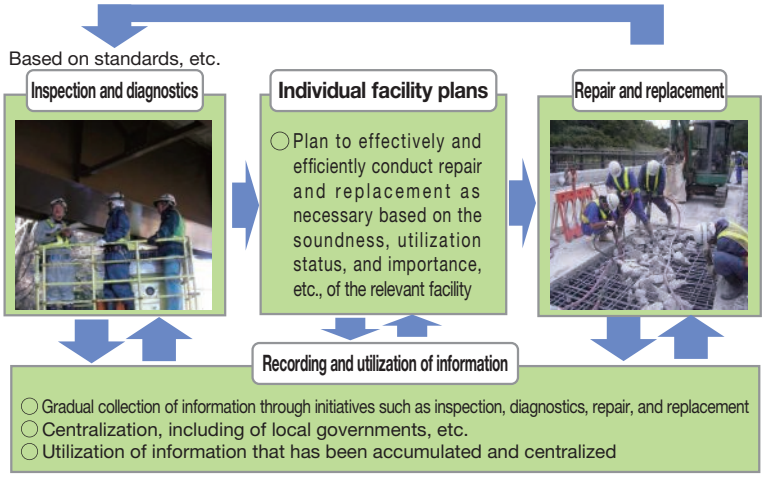
Source) MLIT

## (2) Development and Expansion of the Maintenance Industry

With regard to how social infrastructures should be maintained and replaced in the future, steady progress is being made based on a 2013 report by the Social Infrastructures Maintenance Strategy Sub-committee under the Infrastructure Development Council and the Traffic Policy Council. Concerning a qualification system for inspections and diagnoses, required knowledge and skills were set forth according to job descriptions, a system for registering private qualifications was introduced, and the registered qualifications on inspections, diagnoses and the like have been used since the ordering activity of FY2015.

Figure II-2-2-3 Creation of a Maintenance Cycle Centering on Individual Facilities Plans

Creation of a maintenance cycle that includes inspection, diagnostics, repair, replacement, and recording and utilization of information, centering on the plan to increase lifespan for each facility (individual facility plan)




Source) MLIT

With regard to a "framework for conducting maintenance and management smoothly and measures for supporting local governments," we are having discussions in cooperation with local governments on the methods of comprehensively outsourcing maintenance and management work to the private sector for multiple areas and facilities. With regard to "sharing and visualizing of information pertaining to maintenance, management and renewal," information on maintenance and renewal that is especially important, such as the status inspections at each facility, will be made visible via infrastructure maintenance portal sites.

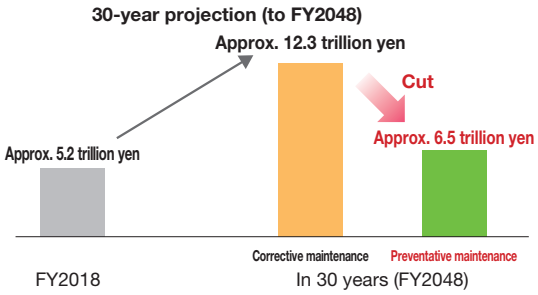
A third meeting of the Social Infrastructures Maintenance Strategy Sub-committee was held after FY2017, and in 2018, it laid out urgent measures to be taken within the next five years for systematic maintenance and replacement, the concept of "Infrastructure Maintenance 2.0," which is a maintenance format for new technology and types of data use, and directions for efforts for proactive preventative maintenance in coordination among all fields under the jurisdiction of the MLIT. The MLIT also published projections of maintenance and replacement costs for social infrastructure in the fields under the jurisdiction of the MLIT for the next 30 years.

In addition, in an effort to take advantage of technology and know-how from various industries, while striving to cultivate and revitalize the maintenance industry, activities are now well underway in each region, with the establishment of regional forums in 10 regions across the country in 2018 under the Japan Congress for Infrastructure Management established in 2016. Also, the Committee on New Introduction of Infrastructure Maintenance Technology and Systems was formed in February 2019 to promote the introduction of new technology used at the Japan Congress.

Furthermore, in August 2018, we held the second presentation ceremony of the Infrastructure Management Award, which was created in 2017 to recognize outstanding efforts and excellent technical development regarding infrastructure maintenance, and we exhibited good case examples nationwide.

We will continue to work toward the realization of steady, efficient infrastructure maintenance and regional revitalization by enhancing the efforts described previously, and by developing and revitalizing the maintenance industry.

Figure II-2-2-4 Estimation Results for Future Maintenance and Replacement Expenses




30-year projection (to FY2048) (Cumulative Total)

| | 30-year period total (FY2019–FY2048) |
|---|---|
| Corrective maintenance | Approx. 280 trillion yen |
| Preventative maintenance | Approx. 190 trillion yen |

Approx. 30% decrease

*1 These broad estimates are based on various assumptions of maintenance and replacement expenses in the 12 fields under the jurisdiction of the MLIT (roads, rivers/dams, erosion prevention, coasts, sewage systems, ports, airports, aids to navigation, parks, public housing, government facilities, observation facilities) borne by the national government, prefectures, municipalities, regional road corporations, the Japan Water Agency (independent administrative institution), some business associations, and the Port and Harbor Bureau.
*2 The graph and chart contain the maximum values.
*3 The estimated values are assumed to change due to unforeseen circumstances.

(Reference) Definitions of terms
Preventative maintenance: Repair and other measures before the capabilities and performance of a facility deteriorate.
Corrective maintenance: Repair and other measures after the capabilities and performance of a facility deteriorate.

(Source) MLIT

### (3) Development and Introduction of Monitoring Technologies

Bracing for the development and introduction of monitoring technologies that provide an efficient insight into the conditions of social infrastructures, the MLIT has conducted field verification of monitoring technologies and finalized the formulation of challenges to their introduction and measures to overcome them at the Committee for Exploring and Promoting Usage of Social Infrastructure Monitoring Technologies.

### (4) Development and Introduction of Robots

The MLIT promotes the development and introduction of robots of practical usefulness that are capable of checking up growing volumes of infrastructures effectively and efficiently while probing disaster sites that are hardly accessible by human beings and expediting recovery quickly and precisely.

## Section 3 Driving the Social Infrastructure Development

Priority Plans for Social Infrastructure Development are formulated to drive the efficient and prioritized implementation of social infrastructure development projects in accordance with the Act on Priority Plan for Social Infrastructure Development.

In September 2015, the Fourth Priority Plan for Social Infrastructure Development (FY2015–2020) was adopted through a Cabinet decision. The Fourth Plan has the basic principles of maximizing stock effects of social infrastructures in order to address the following four structural issues under severe fiscal constraint: (i) possibly imminent massive earthquakes and increasingly severe weather disasters, (ii) accelerating aging of infrastructure, (iii) battered countryside in association with declining population, and (iv) intensifying international competitions. Based on the basic principles, the Plan aims to ensure selection and concentration on projects whose stock effects are high, while pushing forward the effective use (smart use) of existing facilities, as well as their consolidation and realignment. Also, the plan includes the positioning of the stable securing and development of on-site and skilled human resources for supporting social infrastructure development, stating that it is important to ensure stable and sustainable prospects for public investment in light of the systematic implementation of social infrastructure development and securing and developing personnel to conduct it.

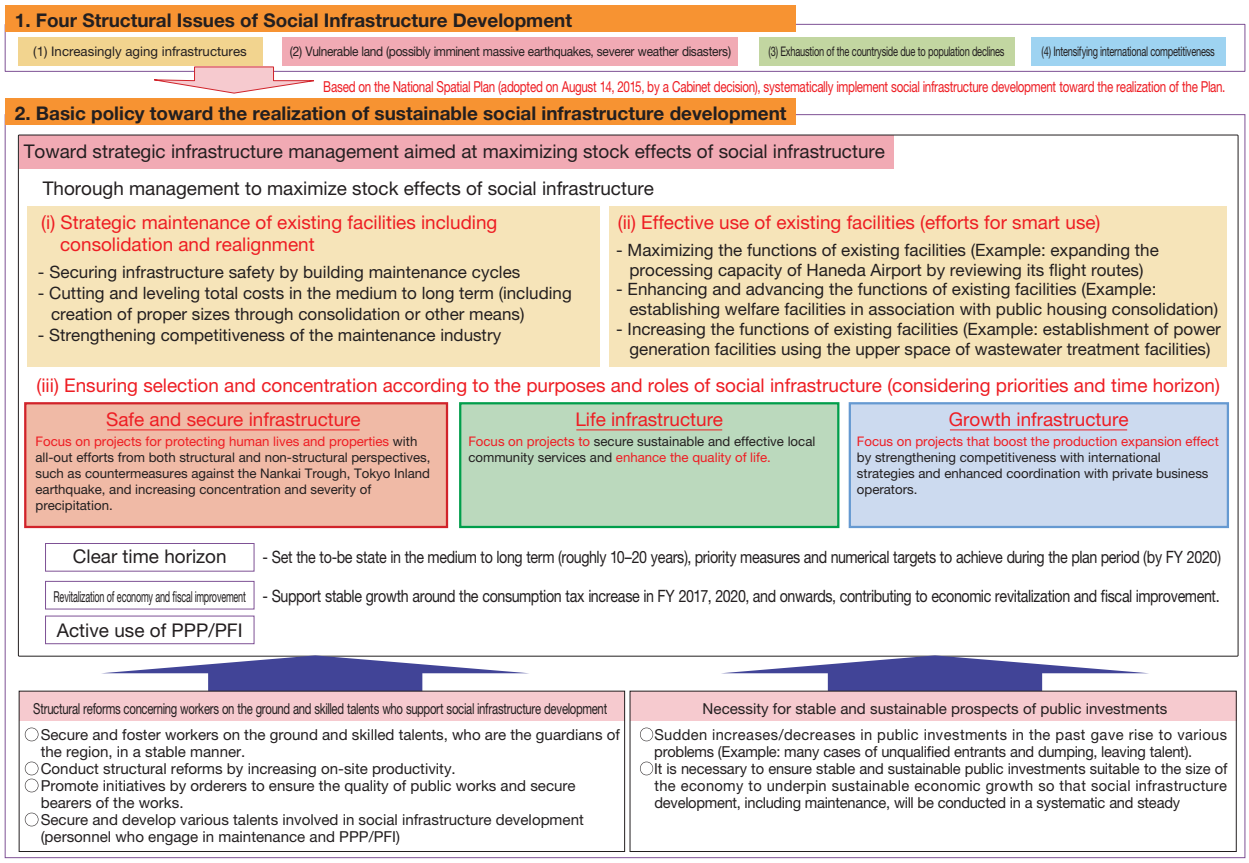
Furthermore, in order to develop social infrastructure with medium- to long-term prospects, the Plan set four priority goals (implementing strategic maintenance and renewal of social infrastructure; mitigating disaster risk in accordance with characteristics of disasters and vulnerabilities of regions; building sustainable local communities that respond to declining/aging population; inducing private investments and enhance infrastructures that support economic growth) and 13 policy packages, and positioned typical indicators as key performance indicators (KPIs).

The Planning Task Force under the Panel on Infrastructure Development and the Transport System Subcommittee of the Council of Transport Policy conducts investigations and deliberations with regard to methods of identifying and "vi-

sualizing" stock effects from the perspective of generating ideas from the perspective of smart investment and utilization, as well as mechanisms, etc., to promote systematic initiatives to this end. The committee compiled its findings in "A Proposal of Practical Strategy for Maximizing the Stock Effect" (November 2016). We will continue to make efforts to specifically implement these policies and steadily promote the Fourth Priority Plan for Social Infrastructure Development based on the committee's proposals.

Furthermore, the Priority Plans for Social Infrastructure Development of Regional Blocks was established in March 2016 based on the Fourth Priority Plan for Social Infrastructure Development as plans for developing social infrastructure in a focused, efficient and effective manner in accordance with the characteristics of each region. Additionally, we commenced the Infrastructure Future Map Project in August 2016, which creates a map (visualization) based on the timeline of future infrastructure management, and we are considering how to achieve it.

Figure II-2-3-1 The Fourth Priority Plan for Social Infrastructure Development




Source) MLIT

## Column

### Promotion of the Infrastructure Future Map Project: Release of Kamaishi City, Iwate Prefecture Edition - Infrastructure Future Map Kamaishi (Trial Edition)

The MLIT began the Infrastructure Future Map Project in 2016, which creates a map (visualization) based on the timeline of future infrastructure management, and we are now considering how to proceed.

The Priority Plan for Social Infrastructure Development of Regional Blocks, which was established in March 2016, contains some 2,800 projects, and unlike previous plans, specifies the slated date of completion of major projects to the extent possible, to facilitate understanding of the outlook of infrastructure management plans along a time axis.

By creating a map of such information and visualizing the future management of infrastructure, the Infrastructure Future Map Project will provide a useful reference for creating life plans or making investment decisions, such as deciding the location of residences and plants or planning store openings, with hopes of contributing to attracting greater private investment and promoting regional revitalization. In FY2018, we conducted studies necessary for the creation of an Infrastructure Future Map (Nationwide Edition) (tentative name), based on such factors as the status of use of the Infrastructure Future Map Kamaishi (Trial Edition), which uses Kamaishi City, Iwate Prefecture, as a model.

https://www.geospatial.jp/ckan/dataset/sougouseisaku-miraimap-kamaishi

In addition to being able to check information on scheduled maintenance for infrastructure listed on the website using maps, it is possible to overlay various information using the GIS (Geospatial Information System) for use by private enterprise to draft investment plans for new locations, etc., and it is expected that even greater stock effects will become apparent.

We will continue to pursue the Infrastructure Future Map Project, and promote visualization of information concerning infrastructure management.


Source) MLIT

# Column

## Aiming to Maximize Stock Effects

Management of social infrastructure has flow effects and stock effects. Flow effects involve creation of employment and other economic activities, invigorating the economy for a short period through public investment in the projects. On the other hand, stock effects are ongoing effects that are seen in the medium to long term through the accumulation and operation of social infrastructure.

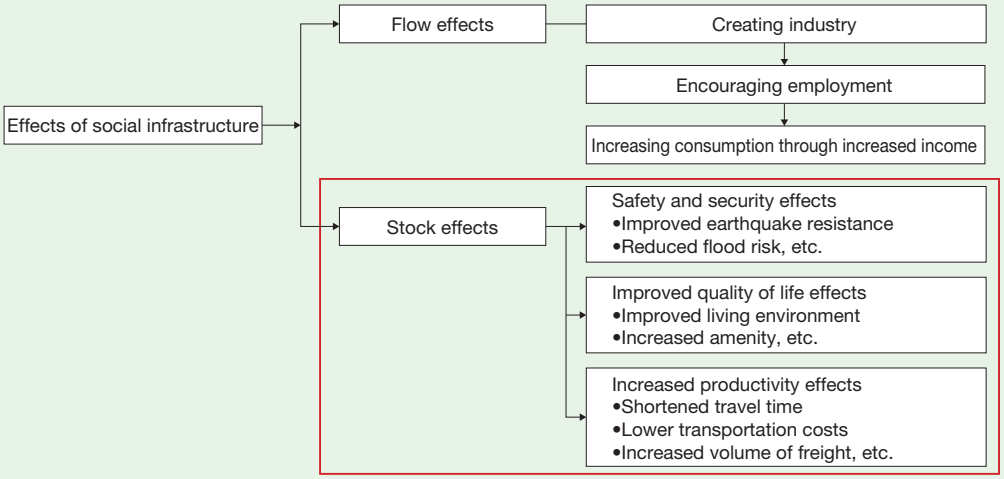
In addition to “safety and security effects,” such as increasing earthquake resistance and reducing flood risk and “improved quality of life effects,” such as improving the living environment and increasing amenity, stock effects include “increased productivity effects” of society by shortening travel time, etc. (Figure 1).

An example of stock effects includes a reduction of travel time from Kuki Shiraoka JCT to Narita Airport (a hub for the flow of goods and people), through the creation of the Ken-O Expressway by up to approximately 30 minutes. This resulted in an increased number of large-scale logistics facilities established along the route from 7 locations in 2013 to 30 locations in 2018 (Figure 2), which helped improve logistics efficiency.

Even though Japan’s population is shrinking, the creation of social infrastructure that maximizes stock effects is needed, in order to ensure economic growth, safety, and security and achieve sustainable improvements in the quality of life of citizens.

For this reason, the MLIT aims to actively grasp the wide range of stock effects that occur and to visualize them, as well as to ensure smart investment and utilization to further maximize stock effects, such as by promoting initiatives including pinpoint measures to combat traffic congestion, effective utilization of existing infrastructure through rejuvenation of dams, and both infrastructural and non-infrastructural improvements to prevent and mitigate disasters.

Figure 1 Stock Effects of Social Infrastructure

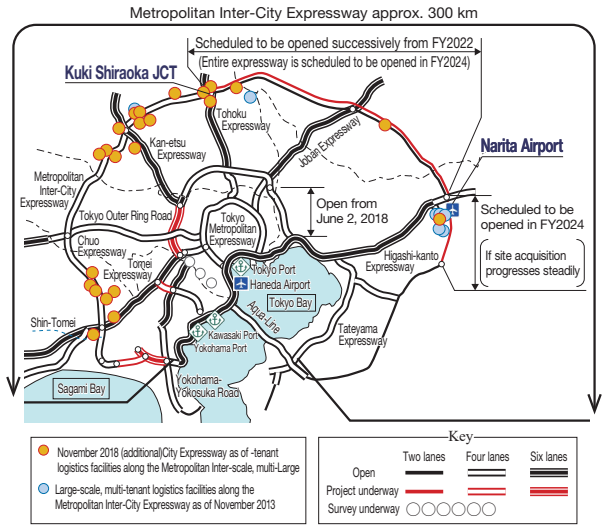



Source) MLIT

Figure 2 Examples Demonstrating Stock Effects

Travel time from Kuki Shiraoka JCT to Narita Airport (a hub for the flow of goods and people) was **reduced by up to 30 min.**

Number of large-scale, multi-tenant logistics facilities located on the Metropolitan Inter-City Expressway
7 (2013) → 30 (2018)




(Source) MLIT

# Section 4 Promoting the Implementation of Transport Policy

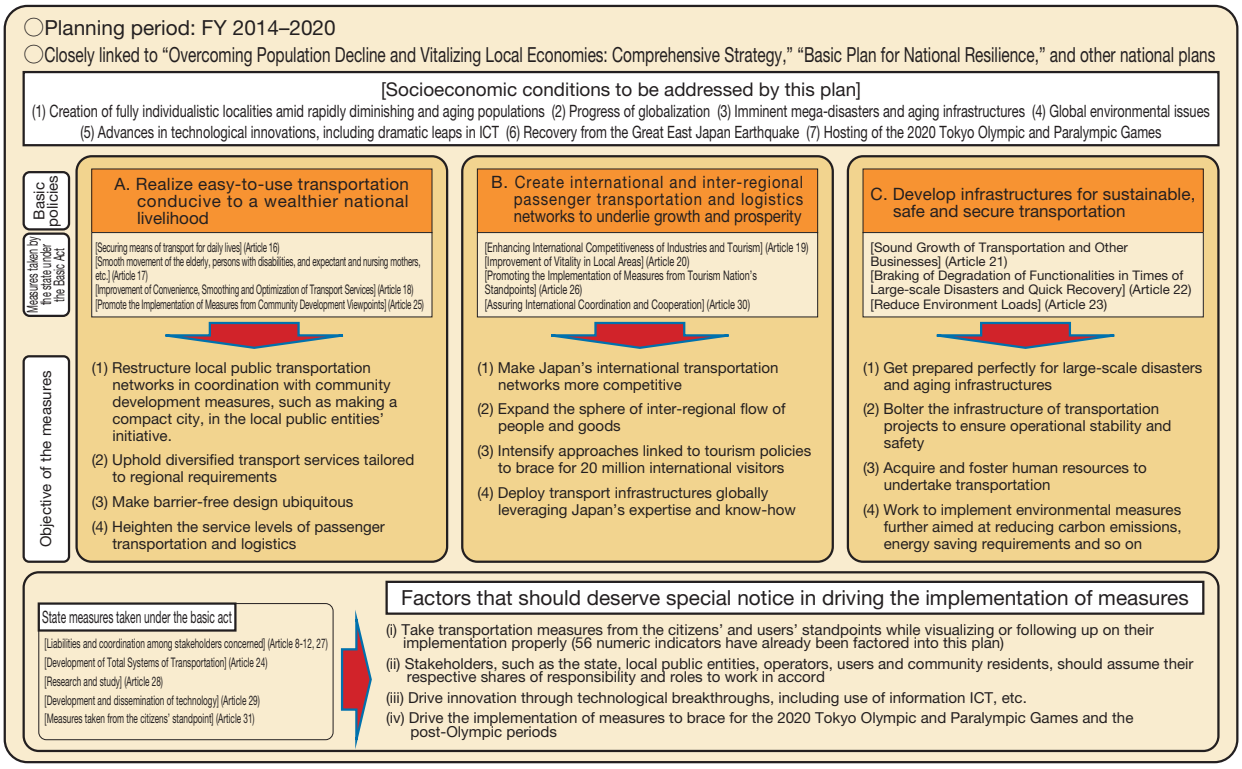
## 1 Developing Policies Based on the Basic Act on Transport Policy

Based on the Basic Act on Transport Policy, the Basic Plan on Transport Policy was adopted through a Cabinet decision in February 2015. The Basic Plan on Transport Policy defines the period from FY2014 to FY2020 as the period of operation and provides for basic policies, goals, and measures, etc., to be taken by the government on a comprehensive and systematic basis. More specifically, three basic policies have been set forth as follows: (A) Realize easy-to-use transportation conducive to a wealthier national livelihood; (B) Create international and inter-regional passenger transportation and logistics networks to underlie growth and prosperity; and (C) Develop infrastructures for sustainable, safe and secure transportation. For each of these basic policies, four measure goals have been presented along with specific measures to approach them. Numeric indicators have also been defined to verify the progress of initiatives to follow up said plan, and to indicate factors for consideration in implementing measures in accordance with the three basic policies above. We are promoting policies accordingly.

In June 2018, the 2018 Transport Policy White Paper based on the Basic Act on Transport Policy was approved by a Cabinet decision and reported to the Diet. The Transport Policy White Paper reports annually to the Diet on transport trends and measures taken, and to be taken, by the government concerning transport, and the Paper follows up on the progress of measures and numerical targets stated in the Basic Plan on Transport Policy.

Leveraging the Transport Policy White Paper, which is prepared annually, we will appropriately follow up on the Plan to ensure its steady progress.

**Figure II-2-4-1 Summary of the Basic Plan on Transport Policy**



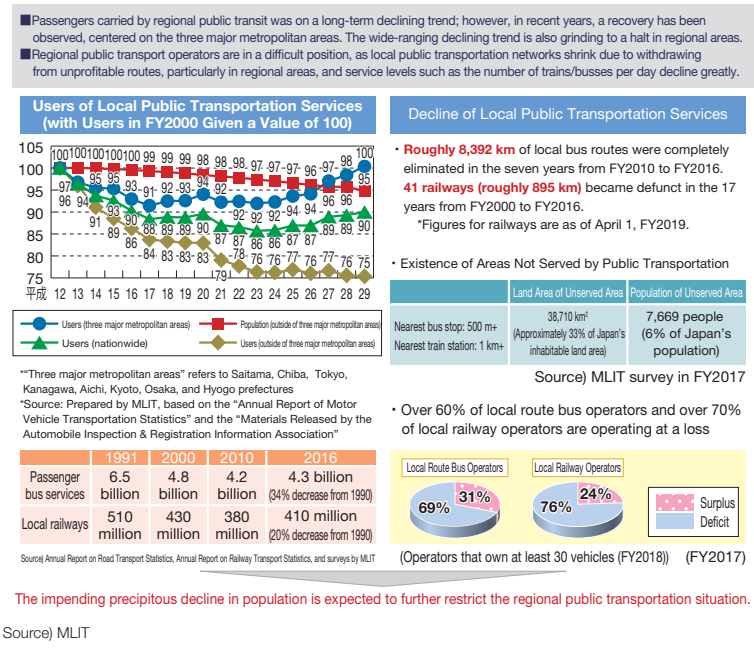

Source) MLIT

## 2 Reconstructing Local Public Transportation Networks

While population progresses to decline in an aging society with falling birthrates, concerns grow over downsized public transport networking and a degraded quality of services particularly in rural areas. In the meantime, local public transportation is of vital importance particularly to those who are unable to drive car, such as students and elderly people. To contribute to the realization of regional communities that are full of vitality, it is important to collaborate with efforts to create compact towns, and strive to revitalize and revive local public transportation.

Based on these circumstances, the Act on Revitalization and Rehabilitation of Local Public Transportation was amended in 2014, thereby establishing a framework for achieving the formulation of optimum public transportation networks and services for each region

**Figure II-2-4-2 Status of Local Public Transportation and Related Issues**




Source) MLIT

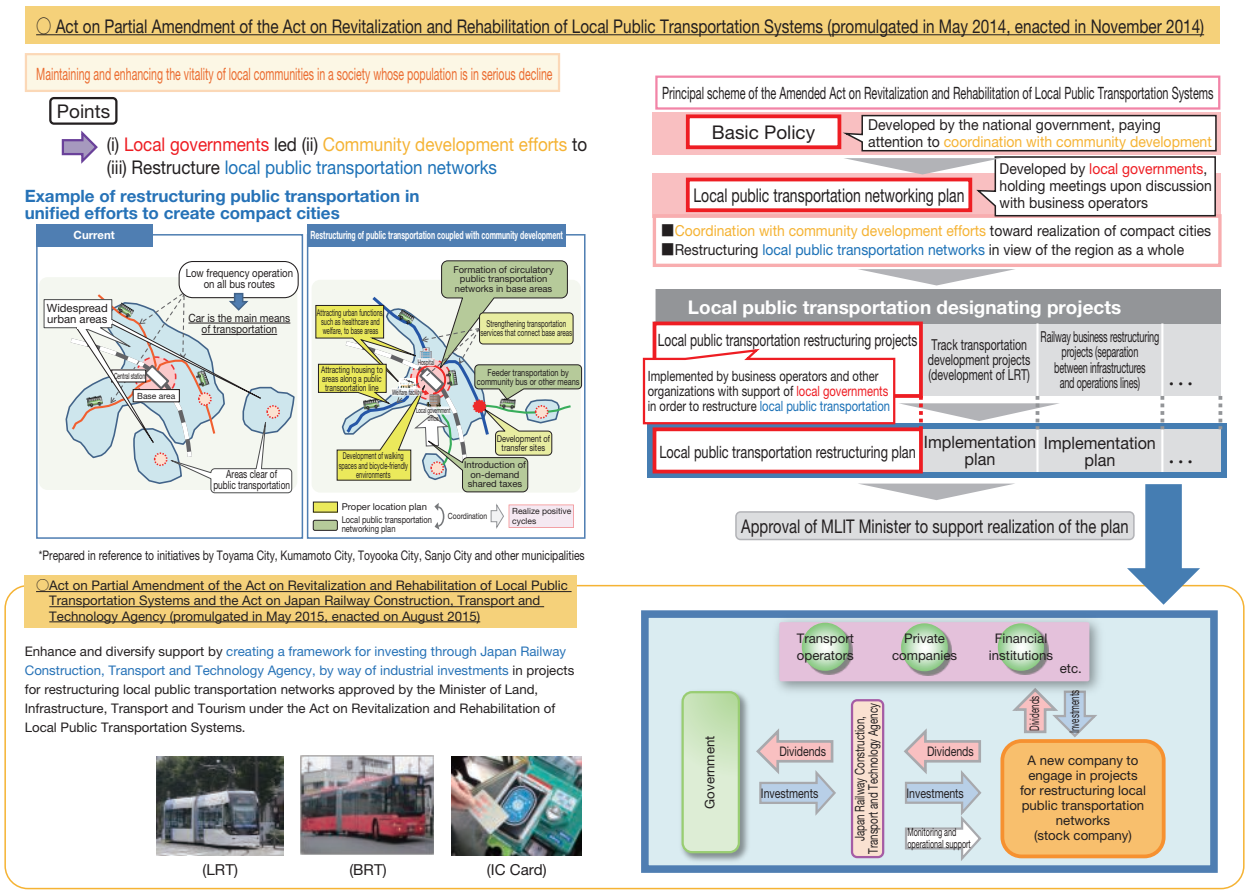
in agreement with relevant personnel, led by local governments in charge of regional administration with appropriate division of roles among relevant parties, and in collaboration with town development, tourism revitalization and other regional strategies.

Under the amended Act, 500 local public transportation networking plans were submitted to the Minister of Land, Infrastructure, Transport and Tourism by the end of FY 2018, and 33 local public transportation restructuring plans received the Minister's approval. This indicates that efforts toward the formation of sustainable local public transportation networks are gathering momentum.

Furthermore, the Japan Railway Construction, Transport and Technology Agency established a program for investing in new companies that engage in businesses relating to rebuilding local public transportation networks, in order to diversify and enhance support.

The MLIT will also continue to provide necessary support to the initiatives of local governments.

**Figure II-2-4-3** Outline of the Revision of the Act on Revitalization and Rehabilitation of Local Public Transportation Systems, etc.




Source) MLIT

## 3 Promotion of MaaS, a New Mobility Service

MaaS (Mobility as a Service),[Note] is a new form of mobility that will solve various issues related to transportation in Japan, including crowding in cities, and maintaining and securing means of transportation in regional areas, through innovation on both the demand side and supply side of movement. In addition, MaaS also has the potential to produce an impact on the form of cities and on the maintenance of infrastructure through regional societies and economies and

**Note** Maas (Mobility as a Service): An online service providing such functions as search, booking, and settlement for a complete journey, from departure point to destination, all together. It also includes high added value through coordination with non-transport services, such as retail, tourism, and medical services.

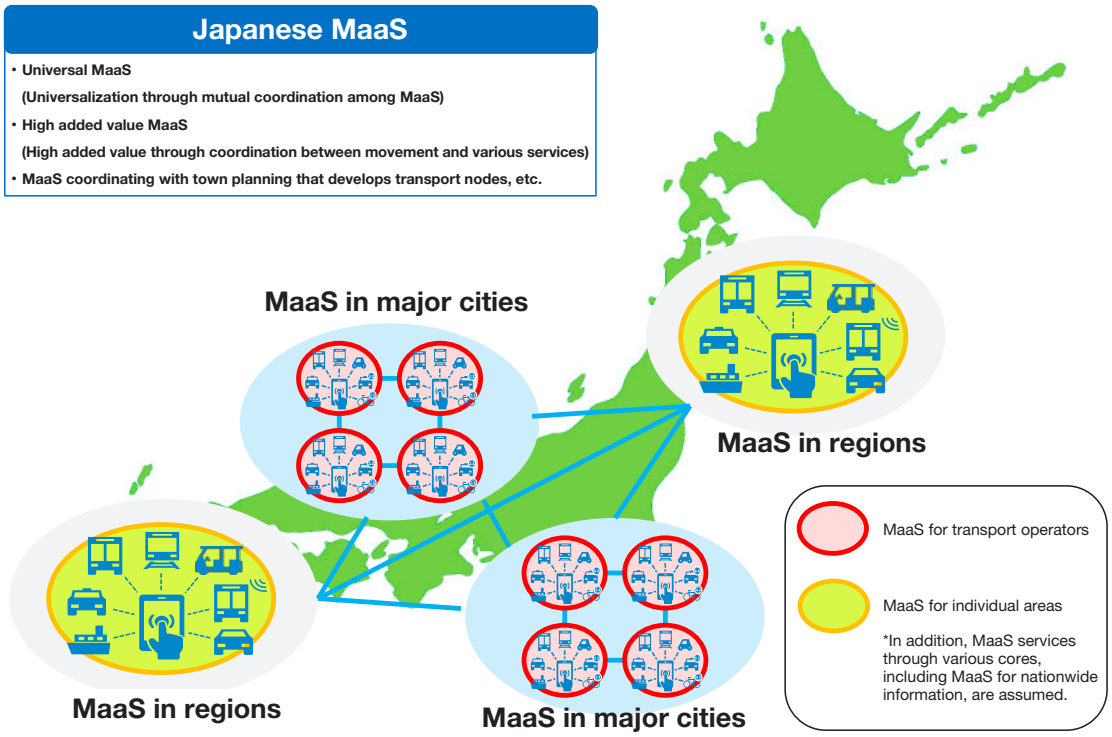
equipment in new cities.

In addition to MaaS, efforts toward the introduction of new mobility services, such as the utilization of AI and autonomous driving technology in buses and taxis, have being taken in recent years, mainly by transportation operators, including private sector businesses.

Under these circumstances, the MLIT set up the Working Group for New Mobility Services in Cities and Regional Areas and released its interim report in March 2019. The interim report sets out such initiatives as data coordination aimed integrating various services into one-stop services, the achievement of fares and fees that meet the needs of service users in detail, and coordination with community development and infrastructure maintenance that enables seamless movement, toward realizing a Japanese MaaS that features universal services through mutual coordination among MaaS, high added value in movement through coordination among various services, and coordination with town planning that develops transport nodes, etc. The report also sets out directions suited to the individual characteristics of each city and rural area, etc.

Going forward, based on the interim report, we will provide support for the demonstration and verification of MaaS in areas throughout Japan, and promote the construction of models aimed at solving regional transportation issues, through the 2019 budget titled "New Mobility Service Promotion Business."

Figure II-2-4-4 Example of Japanese MaaS




## 4 Promotion of Comprehensive Logistics Policy

Japan has high-standard logistics services in terms of punctuality, safety, and conformity with shippers' orders and the like mainly through truck transportation, which underpinned the just-in-time system of the manufacturing industry, and contributed to the development of the distribution industry and the improved convenience of daily lives of citizens through delivery and other services. On the other hand, in recent years, the socioeconomic circumstances surrounding logistics are changing dramatically, including declining/aging population, innovations in such areas as information communication technology (ICT), heightening disaster risk, increasingly frequent deliveries of smaller goods, and diversification of customer needs. Moreover, labor shortages are especially evident and posing challenges in the logistics sector, with aging truck drivers and possibilities of increased difficulties in securing personnel in the medium to long term;

therefore, actions need to be taken as early as possible.

Based on these circumstances, we are working to promote the "Logistics Productivity Revolution" project, which was selected as one of the productivity revolution projects of the MLIT Productivity Revolution Headquarters in April 2016. Its aim is to improve the productivity of logistics operations by 20% by FY2020, by promoting the approval of general efficiency plans covering joint transportation, modal shifts, and consolidation of the transportation network to warehouses that have introduced truck reservation systems, etc., as well as promoting initiatives that contribute to increased efficiency and high added value by reducing re-delivery by home-delivery services and promoting international standardization of logistics systems, based on the Act on Advancement of Integration and Streamlining of Distribution Business, which was revised in 2016 (Act No. 85 of 2005) (the Revised Act on Advancement of Integration and Streamlining of Distribution Business) for the purpose of supporting a range of initiatives relating to integration and streamlining of logistics, in partnership with interested parties.

Initiatives under this "Logistics Productivity Revolution," have been positioned as whole-of-government initiatives, and the Comprehensive Logistics Policy Guidelines (FY2017-2020) received Cabinet approval in July 2017, in order for multiple ministries and agencies to promote these policies in partnership. The guidelines set out goals for future logistics policies from six perspectives, incorporating new perspectives such as work-style reforms and utilization of new technology, in order to achieve resilient logistics to sustainably realize social infrastructure functions that will support Japanese economic growth and the lifestyles of citizens as the social makeup surrounding logistics changes.

Furthermore, in January 2018, we developed the General Logistics Policy Promotion Program, based on the policy direction indicated by these guidelines, to systematically conduct specific policies as whole-of-government initiatives.

## Section 5 Driving the Implementation of a Tourism Policy Package

### 1 Steady Promotion of the "New Tourism Strategy to Invigorate the Japanese Economy"

In March 2016, the Meeting of the Council for a Tourism Vision to Support the Future of Japan, chaired by the Prime Minister, drafted the "New Tourism Strategy to Invigorate the Japanese Economy," which aims to achieve new goals such as attracting 40 million international visitors to Japan and achieving 8 trillion yen in tourism consumption by international visitors to Japan in 2020. We have formulated the "Tourism Vision Realization Program 2018" as a government action plan aimed at one year from now, in order to ensure that the goals laid out in the Tourism Vision in June 2018 be achieved. Specifically, it includes policies based on the 3 themes of (1) "increasing the level of protection and utilization of tourism resources" by actively opening attractive public facilities, etc. (2) "achieving world-class travel services" by providing such services as free Wi-Fi on bullet trains (shinkansens), and (3) "boldly reforming JNTO and DMOs" through initiatives such as promoting global campaigns mainly in Europe, USA, and Australia and by strengthening consulting services for DMOs:[Note] organizations which conduct marketing. In 2018, through initiatives based on the Tourism Vision, etc., we achieved 31.19 million international visitors to Japan, and 4.5189 trillion yen in international visitor consumption, which were the highest figures ever. The number of international visitors has increased 3.7-fold and consumption has increased 4.2-fold over the most recent 6-year period.

Going forward, we will devote all of our resources to implementing more high-level tourism policies in order to achieve the 2020 goals of 40 million international visitors and 8 trillion yen of international visitor consumption, etc., as listed in the Tourism Vision, and become a "world-class tourist destination".

## Section 6 Driving the Implementation of Ocean Policy

### 1 Steadily Driving the Basic Plan on Ocean Policy

Japan, surrounded by oceans on all sides, aims to realize a new oceanic state in harmonization of the peaceful and positive development and use of the oceans with the conservation of the marine environment. The Ministry of Land, Infrastructure, Transport and Tourism, holding jurisdiction over various administrative areas related to the oceans, is

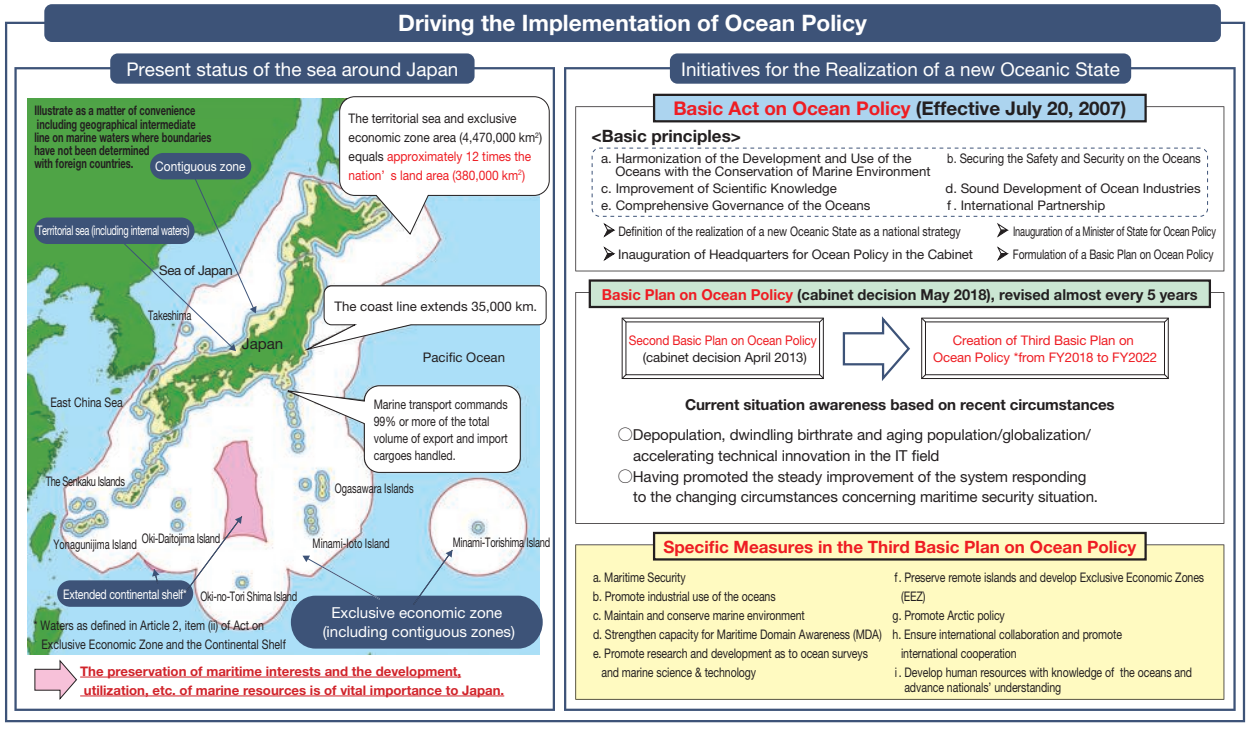
Note DMO: Destination Management/Marketing Organization

driving the implementation of ocean policies by working in collaboration with the relevant ministries and agencies under the "Basic Plan on Ocean Policy," based on the "Basic Act on Ocean Policy."

In recent years, our situations concerning the oceans are undergoing major changes, including the changes in the circumstances of marine security, the increase in the expectations for the development of marine resources and energy, the growing interest in conservation of the marine environment, as well as the dwindling birthrate, aging population and depopulation. Considering the changes, the "Third Basic Plan on Ocean Policy" was approved by the meeting of the Headquarters for Ocean Policy, followed by the Cabinet decision in May 2018. The "Challenge toward a New Maritime Nation" is positioned as the policy direction for the new "Basic Plan on Ocean Policy" and the basic policies of measures with regard to the oceans are determined as follows: (1) comprehensive marine security; (2) promotion of industrial use of the oceans; (3) maintenance and conservation of the marine environment; (4) improvement of scientific knowledge; (5) promotion of Arctic policy; (6) international collaboration and cooperation; and (7) development of human resources with knowledge of the oceans and advancement in nationals' understanding. In a message on the occasion of Marine Day in 2018, Prime Minister Abe announced that Japan's measures on the ocean are promoted based on the new "Basic Plan on Ocean Policy."

Based on the new "Basic Plan on Ocean Policy," the MLIT is promoting various measures such as the use of maritime renewable energy, the development and use of marine resources, the human resource development for marine development, the efficient marine transportation of energy resources, the promotion of marine industries, the development of strategic maritime safety and security systems including strengthening the capacity for Maritime Domain Awareness (MDA), the preparation in natural disasters originating in the ocean, the conservation of Oki-no-Tori Shima Island, the preservation of the low-tide lines and the development and maintenance of the bases of activities on specified remote islands.

Figure II-2-6-1 Driving the Implementation of Ocean Policy




Source) MLIT

## 2 Protecting Our Country's Interests in Maritime Rights and Interests

### (1) Promoting Ocean Surveys in Territorial Sea and the Exclusive Economic Zone and Integrating Marine-related Information

In our country's territorial sea and the exclusive economic zone there are sea areas lacking adequate survey data and the Japan Coast Guard has been conducting intensive ocean surveys in these sea areas including sea seafloor topography, crustal structure, seafloor sediment, and the low-water lines to strategically and continuously implement the development of basic information that will contribute to the safety of navigation, protecting our country's maritime interests, and development in the sea.

Also, under the comprehensive coordination of the Cabinet Secretariat for the Promotion of General Ocean Policy, the Marine Information Clearinghouse, which centrally gathers, manages, and provides sources of marine information, is being operated. Furthermore, based on "Efforts to Consolidate the Capability of Maritime Domain Awareness," which was adopted in July 2016 by the Headquarters for Ocean Policy, we created the MDA Situational Indication Linkages (Umishiru) web service, which displays a variety of marine information held by governmental agencies overlaid on maps, and began operating it in April 2019.

### (2) Initiatives to Delineate the Limits of the Continental Shelf

On April 20, 2012, the UN "Commission on the Limits of the Continental Shelf" adopted the recommendations on the limits of the continental shelf beyond 200 nautical miles in regard to the submission made by Japan in November 2008 in accordance with the United Nations Convention on the Law of the Sea. Since the recommendation granted an extension to Japan's continental shelf with an area equivalent to approximately 80% of her land area, the Shikoku Basin sea area and the Oki-Daito Ridge sea area were newly designated as Japan's continental shelf by a cabinet order in October 2014. In the meantime, since the review of some sea areas has been postponed, the Japan Coast Guard is working towards the establishment of the extended continental shelf in those areas by partnering with the ministries and agencies concerned under coordinated supervision of the National Ocean Policy Secretariat of Cabinet Office.

### (3) Conservation of Okinotorishima Island, Preservation of the Low-Tide Line and Developing the Base of Activities

#### (i) Conservation and Maintenance of Okinotorishima Island

Okinotorishima Island is Japan's southernmost territory and is a very important island that forms the foundation of the 400,000-km$^2$ area exclusive economic zone, which exceeds the area of national land, so the observation and gathering of basic data, checkups of damages, and repairs are carried out. The state is taking direct control to ensure adequate measures to preserve the entire island.

Figure II-2-6-2 Conservation and maintenance of Okinotorishima Island


Source) MLIT

### (ii) Preservation of low-tide lines

In accordance with the Law on the Development of Base Facilities and Preservation of the Low-Tide Line for the Promotion of Use and Conservation of the Exclusive Economic Zone and Continental Shelf (Low-Tide Preservation Act), 185 domestic locations are designated by government decree as low-tide lines preservation areas to implement restrictions on excavation in the area. Furthermore, surveys are conducted on low-tide lines and the surrounding conditions, using patrols by disaster prevention helicopters and ships, as well as satellite images, in order to check whether any restricted activities took place or any topographical changes were caused by natural erosion. Also, information related to the low tide lines is appropriately managed so that preservation activity will be carried out in a steady and efficient manner.

### (iii) Developing and managing bases of activities on specified remote islands (Minamitorishima Island and Okinotorishima Island)

In accordance with the Low-Tide Preservation Act, port facilities are being developed on Minamitorishima Island and Okinotorishima Island, which are located in areas remote from the mainland, to enable the mooring and berthing of vessels and cargo handling as operational bases for the conservation and usage of the exclusive economic zone and continental shelf, with management of the ports by the government.

**Figure II-2-6-3 Preservation of the Low-Tide Lines**

Promoting Measures Regarding the Law on the Development of Base Facilities and Preservation of the Low-Tide Line for the Promotion of Use and Conservation of the Exclusive Economic Zone and Continental Shelf (Low-Tide Preservation Act) (effective in June 2010)

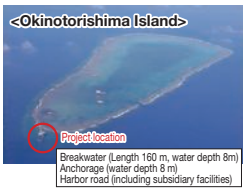
**<<Preservation of Low-Tide Lines>>**

- In the waters surrounding the low-tide lines that form the basis for demarcating the limits of the exclusive economic zone and others, areas requiring conservation are specified as the low-water line preservation areas (185 areas) where activities are restricted.
- Satellite images, disaster prevention helicopters, and ships are used to monitor and research the conditions of the low-tide line and any artificial damages or natural erosion.

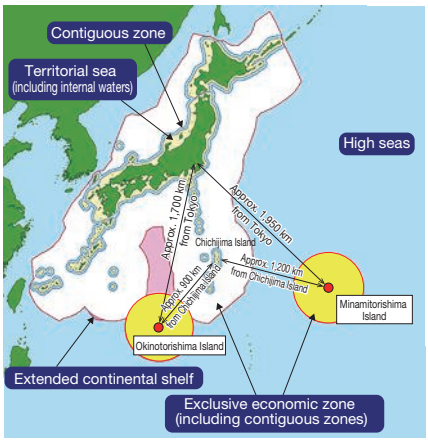
**<<Development and Managing the Base of Activity in Specified Remote Islands>>**

- In order to ensure that the development and usage of maritime resources and maritime research activities are implemented safely and steadily in waters located far away from the mainland, the MLIT Minister implements the development and management of port facilities (the development details are stated in the basic plan based on the Low-Tide Preservation Act).

(Minamitorishima Island) Project started FY2010
(Okinotorishima Island) Project started in FY2011






<Exclusive Economic Zone and position of Minamitorishima Island and Okinotorishima Island>
(Quoted from the website of the marine information division of the Japan Coast Guard, with additions made)

Source) MLIT

## Column

### Launch of MDA Situational Indication Linkages (Umishiru)

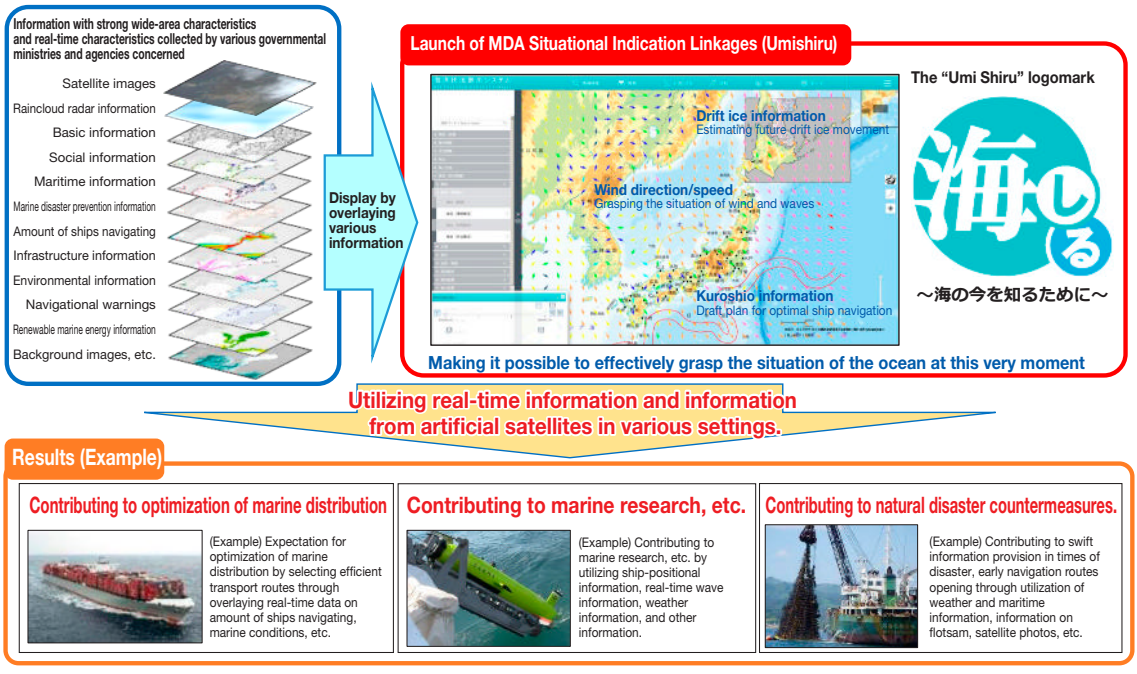
In FY2018, the Japan Coast Guard created the MDA Situational Indication Linkages (Umishiru) web service, which displays a variety of marine information held by governmental agencies overlaid on maps, and began operating it in April 2019.

In Japan, countermeasures against tsunami and other natural disasters and marine pollution have posed challenges in recent years. Moreover, regarding the sea, as the revitalization of the marine transportation, ship building, tourism, and fisheries industries, as well as the development of renewable energy, etc., will lead to Japan's growth and prosperity, it is important to promote marine development and use while working toward harmonization with conservation of the marine environment.

We can contribute to marine security that includes ascertaining the occurrence of and damage caused by disasters and accidents by broadly providing information on all areas around the world and real-time information to private sector businesses, governmental agencies, etc., through the MDA Situational Indication Linkages system. In addition, such information provision also enables us to contribute to promoting marine industrial activities, such as developing marine transportation, fisheries industry, and renewable energy, and to improving productivity in a wide range of marine industries.

The Japan Coast Guard will continue enhancing the capabilities of MDA Situational Indication Linkages based on the needs of the service users.

*Anyone can use MDA Situational Indication Linkages freely by visiting the URL below.
(URL https://www.msil.go.jp/)



# Section 7 Protecting Territorial Land and Territorial Waters Firmly

## (1) Situation in Recent Years

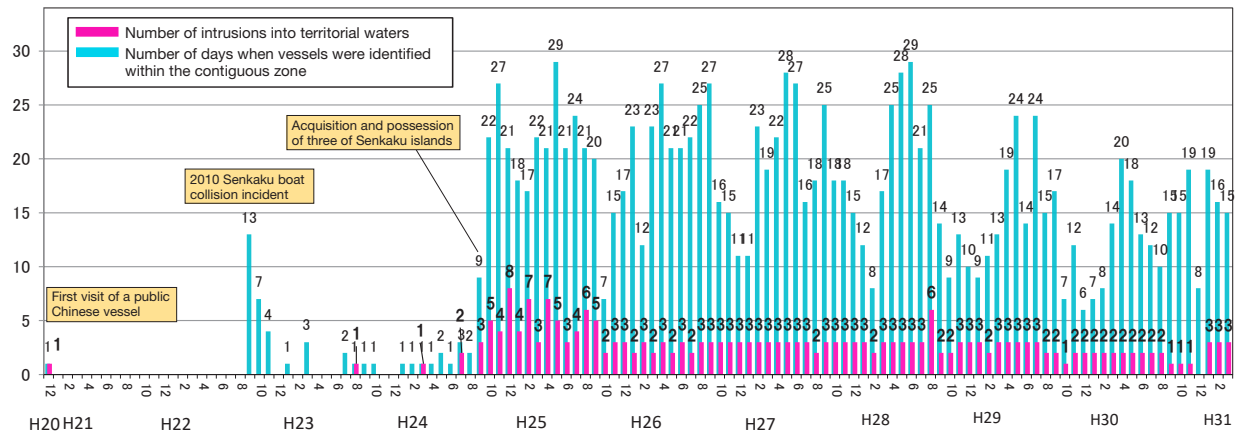
Since September 2012, Chinese government-owned vessels have navigated into the contiguous zone around the Senkaku Islands almost every day, except in bad weather, and have intruded into Japanese territorial waters. Increases in the size, armament, and number of Chinese government-owned vessels has been confirmed recently. We must remain vigilant, as there have been cases such as Chinese government-owned vessels repeatedly intruding into Japanese territorial waters following Chinese fishing vessels in August 2016, and Chinese naval vessels and naval hospital vessels entering Japan's contiguous zone in January and June 2018, respectively. Also, we need to continue keeping a close eye on Chinese movements, as the China Coast Guard was incorporated into the People's Armed Police Force (PAP) in July 2018. Under the policy of protecting Japan's territories and waters at all cost, the Japan Coast Guard is responding to these circumstances in a calm but firm manner by taking such measures as deploying patrol vessels in the waters so that the situation will not escalate.

Figure II-2-7-1 Patrol Boat Guarding the Territorial Sea

Source) MLIT

In addition, in Japan's exclusive economic zone around the East China Sea, surveys and other activities of foreign ocean survey vessels without Japan's consent were found. The Japan Coast Guard is taking appropriate measures on a case-by-case basis depending on the situation, such as by conducting surveillance patrols and requesting suspension of such activities by patrol vessels in coordination with relevant organizations. Furthermore, in addition to the operations of the many North Korean fishing vessels in the sea area near Yamato Bank being recognized as illegal, an increasing number of wooden ships that are thought to be from North Korea have drifted ashore on the coast of the Sea of Japan, and this has increased the seriousness of the situation surrounding Japanese territorial waters.

Figure II-2-7-2 Number of Chinese Government Vessels Entering the Contiguous Zones and Intruding into Territorial Waters




— Status of Chinese government vessels intruding into territorial waters (as of the end of March 2019)
• Intrusion into territorial waters: 273 cases (239 days)
• Vessels intruding into territorial waters: 775
• Maximum number of vessels intruding into territorial waters: 8
• Longest duration of intrusion into territorial waters: 28 hours 15 minutes
Source) MLIT

### (2) Promotion of Strengthening the Maritime Security System

Based on the increasing severity of the situation in Japanese territorial waters, the Ministerial Council on the Strengthening of the Coast Guard System held on December 21, 2016. The Council adopted the Policy on Strengthening the Coast Guard System, which is based on the following five pillars, in order to enhance the maritime law enforcement, maritime monitoring and marine research capabilities. The Japan Coast Guard has been promoting enhancement to the maritime security system according to the policy.

- Strengthening of the security system of the territorial sea around the Senkaku Islands and the improvement of systems to respond to simultaneous occurrences of large-scale incidents (cases)
- Strengthening of the maritime monitoring systems capable of monitoring the vast sea area around Japan
- Strengthening of the response system for important cases such as countermeasures against terrorism and security of the territorial sea in the remote islands and in areas of ocean far from the land
- Strengthening of the marine research system to protect our marine interests
- Improvement of the infrastructure such as training human resources to support the above systems

Figure II-2-7-3 The Ministerial Council on the Strengthening the Maritime Security System

Source) MLIT

Figure II-2-7-4 A Ship Launching Ceremony

Source) MLIT

The third Ministerial Council on the Strengthening of the Coast Guard System was held on December 18, 2018. The Council confirmed progress in the ongoing enhancement of the Coast Guard System, achieved by increasing the number of large patrol vessels for the security of the territorial sea around the Senkaku Islands, new-model jets, and mid-size aircraft for monitoring the sea (survey aircraft), securing necessary personnel, and other initiatives. In addition, it also confirmed the importance of international maintenance and of strengthening the maritime order that is based on the rule of law through international coordination, aimed at the realization of a free and open Indo-Pacific region.

Furthermore, one large survey vessel and three large patrol vessels—including one with a helicopter, the development of which was promoted based on the Policy on Strengthening the Coast Guard System—were launched in March 2019. The large patrol vessels are scheduled to begin operation in FY2019.

## Column

### Dealing strictly with North Korean fishing boats approaching the sea around Yamato Bank

In recent years, North Korean fishing boats have been operating illegally in Japan's exclusive economic zone around the Yamato Bank, and conditions are becoming threatening for Japanese fishing boats in the area.

In addition to patrol by aircraft, the Japan Coast Guard has deployed several patrol vessels since 2017, including large patrol vessels, in the sea area near the Yamato Bank to ensure the safety of Japanese fishing boats and to deal with North Korean fishing boats operating illegally.

The Japan Coast Guard conducted early deployment of patrol ships in the area from late May 2018, before Japan's squid fishing season (June), and dealt with more than 1,600 North Korean fishing boats in total that year by warning them to leave using steam whistles and loud-volume voice warnings. More than 500 of those boats in total were expelled from Japan's exclusive economic with water cannons and kept away from the sea area near the Yamato Bank.

The Japan Coast Guard will continue to deal with such boats strictly, in close cooperation with the authorities concerned, such as the Fisheries Agency.


Source: Japan Coast Guard

### (3) Toward Realization of a Free and Open Indo-Pacific Region

The Japan Coast Guard is promoting initiatives for demonstrating a presence in the Indo-Pacific region and is increasing its support for enhancing the maritime security capacity of coastal states, aiming at realizing a free and open Indo-Pacific Ocean.

In September 2017, it held the first Coast Guard Global Summit in Tokyo, the first such summit in the world, with heads of coast guards, etc., of 38 countries and regions, and three international organizations participating. The Chairperson's summary mentioned efforts to strengthen coordination and expand dialog. As a follow-up meeting, the first Coast Guard Global Summit - Working Level Meeting was held jointly with the Nippon Foundation in Tokyo in November 2018, to enable various countries' coast guard agencies to concentrate efforts transcending regional frameworks and tackle global-scale environmental changes and the challenges such changes cause. Working-level delegates from coast guard agencies from 58 countries and eight international agencies gathered for the meeting. Discussions were held at the meeting under themes including "Coast Guard Global Human Resources Development," and understanding among working-level delegates was reached by beginning a detailed study on opportunities for education and research that connects the world and the development of information sharing. It was also decided at the meeting to hold a second Coast Guard Global Summit in Japan in 2019, in order to have the results of the Working Level Meeting recognized at a higher level and to put them into practice. Also in November 2018, one of the Japan Coast Guard's patrol vessels called into port in Darwin, Australia, while on patrol. In the same month, the Japan Coast Guard and the Australian Border Force signed a statement expressing their intention to cooperate in the field of marine security, and Prime Minister Abe had a meeting with Australian Prime Minister Scott Morrison, at which they exchanged a cooperation document.

Figure II-2-7-5 Signing of Statement Expressing Intention to Cooperate with the Australian Border Force

Source) MLIT

Figure II-2-7-6 Coast Guard Global Summit - Working Level Meeting


Source) MLIT

Through these efforts, the Japan Coast Guard will continue working to maintain and strengthen free and open maritime order based on the rule of law.

# Section 8 Promoting Water Cycle Policy

## 1 Developing Policies Based on the Basic Act on Water - Cycle Policy

The Basic Plan on Water Cycle was adopted through a Cabinet decision on July 10, 2015, based on the Basic Act on Water - Cycle Policy, which was promulgated in April 2014 and enacted in July of the same year. The Basic Plan on Water Cycle sets out nine measures, including the promotion of river basin coordination, to serve as a framework for the comprehensive and integrated management of river basins, and as measures for the government to undertake comprehensively and systematically regarding the water cycle. Relevant ministries and agencies are engaged in efforts based on this plan.

The White Paper on the Water Cycle stipulates measures to be undertaken by the government and is reported to the Diet each year with regard to the water cycle. This year, the White Paper contains a special section titled "Thinking about Effective Utilization of Water based on Lessons from the Water Shortage" and introduces examples of ways to use water intelligently and for a long time into the future. Part 1 contains simple explanations, including examples, such as the relationship between people and the water cycle, as well as the background to policies related to the water cycle and the status of related developments, and it can be used as a teaching resource.

## 2 River Basin Management Promotion

River basin management is defined as the coordinated activity of relevant government and other public agencies, businesses, groups, residents and others through water cycle-related measures aimed at maintaining or improving natural environments that concern human activities, water volume and quality and water in forests, rivers, agricultural land, cities, lakes, coastal area and the like in river basins, and we are promoting further dissemination of information and revitalization of activities.

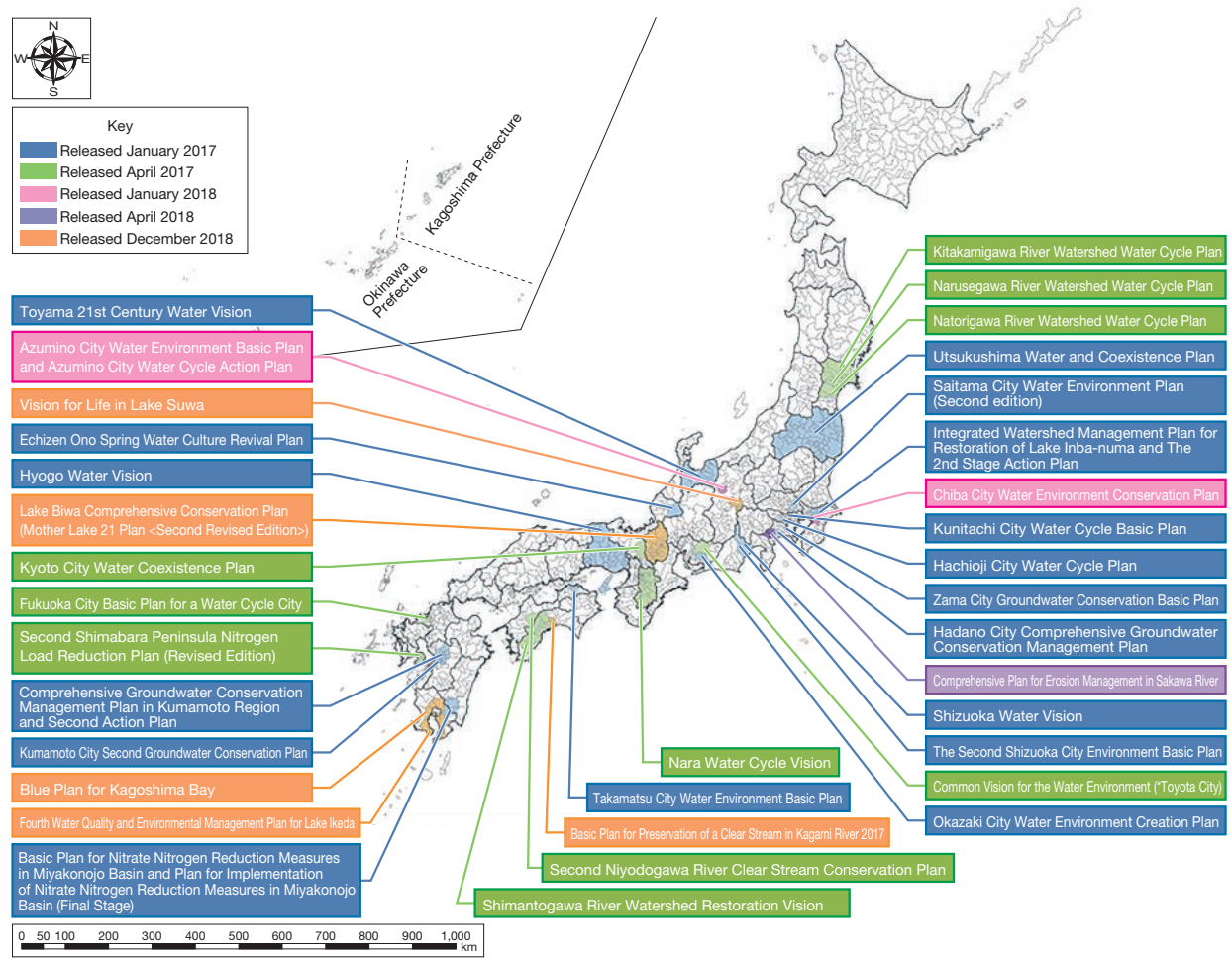
In FY2018, we implemented the "Model Study Regarding Visionary River Basin Management," which comprised activity support and fact-finding surveys in collaboration with three groups, and released one plan in April 2018 and five plans in December 2018 (creating a total of 35 plans as of March 2019) as River Basin Water Cycle Plans for various regions to work toward maintenance or recovery of the sound water cycles.

Furthermore, in July 2018, we released Guideline on River Basin Management, which showcases knowhow from the establishment of the River Basin Water Cycle Councils and formulation of River Basin Water Cycle Plans, and Examples of River Basin Management Initiatives, which showcases key points of river basin management initiatives using specific examples.

Moreover, with the allocation of the General Grant for Social Infrastructure Maintenance from FY2018 as financial support, we are giving a certain amount of consideration to whether maintenance plans should include projects based on a River Basin Water Cycle Plan.

In addition, with regard to public awareness, following on from 2017, the Cabinet Office of Water Cycle Policy held a Water Cycle Symposium 2018 on December 10, 2018, to further spread initiatives related to water cycles throughout Japan, and we strove to create a water network that goes beyond individual regions and situations.

Figure II-2-8-1 Formulation and Release of the River Basin Water Cycle Plans




Source) MLIT

# Section 9 Promotion of Policies to Increase Bicycle Use

## 1 Development of the Bicycle Use Promotion Plan Based on the Bicycle Use Promotion Act

Bicycles are an environmentally-friendly means of transportation, and it is more important than ever to have policies to further promote their use in Japan, where the environment, traffic, and improving health, etc., are all important issues, as they provide transport and delivery in the event of a disaster, improve the health of citizens, and contribute to easing traffic congestion, etc.

To this end, the Bicycle Use Promotion Act (Act No. 113 of 2016) was enacted on May 1, 2017, and based thereon, the Bicycle Use Promotion Plan was adopted through a Cabinet decision on June 8, 2018, as the foundation for promotion of bicycle use in Japan.

Based on the Plan, we are encouraging local governments to develop their own plans to promote the use of bicycles in order to form pleasant urban environments through expansion of the role that bicycles play in transportation. We are also engaged in efforts to promote the systematic construction of bicycle lanes that appropriately keep pedestrians, bicycles, and motor vehicles apart.

Figure II-2-9-1 Outline of Plan to Promote the Use of Bicycles (adopted through a Cabinet decision on June 8, 2018)

**1. General Comments**

(1) Positioning of Plan to Promote the Use of Bicycles
It is a basic plan for promoting the use of bicycles in Japan, formulated based on the Act on Promotion of Use of Bicycles.*

(2) Period of the Plan
Until FY2020, from a long-term perspective

(3) Current situation of bicycles and related challenges

*Act on Promotion of Use of Bicycles (introduced by a Diet member)
Established December 9, 2016
(Unanimous agreement by both houses of the Diet)
Came into force on May 1, 2017

**2. Targets for Promotion of Bicycle Use and Measures that Should be Taken**

**Target 1 Forming pleasant urban environments by expanding the role of bicycles**

1. Promoting the systematic construction of bicycle lanes
[Indicator] Number of local governments that have decided on a plan to promote the use of bicycles
[0 in FY2017 → target of 200 in FY2020]
[Indicator] Number of municipalities that have completed a bicycle network keeping pedestrians and bicycles apart in urban areas
[1 in FY2016 → target of 10 in FY2020]
2. Securing bicycle lanes by promoting construction of cycle parking spaces off the street and control of illegal cycle parking
3. Accelerating the spread of cycle sharing
[Indicator] Number of cycle ports installed [852 in FY2016] → target of 1,700 in FY2020]
4. Promoting construction of cycle parking spaces in response to areas' cycle parking needs
5. Accelerating adoption of IoT for bicycles
6. Constructing bicycle lanes in conjunction with restriction of through traffic on local roads and electric power pole removal

**Target 2 Realizing a vigorous society of health and long life expectancy by promoting cycle sports**

7. Accelerating construction of cycle race facilities meeting international standards
8. Creating an environment for safe cycling by utilizing public roads, parks, etc.
9. Promoting public relations and awareness raising on health promotion using bicycles
10. Accelerating commuting by bicycle
[Indicator] Share of bicycles used for commuting
[15.2% in FY2015 → target of 16.4% in FY2020]

**Target 3 Becoming a tourism nation by promoting cycle tourism**

11. Attracting international conferences, international cycling tournaments, etc. to Japan
12. Creating a world-class cycling environment by creating an environment for cycling, acceptance of cyclists, etc.
[Indicator] Number of model routes aimed at creation of an advanced cycling environment
[0 in FY2017 → target of 40 in FY2020]

**Target 4 Realizing a safe and secure society with no bicycle accidents**

13. Accelerating the spread of very safe bicycles
[Indicator] Diffusion rate of bicycle safety-standards mark
[29.2% in FY2016 → target of 40% in FY2020]
[Indicator] Number of fatalities in cycling accidents*
[480 in FY2017 → target of a proportion of reduction in the number of cycling fatalities greater than the proportion of reduction in the total number of road accident fatalities in FY2020, during the implementation period of the 10th Traffic Safety Basic Plan]
*related to items 13.–17.
14. Promoting public relations and awareness raising to accelerate bicycle inspections and maintenances
[Indicator] Number of qualified bicycle engineers*
[80,185 in FY2017 → target of 84,500 in FY2020
*related to items 13. and 14.
15. Focused implementation of public relations and awareness raising contributing to increased awareness of traffic safety, and of guidance and control
16. Promoting holding of traffic safety classes at schools
[Indicator] Rate of schools providing guidance on traffic safety
[99.6% in FY2015 → target of 100% in FY2019]
17. Accelerating systematic construction of bicycle lanes (reprint)
18. Promoting use of bicycles during a disaster

**3. Measures to be taken for promoting the use of bicycles**

Sorting into a list measures to be taken by the national government during the implementation period of the Plan, for steadily implementation of measures

**4. Matters necessary for comprehensive and systematic promotion of measures for promoting use of bicycles**

(1) Coordination and cooperation with parties concerned
(2) Follow up and revision of the Plan
(3) Survey, research, public relations activities, etc.
(4) Measures concerning financial affairs
(5) Policies on future efforts for supplementary provisions
➢Giving consideration when necessary for dealing with violations of the Road Traffic Act, in light of the status of operation of the system for cyclist training courses
➢With regard to liability for bicycle accidents, increasing subscriptions to insurance through ordinances and regulations, and consideration of the need for a new liability security system.

Source) MLIT

## 2 Creation of a Safe and Comfortable Environment for Bicycle Use

While the total number of traffic accidents involving bicycles has halved over the last 10 years, the number of accidents involving both bicycles and pedestrians has decreased only by 10%, which calls for a creation of a safer and more comfortable bicycle usage environment. To this end, we published the Guidelines for Creating a Safe and Comfortable Cycling Environment in conjunction with the National Police Agency, and we are promoting the creation of bicycle network plans, establishing bicycle lanes in spaces that are generally utilized by automobiles, and effectively raising public awareness of complying with bicycle traffic rules.

## 3 Promotion of Cycling Tourism by Improving the Cycling Environment

Although regional development through cycling is a promising prospect to spread the effects of inbound tourism throughout Japan, the environment for receiving cyclists and the cycling environment are still insufficient. Therefore, we have set model routes aimed at the development of an advanced cycling environment. In addition, through councils consisting of parties concerned, we are promoting cycle tourism by developing the cycling environment, establishing an environment for receiving cyclists, making cycling more appealing, and disseminating information.

# Section 10 Efficient, Prioritized Deployment of Measures

## 1 Promoting i-Construction: Improving Construction Site Productivity

The construction industry is not only responsible for the development of social infrastructure, but as the protector of communities, which is a vital role in the conservation of Japanese national land, it is also tasked with ensuring the safety and security of our society. In order for the construction industry to continue to fulfill these roles even as the population continues to decline and age, they must reform the way they work by raising the level of wages or increasing holidays, and in addition, it is crucial to improve productivity. The MLIT is continuing its work on i-Construction, an initiative that incorporates the use of ICT and other technologies to drastically improve productivity in all construction and manufacturing processes, from studies and surveying to designing, execution of construction work, inspections, maintenance and renovations.

ICT has been introduced to earthworks since FY2016, and to paving and dredging since FY2017, and we have confirmed that this has reduced earthworks hours, for example, by more than 30%. Furthermore, since FY2018 we have been promoting the expansion of ICT introduction to the field of maintenance, including river dredging and inspections, and to the field of construction, including government building projects. In addition, we developed an environment that makes it easier to introduce ICT to municipalities and SMEs, such as by revising quantity surveying standards and dispatching experts to assist with construction ordered by municipalities.

Moreover, we are working toward leveling construction time through the optimization of concrete construction and the application of acts incurring treasury liability, etc. With regard to the leveling of construction time, we confirmed that projects in the off-season, from April to June FY2018, were up by approximately 5% year on year. Regarding optimization of concrete construction, we confirmed such effects as a 20% increase in the rate of concrete poured into frameworks per amount of time, and a 20% reduction in the number of workers required, through revising slump values, for example.

We have introduced three-dimensional Building Information Modeling and Civil Information Modeling (BIM/CIM) to bridge and dam, etc., construction since FY2012, and the number of cases of adoption is increasing steadily. In 2018, we decided to introduce the use of BIM/CIM to detailed designing of large-scale structures, in principle, and BIM/CIM was used for a total of 132 construction and design projects.

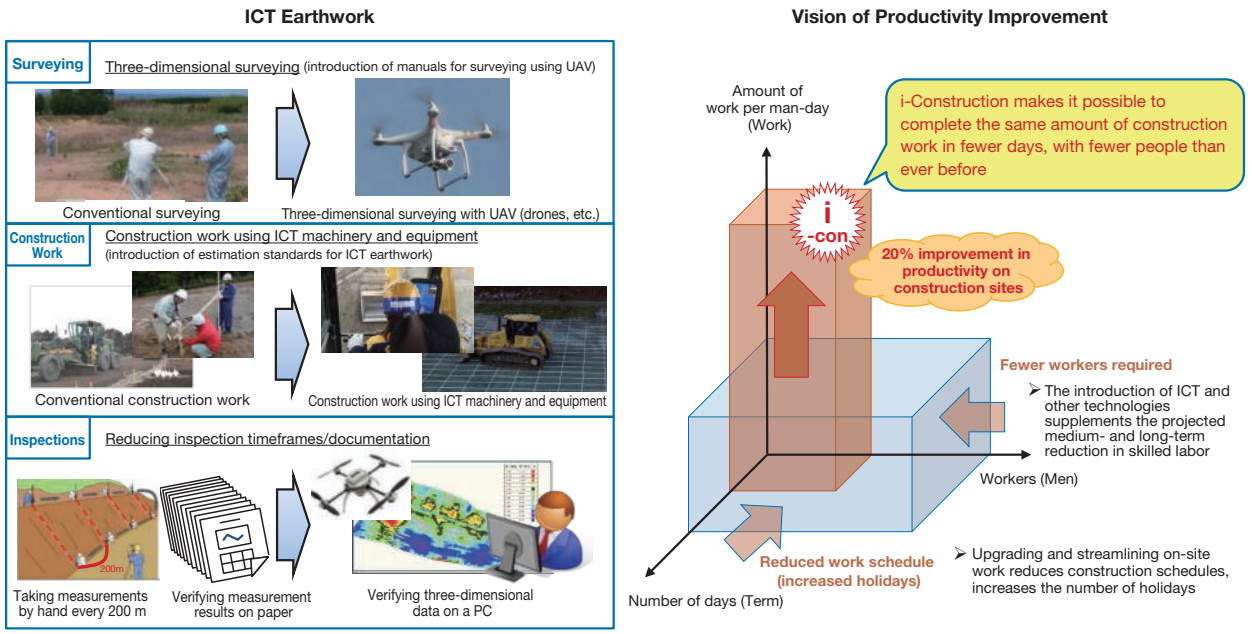
Expenses for surveys to promote introduction of new technology were included for the first time in the MLIT's initial FY2018 budget. The MLIT is utilizing the expenses in efforts for onsite verification of technology seeds and elemental technology not yet ready for practical application, testing and inspection of technology seeds, and onsite implementation of new technology. In addition, we promoted further productivity improvement at construction sites utilizing revolutionary technology, such as by launching 33 model projects introducing and utilizing revolutionary technology, including obtaining and using construction site data in real time by utilizing the budget for Public/Private R&D Investment Strategic Expansion Program (PRISM), under the Cabinet Office's jurisdiction.

Additionally, the i-Construction Promotion Consortium, which was established in January 2017 through a collaboration between industry, academia and government and has over 1,000 members, is working to accelerate the development and introduction of technology by expanding initiatives to match on-site needs with technological seeds to each branch of the Regional Development Bureau and other organizations.

In addition, regarding the i-Construction Award, which was created in FY2017 to recognize initiatives that have led to improved productivity at construction sites, we have been taking measures to further spread and promote i-Construction, such as by making construction ordered by local governments, initiatives taken by members of the i-Construction Promotion Consortium, and other projects eligible for awards.

Going forward, considering 2019 as the year for generating a productivity revolution when it comes to road works, for example, we will continue expanding the introduction of ICT to ground-improvement works and incidental structure works, not just some construction works such as earthworks and paving works, and develop standards to enable consistent utilization of new technology, including three-dimensional data on whole construction projects and ICT. We will also continue accomplishing the initiatives we have taken so far to connect construction sites with three-dimensional data, such as by setting up model offices to lead i-Construction initiatives utilizing three-dimensional data, and accelerating the advanced use of three-dimensional data in every stage of construction, from design to maintenance, and the introduction of ICT and other new technology.

Figure II-2-10-1 i-Construction




Source) MLIT

## 2 Assuring Public Works Quality and Securing and Developing Leaders

With the aim of ensuring the present and future quality of public works and securing and developing leaders of public works over the medium to long term, the Act for Promoting the Assurance of Quality of Public Works (Public Works Quality Assurance Act), the Act for Promoting Proper Tendering and Contracting for Public Works (Proper Tendering and Contracting Act), and the Construction Business Act were amended in June 2014 (the so-called Three Public Work Bearers Acts), and the amendment of the Basic Policy under Article 9 of the Public Works Quality Assurance Act and the Rationalization Guidelines under Article 17 of Tendering and Contracting Act was adopted by a Cabinet decision in September 2014. Furthermore, Guidelines on Implementation of Order Administration (Operation Guidelines) (an agreement of an advisory committee of relevant ministries and agencies for promoting quality assurance of public works) pursuant to Article 22 of the Public Works Quality Assurance Act were developed in January 2015 to enable commissioning entities to appropriately and efficiently implement order administration in order to fulfill the "responsibilities of orderers" set out in Article 7 of the Act.

Given the full-scale implementation of the Three Public Works Bearers Acts, the MLIT requires municipalities and all other commissioning entities of public works to move forward with specific efforts based on the Guiding Principles.

### (1) Approaches to Fulfilling Duty of Orders

The MLIT is taking various initiatives for the appropriate implementation of order administration based on the Rationalization Guidelines and Operation Guidelines. In addition, to verify whether orderers are properly implementing order administration based on these Guidelines, we are conducting fact-finding investigations of tendering and contracting procedures pursuant to the Tendering and Contracting Act, and organizing and publicizing the results.

#### (i) Appropriate setting of predetermined prices

As an effort to eliminate so-called bugiri, which is the practice of deducting part of construction specification amounts that are based on fair estimation, the MLIT (with collaboration from the Ministry of Internal Affairs and Communications) has requested that local governments rectify the practice as soon as possible through every opportunity. As a result, all local governments (459 organizations) that engaged in bugiri as of January 2015 due to precedents, fiscal reforms of municipalities, and other reasons, decided to abolish the practice as of April 2016. In addition to the popular version of

the Implementation Manual for the Repair Cost Estimation Method, which is a compilation of public construction works estimation standards and efforts regarding their implementation that was created in January 2015, we created a version for affected regions in Kumamoto in January 2017, and have continued efforts to develop and spread the word about the latest standards and manuals regarding estimation.

#### (ii) Measures against dumping

Dumping inhibits the healthy development of the construction industry, and MLIT has been using every opportunity to consider options for the prompt introduction of the low bid price survey system or the lowest price limit system at regional public organizations that have not yet introduced them. As a result, the number of organizations that have not yet introduced these systems has decreased from 126 as of March 2017 to 109 as of August 2018.

#### (iii) Appropriate design changes

The MLIT aims for the appropriate stipulation of construction conditions in design documents, as well as appropriate changes of design documents if deemed necessary, and has developed the Guidelines on Design Changes to facilitate design change work, and is requesting local governments to also develop such guidelines.

#### (iv) Leveling of construction work schedules, etc.

We are steadily promoting actively leveraging the multi-year budget system, incorporating and announcing order outlooks on a regional basis, setting appropriate construction work schedules, and using systems that allow leeway. We are working to promote further leveling of construction periods, etc., such as by revising and disseminating "The ABCs of Leading Cases of Leveling", which is a collection of forward-thinking examples of efforts by local governments, in May 2018.

#### (v) Review of varied tendering and contracting options, etc.

New additions to the Public Works Quality Assurance Act include the selection and utilization of various tendering and contracting options, phased screening systems, technical proposal integrated negotiation systems, and systems that contribute to the maintenance and management of regional social capital (multi-year contracts, bulk orders, joint order acceptance). In May 2015, the MLIT drafted Guidelines Regarding the Implementation of Tendering and Contracting Options for Public Works to enable various orderers to select the tendering and contracting options that correspond to the peculiarities of each project.

### (2) Coordination and Support Among Orderers

With regard to initiatives to contribute to assuring quality of public works, etc., MLIT is working to share information and achieve further coordination between orderers through the Regional Council of Orderers, the MLIT Committee of Ordering Institutions for Public Works, and the Regional Committee on Public Works Contracts, etc. In addition, in the public construction works sector, we are working toward increasing understanding of the role of orderers through such efforts as encouraging local government offices and the like to uptake the "Ideal State of Orderers in Public Agency Facility Improvement," which was released by the Panel on Infrastructure Development in January 2017, and Recommendations and Explanations, etc., which was revised in October 2018 based on the "responsibilities of orderers" set out in the Quality Assurance Act.

Figure II-2-10-2 Key Points of the Guidelines on Implementation of Order Administration (Operation Guidelines)

**Key Points of the Guidelines on Implementation of Order Administration (Operation Guidelines)**

The national government prepared the Operation Guidelines under Article 22 of the Quality Assurance Act, listening to the opinions of local governments, academic experts and private business operators and others.
- The Guidelines were put together in a systematic manner as common guidelines for orderers so that they can operate order administration appropriately and efficiently.
- The national government periodically conducts surveys on whether order administration is conducted appropriately in accordance with the Guidelines, and puts together the results for publication.

**Mandatory action items**

**Appropriate setting of predetermined prices**

In setting predetermined prices, estimates must correctly reflect transaction prices of labor, materials and the like in the market as well as state of affairs of construction so that appropriate profits will be secured. In calculating estimates, the up-to-date estimation standards should be used on the assumption of a proper construction period.

**Elimination of *Bugiri* practice**

The *bugiri* practice must not be conducted as it violates the provisions of Article 7, Paragraph 1, Item 1 of the Act for Promoting the Assurance of Quality of Public Works.

**Ensuring setting up and use of survey standards on low bid prices or the lowest price limits**

In order to prevent the practice of winning orders by presenting extremely low prices, appropriate use of the low bid price survey system or the lowest price limit system must be ensured. In principle, predetermined prices are published after bidding.

**Appropriate design changes**

If construction conditions and actual state of construction sites do not match or there are other similar situations, the design documents and associated contract prices and construction period must be changed appropriately.

**Establishment of a system for support among orderers**

In addition to capturing the order administration status of orderers through the regional council of orderers, orderers make necessary coordination and adjustments, and municipalities and other orderers that require assistance seek support from the national and prefectural governments through the regional council of orderers.

**Action items to work on**

**Selection and use of tendering and contracting methods according to the characteristics and other factors of works**

Orderers select appropriate tendering and contracting methods among various methods according to the characteristics of works and regional conditions, or apply a combination of methods.

**Leveling of order and construction periods**

The leveling of ordering and construction periods should be a goal in order to devise better ways to execute budgets, such as by actively leveraging the multi-year budget system and ensuring budget execution from the first fiscal year, as well as devising contracting methods, such as setting leeway periods, and setting construction periods that take into consideration non-operating days by securing two days off a week.

**Use of quotations**

In the case of inviting bids, if a gap between a standard estimate and actual situations at construction sites is assumed, such as when there has been no bidder or no successful bid, predetermined prices should be reviewed appropriately using quotations.

**Expediting information sharing and discussions with contractors**

Orderers strive to respond to consultations from contractors speedily and appropriately. Hold meetings of all relevant parties of both orderers and contractors as necessary to discuss and deliberate the appropriateness of the design changes and suspension of construction works and the like with the aim of expediting design change procedures.

**Confirm and evaluate construction status after elapse of specified periods after completion**

Implement confirmation and evaluation of construction status as necessary after elapse of specified periods after completion.

Source) MLIT

# Section 11 Forming a New Phase of Relationships between the Central and Local Governments and Private Sectors

## 1 Promoting Public-Private Partnerships, etc.

In order to promote the formation of public-private partnerships (PPP/PFI), the MLIT provides support to local governments, etc., and facilitates the formation of forums for industry-academia-finance-government discussions (regional platforms).

In FY2018, we adopted 27 pioneering public-private partnership projects, which included feasibility research for the introduction of PPP/PFI concession schemes to toll roads, sewage lines, and airports projects. We also began providing support for local governments that are considering comprehensive, cross-field entrustment to the private sector, in order to form model PPP/PFI at local governments in areas with a low population. In addition, within regional platforms established in each of the nine blocks throughout Japan, we provided practical training, etc., for sounding out specific projects and acquiring knowhow through public private dialogue, and we supported 27 local governments to create local government platforms.

# Section 12 Policy Evaluations, Project Evaluations, and Interactive Administration

## 1 Driving Policy Evaluations

Based on the MLIT Basic Plan for Policy Evaluations under the Government Policy Evaluations Act, the MLIT uses three basic policy evaluation methods: (i) checking policies by periodically measuring and evaluating the achievement of each measure, (ii) reviewing policies by conducting in-depth analyses on specific focused themes and (iii) conducting policy assessment by analyzing the necessity of new measures and runs management cycles for policies by linking those methods. In FY2018, (i) 141 performance indicators were monitored, and (ii) 5 themes and (iii) 21 new measures were evaluated, by the respective systems[Note]. In addition, policy evaluation of individual public-works projects, individual research and development issues, regulations, and special taxation measures are conducted as a method of policy evaluation according to the characteristics of policies, and the results of the evaluations are reflected in budget requests and the development of new measures.

Also, in accordance with the Act on General Rules for Incorporated Administrative Agencies, performance evaluations of 15 incorporated administrative agencies as the competent minister were performed.

## 2 Implementation of Project Evaluations

A fully integrated scheme of evaluating individual public-works projects is built in place to enhance the efficiency and transparency of their implementation. Under this scheme, new public-works projects are evaluated upon initial adoption and then reevaluated and post-evaluated upon completion. Project appraisal charts are organized to present a background of the evaluations of public-works projects, including supporting data relevant to their cost effective analyses upon initial adoption, reevaluation, and post-evaluation upon completion, and are posted on the Internet and elsewhere. In addition, MLIT conducts planning-phase evaluations on public-works projects implemented under its direct control as its own approach in the preliminary phase of new project evaluation upon initial adoption.

## 3 Promoting Administrative Management Open to the Public, and Interactive Administration

### (1) MLIT Hotline Station

Promoting the land, infrastructure, transport, and tourism administration that has a very close bearing on national living, it would be essential to gain a broad insight into people's comments, requests and so on and deploy administrative actions directly related to the people. Therefore, the MLIT has established the MLIT Hotline Station to receive about 1,100 views on a monthly average.

### (2) Keeping Consumers Informed

The MLIT has opened the Negative Information, Etc. Search Site at its website to provide a summary listing of the records of contractors, etc. relating to buildings, such as housing, and public transportation facilities, including administrative dispositions imposed on them, to ensure safety and security through proper selection by consumers, etc. and supervision by markets, as well as by administration as in the past.

### (3) Making the Planning Process in the Development of Social Infrastructures More Transparent

In driving the development of social infrastructures, it is important to ensure the transparency and fairness of the planning process and win understanding and cooperation from the local residents. The MLIT is working to make the planning process more transparent by using guidelines that stipulate present key conceptual approaches to formulating plans efficiently with socioeconomic, environmental, and all other relevant perspectives taken into consideration while encouraging the participation of various entities, including local residents, in the process.

Note Ministry of Land, Infrastructure and Transport and Tourism Policy Evaluations
Website: http://www.mlit.go.jp/seisakutokatsu/hyouka/index.html

## Section 13 Approaches to Hosting Tokyo 2020 Olympic and Paralympic Games

The Act on Special Measures for the 2020 Tokyo Olympics and Paralympics was enacted on June 25, 2015, and the government has established a promotion headquarters to contribute to smooth preparations toward Tokyo Olympics and Paralympics to be held in 2020. Also, in accordance with the Act, the Basic Policy was adopted on November 27, 2015, by a Cabinet decision.

The MLIT launched the MLIT Preparatory Headquarters for the 2020 Olympic and Paralympic Games headed by the MLIT Minister on April 18, 2014 to render all-out assistance. It will take whatsoever responses necessary to get the Games running smoothly, including assuring safety and keeping lodgings and transportation comfortable. In addition, the Games belong not only to Tokyo, but to the whole of Japan, and MLIT will promote initiatives to lure international visitors into every little locality of Japan to create vibrant regional areas.

Specifically, the MLIT will work on such measures as the development of road transportation infrastructure; enhancement of the functionality of Tokyo's airports which are Japan's gateway; enhancement of barrier-free measures, development of an environment for receiving foreign travelers that includes multi-language information signs/maps and free public wireless LAN, strategies to combat heat for athletes and tourists through greening of roadsides and environmentally-friendly paving, etc., improvement of the waterfront environment, disaster-prevention measures against typhoons and other disasters, security measures, such as maritime security, and issuance of special license plates, in coordination with interested parties, including the Games Committee and Tokyo.

# Chapter 3 Realizing a World-Class Tourist Destination and Building a Beautiful Nation

## Section 1 Trends in Tourism

### 1 Significance of a Tourism Nation

Tourism is an industrial segment of vital importance to Japan, for it helps the nation maintain regional vitalities to keep up with its social development by capturing global demands, as from rapidly advancing Asian nations, to expand the nonresident population visiting from both at home and abroad in a decreasing population and aging society with falling birthrates, and also consolidate its position in an international community by promoting deeper global mutual understanding through two-way exchanges with the nations abroad.

### 2 Tourism Situation

#### (1) Japanese Domestic Tourism Consumption

Japanese domestic tourism consumption for 2018 was 20.5 trillion yen (down 3.0% from the previous year) as a total of guest nights and day trips.

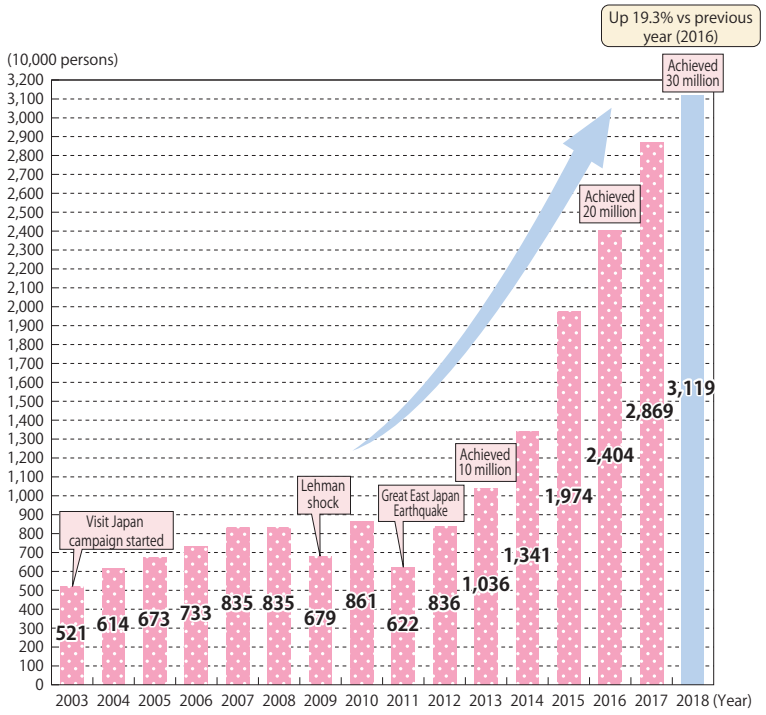
The breakdown of this domestic tourism consumption was 15.8 trillion yen for guest nights (down 1.7% from the previous year) and 4.7 trillion yen for day trips (down 7.0% from the previous year).

#### (2) Number of International Visitors to Japan

The number of international visitors to Japan in 2018 was 31.19 million (up 8.7% from the previous year), topping 30 million for the first time and marking a record high for the sixth consecutive year.

By nationality/region, visitors from China were the largest segment, at about 8.38 million, topping 8 million for the first time. Also, of the top 20 priority markets[Note 1] in the Visit Japan program[Note 2], all 19 markets except for Hong Kong marked records for the year.

Figure II-3-1-1 Change in the Number of international Visitors




(Note) Definite values for 2017 and before and preliminary value for 2018.
Source) Japan National Tourist Organization (JNTO)

Note 1 Korea, China, Taiwan, Hong Kong, Thailand, Singapore, Malaysia, Indonesia, Philippines, Vietnam, India, Australia, USA, Canada, UK, France, Germany, Italy, Russia, Spain

Note 2 Inbound tourist promotion project started in 2003, aimed at increasing the number of international visitors to Japan

### (3) Tourism Consumption by International Visitors to Japan

With the increase in the number of international visitors, tourism consumption by international visitors in 2018 reached a record high of 4,518.9 billion yen.

By nationality and region, China accounted for 1,545.0 billion yen (34.2% of total), followed by South Korea with 588.1 billion yen (13.0% of total), Taiwan with 581.7 billion yen (12.9% of total), Hong Kong with 335.8 billion yen (7.4% of total), and the United States with 289.3 billion yen (6.4% of total). These top five countries accounted for 73.9% of total travel spending by international visitors in 2018.

### (4) Number of Repeaters among International Visitors to Japan

The number of repeaters among international visitors in 2018 was 19.38 million (up 10.0% from the previous year).

Taiwan and Hong Kong especially produced high rates of repeaters, with the percentage of travelers in 2017 visiting for their second time or more being 85.6% and 82.4%, respectively.

### (5) Total Number of Guest Nights of International Visitors in the Outlying Areas

The total number of guest nights of international visitors in the outlying areas in 2018 (preliminary figures) was 36.36 million (up 11.3% from the previous year). Year on year, this exceeds that for the three major metropolitan areas (which were up 11.1%), with large increases by prefecture in Aomori (up 45.7% from the previous year), Miyagi (up 45.1% from the previous year), and Yamagata (up 37.0% from the previous year).

### (6) Percentage of International Conferences Held in Major Asian Countries

There were 492 international conferences held in 2018 (up 18.8% from the previous year), ranking 7th in the world after Italy. Japan's share of international conferences out of those held in major Asian countries was 30.3%, remaining in the top position in Asia.

### (7) Number of Japanese Going Overseas

The number of Japanese who went overseas in 2018 was 18.95 million (up 6.0% from the previous year), marking a record high.

## Section 2 Initiatives to Realize a World-Class Tourist Destination

On June 12, 2018, the Ministerial Council on the Promotion of Japan as a Tourism-Oriented Country decided on a "Tourism Vision Realization Program 2018" as a short-term action plan for the "New Tourism Strategy to Invigorate the Japanese Economy." Based on this program, the government made united efforts to promote various measures to realize a world-class tourist destination.

## 1 Enhancing the Appeal of Tourism Resources as a Cornerstone of Regional Revitalization

### (1) Opening Appealing Public Facilities and Infrastructure to the Public

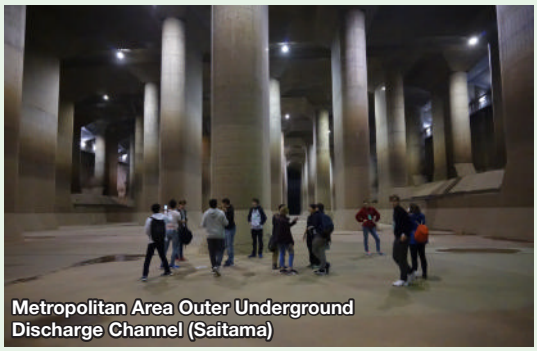
The MLIT promoted infrastructure tourism to encourage regional promotion by utilizing and opening infrastructure as tourism resources, such as expanding the number of tours held at the Metropolitan Area Outer Underground Discharge Channel.

## Column

### Promotion of Tourism and Regional Development through Infrastructure Tourism

There has been a surge of interest in infrastructure tourism, which utilizes dams, bridges, ports, and world-class civil engineering technology as tourism resources to promote tourism and regional development, with the number of visitors reaching about 500,000 per year. Infrastructure tourism involves viewing, experiencing and enjoying property unique to various regions in closer proximity, developing a deeper understanding of infrastructure, and contributing to the revitalization of regions around this infrastructure.

The number of private sector-sponsored tours listed on the MLIT Infrastructure Tourism Portal Site created in January 2016 increased from 32 in FY2016 to 107 in FY2018, and tours are offered with cooperation between infrastructure and the local community, such as discharge of water from a dam for tourists plus local dinning. Additionally, we are incorporating new perspectives, such as through solicitation of ideas from university students around the country, and promoting regional revitalization using infrastructure as tourism resources. We invite you to also participate in an infrastructure tour and see, learn, enjoy and experience infrastructure in Japan.


Metropolitan Area Outer Underground Discharge Channel (Saitama)


Akashi Kaikyo Bridge (Hyogo)


Miyagase Dam (Kanagawa)


Coast battery No.2

Source: MLIT

### (2) Increasing the Attraction of Tourist Sites through the Preservation and Utilization of Tourism Assets with Excellent Scenery

From such viewpoints as creating pleasing landscapes, promoting tourism, keeping the driving environment safe and comfortable, and making roads disaster-ready, we promoted the removal of utility poles by the maintenance of technical manuals and implementation of model construction towards the spread of low-cost methods.

In April 2018, a Utility Pole Removal Plan was formulated to encourage the comprehensive, planned and rapid promotion of measures to remove utility poles.

Furthermore, through workshops for all prefectures and municipalities, we encouraged municipalities that are major

tourist sites to develop landscape plans. We also made multilingual information boards in national government parks.

For rivers, with the easing of permission rules on exclusive use for river sites, open cafes and riverbeds were established in cooperation with private-sector operators. We integrated rivers and towns, promoting the formation of favorable spaces that appeal to travelers.

### (3) Promoting Tourism Town Development Using Historical Resources such as Japanese Traditional Houses

In order to make use of historical resources that are unused assets in local communities, such as using Japanese traditional houses as accommodations, and to connect that to regional revitalization, we cooperated with the ministries concerned to respond to inquiries from local communities by setting up a one-stop consultation hotline about Japanese traditional houses and providing support such as dispatching experts.

Also, by developing guidelines on specific business methods for newly established small-scale real estate joint ventures and crowdfunding, we promoted the regeneration of Japanese traditional houses utilizing small investments.

### (4) Development of New Tourism Attractions

We implemented a new project for experiential tourism utilizing tourism resources such as local culture and nature to expand travel consumption by prolonging regional visits by international visitors to Japan.

### (5) Improving Extensive Sightseeing Routes to a World-class Level

To promote the travel of international visitors to Japan into regional areas, we provided support for efforts such as the enhancement of tour content based on research and strategy formulation, and environmental maintenance, information sharing and promotion for sightseeing in wider areas, collaborating with regional stakeholders to encourage tourists to visit and stay. We also dispatched experts to each region to help identify an area's attractions and challenges, suggest measures, and help improve the skills of relevant persons in the community.

We used a "Theme-based Tourism Program for Drawing Visitors to the Countryside" to support networked regions in order to attract visitors to areas in the countryside that have specific tourism resources, such as anime and ninja.

Additionally, as part of the promotion of sake tourism, the 2017 tax reforms established an export alcohol market system that allows liquor tax exemptions to international visitors, and efforts were made to promote this system by posting the names of sake breweries, wineries and distilleries where it can be used on JNTO website.

Furthermore, in December 2018, we released the latest annual (2017) FF-Data, which enables users to grasp the movement of international visitors to Japan (modes of transportation used and routes taken within the country). It is expected that this information will be used to analyze sightseeing routes and for the planning and revision of strategic promotion measures.

In addition, we used big data in an effort to strengthen quick-impact congestion measures by making smart use of the capacity and space of existing roads and parking lots. Specifically, in the Furano/Biei region of Hokkaido, we implemented congestion measures using wide shoulders to separate vehicles waiting to park from through traffic, as well as a park & bus ride scheme from a temporary parking lot.

### (6) Promoting Formation of "Tourism Nation Showcases"

In order to form model cases for drawing international visitors to the countryside, we selected Kushiro City, Kanazawa City, and Nagasaki City, and are supporting the improvement of tourism resources to promote the Tourism Nation Showcases Plans formulated by each city.

### (7) Revival of Tourism in Tohoku Region and Responses to Natural Disasters

We designated 2016 as the "First Year of Tohoku Tourism Recovery" and are taking various measures to further promote tourism revival initiatives in Tohoku[Note].

In 2018, there was a series of major natural disasters, including Typhoon Jebi of 2018, the July 2018 torrential rain and the 2018 Hokkaido Eastern Iburi Earthquake, and these had a serious impact on each tourist destination. The Japan

**Note** See Chapter 1 Section 4 (2) about the restoration of tourism in Tohoku.

Tourism Agency took various measures to support tourism and to minimize the effect of reputational damage due to these disasters[Note].

## Column Reconstruction Support for Disaster-Stricken Tourist Areas (Disasters in 2018)

In 2018, there was a series of major natural disasters, including the July 2018 torrential rain, Typhoon Jebi of 2018, and the 2018 Hokkaido Eastern Iburi Earthquake, which had a serious impact on various tourist destinations. In order to mitigate any reputational damage from these disasters, the Japan Tourism Agency took a variety of measures to support various types of tourism.

Concerning the July 2018 torrential rain, the July 2018 Torrential Rain Tourism Support Project Subsidy was established by the government based on its July 2018 Torrential Rain Lifestyle and Business Reconstruction Support Package, which, in addition to providing support for discounted accommodation costs (Fukko Tour Discount) for tours to 13 disaster-affected prefectures (Gifu, Kyoto, Hyogo, Tottori, Shimane, Okayama, Hiroshima, Yamaguchi, Ehime, Kochi, Fukuoka, Tokushima, and Kagawa), also promoted visits to Japan with the aim of the fast recovery of tourism demand and the prevention of reputational damage.

Also, in response to Typhoon Jebi of 2018 and the associated damage to Kansai International Airport, the Kansai Inbound Tourism Revival Plan was formulated for the revitalization of inbound tourism to the Kansai region, providing detailed information on the Kansai region and implementing various measures in the public and private sectors, such as setting discount products for airlines and travel agencies.

Further, when the 2018 Hokkaido Eastern Iburi Earthquake occurred, the "Genki Desu Hokkaido/Welcome! HOKKAIDO, Japan" campaign was implemented to support Hokkaido tourism, with cooperation between the Hokkaido Tourism Organization and Hokkaido government from September 28 for travel product and accommodation support in both the public and private sectors, using Hokkaido Fukko Discounts and various other discount fares, and the JNTO conducted the accurate dissemination of information and overseas promotion of tourism.

By minimizing the impact of these disasters through such measures, while the number of inbound tourists visiting Japan in 2018 after the disasters in September turned negative year on year, by December these numbers had recovered to see more than 30 million inbound visitors in a year for the first time ever, marking a record of 31.19 million visitors. We will continue to work on various measures toward the realization of an advanced tourism country that does not lose to disasters going forward.

元気です
北海道
We are GENKI Hokkaido

Welcome!
HOKKAIDO,
Japan.

"Genki Desu Hokkaido/Welcome! HOKKAIDO, Japan" campaign logo

Note See the columns for details on how each natural disaster was handled.

**With the cooperation of a wide range of stakeholders, including the Hokkaido Tourism Organization, Japan National Tourism Organization (JNTO), private business operators and local governments, the "Genki Desu Hokkaido/Welcome! HOKKAIDO, Japan" campaign is being implemented during tourist seasons to welcome visitors from Japan and overseas, incorporating the "Hokkaido Fukko Discount" to encourage enjoyment for visitors from Japan and overseas during their stay and experiences in Hokkaido, sharing the charms of Hokkaido' s abundant nature, culture and foods.**

**4 Pillars and Case Study**

(As of Feb 28, 317 cases ← As of Sept 28, 252 cases)

**Get people to know** 180 cases

- Set common campaign logo
- Sharing detailed information in Japan and overseas on the wonderful tourism resources of Hokkaido through the Hokkaido Tourism Organization, Japan National Tourism Organization, etc.
- Joint promotion between the Japan National Tourism Organization and airlines/travel agencies
- Sharing information in cooperation with relevant ministries to mitigate reputational damage

**Get people to come** 70 cases

- Support for discounts for travel products and accommodation expenses throughout Hokkaido (Hokkaido Fukko Discount)
- Setting of discount products by airlines, railway companies and travel agencies

(ANA: Fares for visitors to Japan cut by up to approx. 50%
JAL: Reduced domestic fares for international visitors to Japan to/from Hokkaido by 30%
JR East: Set up special "Ekinetto Mobile Suica" product (50% discount))

**Get people to go** 26 cases

- Activities to promote use by public transport operators in Hokkaido

**Get people to enjoy themselves** 41 cases

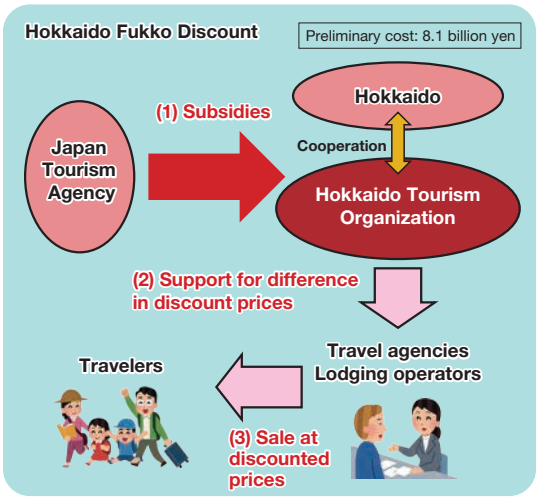
- Promotion of experience and stay-type tourism to enjoy nature and culture
- Discounts for tourist facilities in Hokkaido such as hotels and inns, restaurants and retail stores, etc.

元気です北海道

Welcome! HOKKAIDO, Japan.

**Campaign Logo**

*Some underlined portions implemented using preliminary cost




Source) Japan Tourism Agency

## Column Ensuring Safety and Security for International Visitors during Emergencies

Last year, there was a series of natural disasters, including the 2018 Osaka earthquake, Typhoon Jebi and the 2018 Hokkaido Eastern Iburi earthquake. Visitors to Japan were unable to obtain proper information about the state of the disaster and the operation of transportation, etc., and also experienced issues with using smartphones, which were an important source of information.

Based on lessons learned, the Emergency Measures for the Safety and Security of International Visitors in Disasters were decided by the Tourist Strategic Promotion Meeting on September 28, 2018. Based on this, the Japan Tourism Agency is working to improve the provision of information to international visitors during disasters, in cooperation with relevant organizations and businesses. The following are some of these measures.

1. Raise awareness of the Japan National Tourism Organization (JNTO) Japan Visitor Hotline and establish a system providing detailed consultations in English, Chinese and Korean 365 days a year, 24 hours a day, and support the development of emergency power supplies and mobile phone charging equipment at JNTO Tourist Information Centers to further strengthen business continuity. Further, improve the functions of the Japan Tourism Agency app, enhancing push notifications for disaster information and disaster guidance functions.

2. Disseminate accurate disaster-related information through the establishment of a new Twitter account (Japan Safe Travel) for sharing disaster information from the JNTO, as well as through the official website and social media accounts (Facebook, Twitter, Weibo) of the JNTO.
3. Promote the improvement of English broadcasting on the Shinkansen and at stations, and provide operating information in foreign languages at station ticket gates, ticket vending machines and ticket offices, etc., to improve the provision of railway information.
4. Secure airport staff who can handle multiple languages, build a cooperative system of relevant organization staff within the airport, such as from airlines and other tenants, based on BCP and disaster support agreements, and secure adequate mobile phone charging environments to improve the provision of information at airports.

Figure 1 Many tourists gathered at the tourist information center after the disaster


Figure 2 Examples of improvements to information provision by railway companies (information provision through tablets)

In addition, for the Shinkansen, which transport a large number of international visitors, because of the importance of providing information in the event of transportation problems, the Guidelines for the Provision of Information to International Visitors in Emergencies (Shinkansen) were formulated on January 30 of this year, and notice has been given to all JR companies, which are working to 1) provide broadcasts in 4 languages, in principle, every 10 minutes at stations, 2) provide guidance to websites using QR codes, and 3) update websites every 30 minutes.

We will continue to take measures to improve the environment for international visitors to Japan so that they can travel with peace of mind.

## 2 Innovating the Tourism Industry to Boost its International Competitiveness and Develop It into a Core Industry

### (1) Comprehensive Review of Tourism-related Regulations and Systems and Response to Minpaku (Private Lodging) Services

Based on the Act to Amend the Licensed Guide Interpreters Act and the Travel Agency Act, which went into effect in January 2018, a regional guide interpreter system was established in 5 new areas, and under the travel service arrangement business registration system, a total of 1,037 companies had registered as of March 2019, after efforts in cooperation with prefectures to raise awareness of this system.

Also, under the Private Lodging Business Act, which went into effect in June 2018, and other relevant government ordinances to promote healthy minpaku under appropriate regulations, operation began of a notification system for those running lodging businesses and a registration system for those running lodging management businesses and lodging agency businesses.

### (2) Developing and Enhancing Tourism Management Personnel Based on Industry Needs

We took initiatives at each level - the top, core, and working levels - to develop and secure personnel in the tourism field.

With respect to the top level, to develop human resources to lead the tourism industry in Japan, "Tourism MBAs" were established in April 2018 at the graduate school level (including MBAs) at Hitotsubashi University and Kyoto University as a base for the continuous development of management personnel, with the examination of curriculum content, public relations and awareness-raising activities carried out in cooperation between industry, academia and government.

Regarding the core level, an educational program conducted at Otaru University of Commerce in FY2015 was adopted by Aomori University, Kagoshima University, Toyo University and Meikai University in FY2017, and Kobe Yamate University, Shinshu University and Yokohama College of Commerce in FY2018, providing courses to increase managerial capabilities in the regional lodging industry.

On the working level, in response to a shortage of labor in the tourism industry, we conducted a survey and posting of advanced practical classes through industry-academia collaboration and held workshops to develop and secure practical human resources.

### (3) Quick Resolution of the Shortage of Accommodation Facilities and Provision of Accommodation Facilities that Meet Diverse Needs

Based on notifications sent out in June 2016 related to the creation of a system for relaxing floor area ratios, which is focused on the development of accommodation facilities, we carried out positive initiatives and provided financial support through the Organization for Promoting Urban Development (MINTO) for the development of accommodation facilities operated by private enterprises.

We also provided support for the handling of inbound tourists at accommodation facilities, such as inns and hotels, by promoting the provision of accommodation facilities to meet diverse needs.

### (4) Formation and Development of World-class DMOs

Toward the formation and development in each part of the country of Destination Management Organizations[Note], which are corporations that handle the management and marketing of tourism regions, we had registered 237 corporations as of March 29, 2019 under the Japan DMO registration system, and provided assistance for initiatives in each region in three ways: information, personnel, and financial/monetary support.

### (5) Continual Operation of the Tourist Area Regeneration/Revitalization Fund and Deployment of Fiscal Resources to Become a Next-generation Tourism-oriented Country

The Regional Economy Vitalization Corporation of Japan (REVIC), which has entered into a comprehensive collaboration with the Japan Tourism Agency, had set up 12 tourism revitalization funds by the end of FY2018 in different regions together with local financial institutions. These funds have provided investment and loans to 50 projects, contributing to area-wide regeneration/revitalization of tourist areas. The Japan Tourism Agency supported REVIC's efforts, including the provision of information on businesses with high relevance to REVIC's initiatives and efforts to get the word out about the funds, including through its website.

Also, with a view toward expanding and reinforcing the foundations of tourism, in order to make Japan an advanced tourism nation, an International Tourist Tax was created as a tax for promoting tourism (this system began on January 7, 2019). The source of funds is to be applied to uses that win the understanding of those paying the tax, including Japanese traveling abroad, based on the relationship between the benefits and burden, that are highly advanced and demonstrate good cost effectiveness, and that are in line with the important policy issues, including regional development, that Japan faces.

**Note** DMO: Destination Management/Marketing Organization

### (6) Strategic Advancement of Visit Japan Promotions With the Post Olympic and Paralympic Period in Mind and Strengthening of Foreign Publicity on Japan's Diverse Attractions to Encourage Inbound Tourism

In order to further promote inbound tourism from Europe, the United States and Australia, the Japan Tourism Agency and JNTO began the Enjoy My Japan Global Campaign with the objective of increasing recognition of Japan as a travel destination, utilizing digital technologies to disseminate advertisements and information mainly online.

Also, by accumulating and utilizing data on the usage of the JNTO website, etc., we have been able to make a quantitative analysis of the interests of international travelers and have worked to provide content that meets their needs.

Further, to attract more visitors to rural areas, the JNTO held seminars for local governments to provide them with the latest trends in relation to inbound tourism

### (7) Promotion of MICE

To further strengthen Japan's international competitiveness in MICE, relevant ministries and organizations came together in July 2018 to formulate both the Relevant Ministries' MICE Support Action Plan 2018, and the implementation of the recommendations of the MICE International Competitiveness Enhancement Committee for initiatives in the MICE industry. In line with these guidelines, we further strengthened our initiatives, including providing support for functional advancement for cities hoping to attract MICE. We also provided support to improve conference facilities that help the business activities of global companies.

### (8) Strategic Relaxation of Visa Requirements

We partially simplified application procedures for travelers from China, Philippines and India, which are target markets for the strategic relaxation of visa requirements under the Tourism Vision, we extended the maximum validity period and expanded the kind of people eligible, and simplified some application procedures, while for Russia we also introduced a short-term visa verification system for group package tour participants.

### (9) Stimulation of Educational Travel to Japan

In addition to supporting the matching of educational travel to Japan through a centralized point of contact at the JNTO, we also conducted an invitation program for educators in the Taiwan market and others.

### (10) Enhancement of Tourism Education

We examined model classes and produced videos to promote tourism education so that children can learn about attractive historical and cultural tourism resources in their communities and other parts of Japan and communicate the appeal of those resources on their own, and published them at symposiums and online, etc.

### (11) Stimulation of Outbound Travel by Young People

In July 2018, we published the findings of the Review Committee for Stimulation of Outbound Travel by Young People. Based on these findings, the Committee for Promotion of Outbound Travel by Young People was established in January 2019, and support programs are being developed in collaboration with stakeholders while fostering a national movement to promote overseas experiences for young people.

Also, toward the national deployment of the Youth Travel Classes, which have been implemented since 2013 mainly in the Tokyo metropolis and which share the significance and wonder of travel by young people, we have strengthened cooperation with MEXT, regional transportation bureaus, education boards and related organizations, holding 14 such classes in total (5 of these in rural areas) in FY2018.

## 3 Ensure All Visitors May Enjoy a Satisfying, Comfortable and Stress-free Sightseeing Experience

### (1) Realization of Innovative Immigration Control Using Cutting-edge Technologies

In coordination with the relevant ministries, installation of "Bio Carts", which use the waiting time for passport control to acquire biometric information in advance, was expanded from 15 to 17 airports, and facial recognition automated gates

for Japanese departure and return procedures were fully installed at Haneda, Narita, Chubu, Kansai and Fukuoka airports.

Furthermore, body scanners were installed at 13 airports, including Sendai, and high-performance automatic explosives detectors were installed in some major airports, including Narita Airport.

### (2) Promotion of "Integrated Tourism/Town Revitalization" through Private Sector Town Development Activities

We are promoting the establishment of networks of clear, easy-to-use walking spaces by supporting the development of information signs around terminal stations and barrier-free transportation facilities and walking spaces.

Also, to capture inbound demand, we have implemented initiatives to introduce the attractiveness of Japanese cities to promote the overseas expansion of urban development.

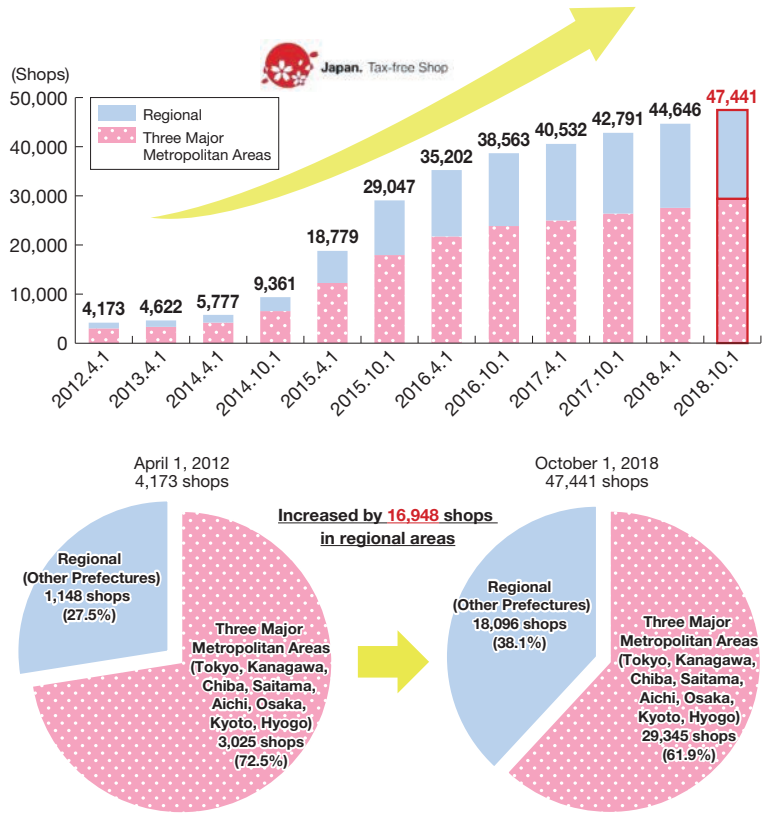
### (3) Improving the Environment for the Visitor Experience in Japan

In public transportation and tourist information centers, we provided support for multilingual services, the development of free public wireless LAN environments, and the westernization of toilets in public restrooms.

We also provided support for costs to cope with inbound travelers for inns, hotels and other accommodation facilities.

From July 2018, under certain conditions (special packaging, etc.), purchases in which the total amount of general goods and consumables is 5,000 yen or more may also be eligible for the tax-free program. We have continued to spread information about the consumption tax-free program for international visitors, and expand tax-free shops, including in the countryside. Also, to increase sales opportunities for international visitors of specialty products at regional events, etc., a program was established from July 2019 which allows businesses that already hold tax-free licenses to set up temporary tax-free shops at regional festivals, etc. with prior application.

Figure II-3-2-1 Change in the Number of Tax-free Shops




Source) Prepared by the Japan Tourism Agency based on documents from the National Tax Agency

Further, at Michi-no-Eki (Roadside Stations), measures were taken to promote the handling of inbound visitors and the establishment of bases for the dissemination of local information, such as the establishment of tourist information centers and the provision of free public wireless LAN ("Michi-no-Eki" SPOT).

### (4) Enhancing Systems for Receiving Foreign Patients to Enable Adequate Responses to Emergency and Non-emergency Cases

In FY2018, a list of about 1,600 medical institutions capable of accepting international visitors to Japan was created and disseminated in multiple languages. We also encouraged international visitors at various stages (prior to entry, at entry, and after entry into the country) to subscribe to travel insurance so that they could continue to have the peace of mind of being able to receive treatment without worrying about medical costs.

### (5) Establishing "Regional Economic Development Corridors"

The system of sales outlets for Japan Rail Passes was expanded to 59 train stations and 79 airports, with the addition of JR East Hamamatsucho Station in July 2018 and JR West Toyama, Sannomiya and Nara stations in March 2019.

Also, to further accelerate the flow of people and goods and to encourage local revitalization by creating an environment with choices among diverse, easy-to-use modes of transportation, we promoted the strengthening of inter-mode connections, focusing on buses. Improvements were also made to the location of souvenir shops and to the line of National Highway 20 to improve the waiting environment and reduce traffic congestion at the Shinjuku Expressway Bus Terminal, which opened in April 2016. We will continue to look at ways to improve convenience and strengthen traffic congestion countermeasures in this area. Going forward, we will look to further develop strategic integrated transportation terminals with road projects, beginning with plans for Shinagawa Station and Kobe Sannomiya Station, while strengthening public-private partnerships.

In order to create road signs that are easy for all users to understand, including international visitors, we introduced a "Numbering System" for expressways, in addition to route names, for Japan's developing expressway network. Cooperating with the different road administrators, we pushed forward with the development, aiming to be almost complete by 2020. Also, we improved the display of English on road information signs at 49 major tourist sites nationwide and other places in coordination with the information signs of various organizations and also promoted the display of the names of tourist sites on intersection name signs at famous tourist destinations and places of interest.

Expressway companies are implementing fixed-price expressway passes for various areas around Japan for international visitors using rental cars.

To encourage the development of new boat tourism-related services, the "Model Zones for Boat Travel Revitalization" system was established for a three-year trial period from April 2016 to improve the operation of passenger ship businesses targeting specialized tourism routes. Based on the results of this trial, the "Boat Travel Promotion for Inbound Tourist" system will be established from April 2019 to develop the environment for inbound tourism demand.

To secure means of transportation for tourists in depopulated areas, the "Private Car Compensated Passenger Transport System" was expanded to tourists, including international visitors, in the National Strategic Special District, and operation began in May 2018 in Yabu City, Hyogo.

### (6) Strengthening Gateway Functions at Regional Airports and Encouraging LCC (Low-cost Carrier) Services

To attract visitors to Japan through international air routes, 27 airports nationwide were approved as Air Travel Support Airports in July 2017, providing support for upgrading environments to receive travelers and to establish new international routes and an increased number of flights.

Additionally, the JNTO exhibited and engaged in business negotiations at international aviation trade fairs and carried out joint advertising in each market in conjunction with the new routes and the increase in the number of flights.

We also continued with procedures toward the privatization of airport operations at Fukuoka Airport, Kumamoto Airport, seven airports in Hokkaido, and Hiroshima Airport, making use of private-sector wisdom and funds to revitalize these airports.

Furthermore, we carried out initiatives to expand the arrival and departure capacity at airports, including facility maintenance needed to revise flight routes at Haneda Airport, construction of rapid exit taxiways at Narita Airport, construction of a terminal exclusively for LCCs at Chubu Airport, and construction of additional runways at Fukuoka Airport and Naha Airport.

### (7) Further Expanding the Ability to Receive Cruise Ships

To attain the goal of achieving five million international visitors from cruise ships in 2020, which was set out in the Tourism Vision, we carried out initiatives aimed at "zero rejections" of cruise ship port calls. This included the upgrading of mooring posts and fenders for receiving large cruise ships using existing stock, we established a subsidy system (project to make functional improvements for receiving international cruise passengers) for local governments and other organizations conducting projects to ensure the convenience and safety of cruise passengers.

Also, an agreement system has been created to allow priority use of quays to private businesses that develop passenger facilities and make them available for use by the general public at ports designated by the Minister of Land, Infrastruc-

ture, Transport and Tourism, and in June 2018, an additional port (Kagoshima Port) was added to the six ports designated up to 2017.

We also held seminars in Indonesia for local travel agencies, exchanges with cruise ship companies and port administrators to encourage the development of high-quality tourism port programs and a National Cruise Vitalization Conference, and enhanced the website for centrally disseminating specifications of port facilities and tourist information around ports of call.

### (8) Innovating the Environment for Using Public Transportation

We added dynamic data on bus delays and operating information to the standard bus information format that was established between bus operators and route searching service providers for the easy transfer of data to improve route searches for public transportation nationwide.

A free onboard Wi-Fi service was started for all Shinkansen from May 2018, beginning with the JR East Tohoku Shinkansen, to cater to the needs of foreign tourists visiting Japan. Discussions were also held in a review committee composed of relevant stakeholders, established in February 2018, with a view toward improving routes on which bus numbering had already been introduced and encouraging its introduction on routes that do not yet have numbering. Bus System Numbering Guidelines were also formulated in October 2018 to improve the user environment of buses to make them easy to understand for all users, including international visitors to Japan.

With respect to taxis, demonstration tests were carried out, with one test performed from October to November 2018 in which an app was used and pick-up charges fluctuated depending on demand, while another test from October 2018 to February 2019 involved operators setting a specific area of use and conditions such as the number of uses, and then offering unlimited rides for a fixed price and period within those conditions.

To reduce the inconvenience to foreign travelers of carrying large suitcases onto trains, we promoted hands-free travel that offers temporary storage of luggage at airports and stations as well as delivery of luggage to airports, hotels, and homes outside Japan. (Locations approved to use the common Hands-Free Travel logo mark: 296, as of March 2019)

In April 2018, a partial amendment to the Act on the Promotion of International Tourism by Encouraging Visits by Foreign Tourists was enacted, expanding measures to encourage public transport operators in their duties to provide information in multiple languages, and to improve the convenience of international visitors by encouraging Wi-Fi development, the westernization of toilets and responding to a wide range of needs.

### (9) Promoting Universal Design Ahead of the 2020 Tokyo Olympics and Paralympics

Based on the Universal Design 2020 Action Plan decided in February 2017, it has been decided to make large train stations more barrier-free and to promote the development of a high level of barrier-free environments across Japan, with a view toward assuring the success of the 2020 Tokyo Olympics and Paralympics and the future beyond the Games. In relation to this, in May 2018, the Act on the Partial Amendment of the Act on Promotion of Smooth Transportation, etc., of Elderly Persons, Disabled Persons, etc., was enacted, and necessary government ordinances were promulgated (effective from November 1, 2018. However, some provisions came into effect from April 1, 2019).

At airports, we established numerical targets related to the handling of passenger terminal buildings, and installed flashlights at all toilets at Narita Airport and the Haneda Airport International Terminal.

In addition to encouraging the introduction of barrier-free buses and taxis, we provided support for the addition of elevators and the development of barrier-free platform doors, etc., at stations that will be used during the 2020 Tokyo Olympic and Paralympic Games.

For lodging facilities such as inns and hotels, we provided support for barrier-free renovations and created and published a manual on sharing information on barrier-free facilities for lodging facilities.

In September of this year, we also formulated a similar approach to the Tokyo Metropolis' Policy on Road Sign Improvements toward the Tokyo 2020 Olympic and Paralympic Games, which had been applied to the Tokyo Metropolis since January 2016, for Chiba, Saitama and Kanagawa prefectures. We are working on improving road signs based on these policies, including the improvement of English signage, the use of route numbers, the use of pictograms and reversed characters, the expansion of common naming and font sizes and the enhancement of pedestrian signage. Also, we have promoted area-wide improvements of particular roads near the venues, including accessible routes, for better accessibility in a way that they would be distributed continually.

# Section 3 Building a Beautiful Nation Blessed with Pleasing Landscapes, etc.

## 1 Pleasing Landscape Formation

### (1) Accelerating Community Development Leveraged by the Landscape Act, etc.

Efforts to create pleasing landscapes have been accelerated by landscape administrative bodies based on the Landscape Act, which numbered 713 groups as of the end of March 2018, with 558 of them pursuing their own landscape plans. Also, landscape administrative bodies that have established provisions under the Outdoor Advertising Act rose to 209 groups as of April 1, 2018, and the comprehensive formation of pleasing landscapes is ongoing.

### (2) Approaching Landscape Discussions as Part of Social Capital Development

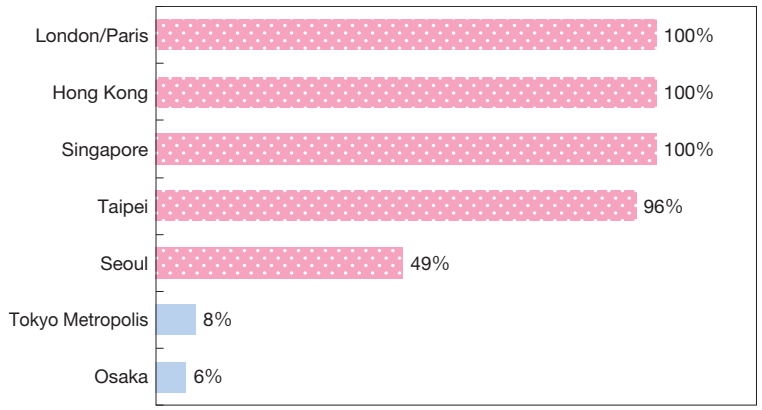
To move ahead with landscape-conscious social capital development, a scheme of making post-project predictions and assessments of landscapes and factoring them into project plans while hearing diverse opinions from the local residents, academic experts and others has been pursued.

### (3) Accelerating Removal of Utility Poles

From the viewpoints of creating pleasing landscapes, promoting tourism, keeping the driving environment safe and comfortable, and making roads that are prepared for disasters, we implemented a model to spread low-cost construction methods and encouraged the use of no utility poles in technical manuals.

We also formulated a plan to remove utility poles in April 2018, to promote the comprehensive, systematic and swift implementation of these measures.

Figure II-3-3-1 Present Status of Removal of Utility Poles in Japan Compared with Major European and Asian Cities




*1 2004 status for London and Paris, surveyed by overseas power survey companies (in terms of total cable length)
*2 2004 status for Hong Kong, surveyed by the Infrastructure Development Institute (in terms of total cable length)
*3 2001 status for Singapore, according to "Power Quality Initiatives in Singapore, CIRED2001, Singapore, 2001" (in terms of total cable length)
*4 2015 status for Taipei, based on data from the Taipei City Road Information Center for Taipei City (in terms of total cable length)
*5 2017 status for Seoul, according to 2017 Korean electricity statistics (in terms of total cable length)
*6 2017 status for Japan, surveyed by the MLIT (in terms of total cable length)
Source: MLIT

### (4) Promoting the "Japan Scenic Trails" campaign

The "Japan Scenic Trails" campaign has been promoted with the view of furthering roadside landscape designs and greening by leveraging regional resources and collaborating with various entities in order to help realize a tourism-oriented country and contribute to regional revitalization. As of the end of March 2019, 142 routes had been registered as Scenic Trails. Activities include those that help create pleasing landscapes and add to the charm of roadside localities by working in conjunction with Michi-no-Eki (Roadside Stations).

### (5) Promoting Landscape-conscious Road Design

We revised draft Road Design Guidelines, which are general and technical guidelines on road improvement combining aspects of aesthetic landscape safety, smoothness of traffic, and comfort, and promoted an approach to the formation of beautiful landscapes based on the Guidelines on Landscape-conscious Auxiliary Road Structures to show consideration for landscapes when installing or updating road facilities.

### (6) Promoting the Development of Waterfront Spaces, etc.

The practice of the concept of nature-rich river works has been promoted in all river restoration projects to preserve and create the habitat, growing and breeding environments of living organisms inherent in rivers and diversities of river landscape while keeping the rivers in harmony with local livelihood, history, and cultures with the workings of nature

taken into consideration.

In order to revitalize rivers and towns connected to them from the mouth of river to the source, we use "resources" such as regional landscape, history, culture and tourism infrastructure and "wisdom" with regional ideas, formulate river-town planning with coordination among municipalities, private businesses, local residents, and river administrators, and promote the formation of favorable spaces where rivers and towns integrate.

Specifically, we provide support through the river environment project to preserve/restore and create a favorable river environment, make exceptions to the permission rules on exclusive use for river sites in order to open river spaces, create a water resource area vision that aims to revitalize water source regions leveraging dams, and promote the Mizubering Project, which provides the wide public with opportunities to find value in rivers.

Other ongoing efforts directed at regenerating and creating waterside environments include putting treated sewage water to use in babbling water channels. The conservation and creation of excellent waterside environments is also ensured by the implementation of appropriate wastewater treatment.

## 2 Community Development Leveraging Nature and History

### (1) Developing National Government Parks to Contribute to the Preservation, Utilization, etc., of Japan's Indigenous Culture

The development of National Government Parks has been driven to ensure the preservation, utilization, etc. of Japan's superb indigenous culture. A total of 17 National Government Parks are already open. In FY2018, facilities were constructed in Asuka-Nara Palace Site Historical National Government Park and other locations. Also, as part of measures related to the 150th anniversary of the Meiji Restoration, some areas of the Meiji Memorial Oiso Garden were opened to the public in accordance with a Cabinet decision.

### (2) Preserving Historic Landscapes in Ancient Capitals

In Japan's ancient capital, such as Kyoto, Nara, and Kamakura, restrictions are placed on constructing new buildings, etc., making additions and modifications to existing ones, developing housing land and so on under the Act on Special Measures for Preservation of Historic Natural Features in Ancient Cities (Ancient Capitals Preservation Law). The Act also provides for the implementation of ancient city preservation projects, such as purchasing land, and publicity, educational and other activities, to help preserve historic landscapes in these cities.

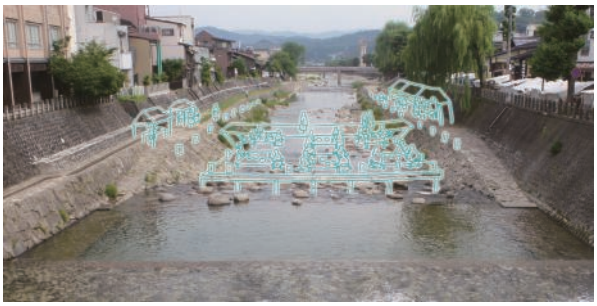
### (3) Preserving and Utilizing Historic Public Buildings of Historical Value, etc.

With the aim of contributing to community development, we are promoting the preservation and utilization of historically significant government buildings and facilities locally beloved in their areas for a long time. We have developed the environment of historic Sabo facilities (Two Important Cultural Properties and 201 Registered Tangible Cultural Properties as of March 31, 2019) by positioning them and their surrounding environment as a core of tourism resources, thereby encouraging efforts that contribute to the formation of a new forum of human interaction.

Figure II-3-3-2 Promoting Tourism and Exchange Events Around Historical Flood and Sediment Control Facilities in the Arakawa River Basin (Fukushima City, Fukushima)

Source) MLIT

Figure II-3-3-3 Riverbed Sketch (Miyagawa River, Takayama City, Gifu)



Source) Junior Chamber International Takayama

### (4) Community Development Leveraging Histories and Cultures

Historic landscape maintenance and improvement plans for 72 municipalities (as of January 31, 2019) have been accredited in order to promote community development leveraging local histories and traditional cultures and approaches pursuant to the plans supported, based on the Law on the Maintenance and Improvement of Historic Landscape in a Community (Historical Urban Development Law). In addition, we have provided renovation and other support for buildings that serve as landscape and historic resources in order to encourage the formation of pleasing scenic and historic landscapes.

Figure II-3-3-4 Riverbed Created (Miyagawa River, Takayama City, Gifu)

Source) Junior Chamber International Takayama

### (5) Promotion of Mizubering Project

Mizubering is an initiative to provide opportunities to find new value in rivers to people and private companies leading daily lives or engaging in economic activities without being conscious of rivers around them.

Utilizing familiar rivers, Mizubering is an activity taking place in more than 60 locations nationwide aimed at realizing regional revitalization, starting from waterfronts across Japan, while creating a new social design that uses rivers as a new frontier and has various entities collaborating with each other.

We will continue to provide support for the efforts of locals and private companies through Mizubering so that the value of rivers can be further leveraged in fulfilling their roles as regional treasures.

### (6) Promoting Green Infrastructure Initiatives

Green infrastructure aims to utilize the natural environment's diverse functions (providing habitats for wildlife, creating pleasing landscapes, and controlling atmospheric warming) and obtain diverse effects such as improving local charm and the living environment and preventing/reducing disasters, in terms of both structural and non-structural issues, such as infrastructure development and land use. With regard to this, we carry out initiatives in various fields, including the creation of rich river environments and the development of green coastal levees, as well as parks and green spaces that function to prevent the spread of fires. In FY2018, we held a Green Infrastructure Round Table in which future promotion measures were discussed.

# Chapter 4 Promoting Regional Revitalization

## Section 1 Approaches to Regional Revitalization

In order to properly respond to the declining birth rate/aging population to put a brake on population declines, while correcting the excessive concentration in Tokyo Area and maintaining vitality of Japanese society in the future by securing a comfortable living environment in each region, the Basic Policy for Overcoming Population Decline and Vitalizing Local Economy in Japan 2016 was formulated in 2017 and the Overcoming Population Decline and Vitalizing Local Economies: Comprehensive Strategy was revised, in accordance with the Act for Overcoming the Population Decline and Vitalizing Local Economy in Japan passed by the government in November 2014. Also, with the aim of deepening the regional revitalization, ideas such as using vacant stores and revising and establishing laws aimed at promoting local universities, etc., were examined, and information, human and financial support to promote specific initiatives based on regional comprehensive strategy was provided to local governments.

Efforts to achieve Sustainable Development Goals (SDGs) contribute to the realization of regional revitalization, and from February to March 2018 the Japanese government solicited proposals from local governments (prefectures and municipalities) for the achievement of SDGs, before selecting 29 cities in June of that year from the best proposed approaches as SDG Cities of the Future, with ten of these leading projects further selected as Model Local Government SDG Projects. Given the need for collaboration between various stakeholders in the promotion of SDGs, the Public-Private SDG Partnership Platform for Regional Revitalization was established in August 2018, for the purpose of promoting public-private partnerships and implementing initiatives for matching support and launch study groups, etc. Also, in February 2019, the 1st International Forum on SDGs for Regional Revitalization was held, for the purpose of promoting the sharing of initiatives from SDG Cities of the Future throughout Japan and around the world. Further, the construction of a Financial Scheme for SDGs for Regional Revitalization was examined with the aim of forming an autonomous virtuous cycle to create cash flows for the solution of regional issues.

In March 2019, the Cabinet decided and submitted to the Diet a Bill for Partial Revision of Local Revitalization Act, with the purpose of establishing projects to promote migration to existing housing in rural areas by providing fuller information for migrants and establishing regional housing complex revitalization projects and public facility infrastructure projects utilizing private funds, in order to make a shift from "high-growth period town planning" to the revitalization of towns for a society in population decline.

In order to realize regional revitalization through regulatory reform, the National Strategic Special Districts system has successfully reformed regulations that had been difficult to change due to stiff opposition in a wide range of fields, including medical care, nursery care, employment, education, agriculture, urban reconstruction and community-building. In addition, a total of 315 specific projects have been implemented in a visible way in the 10 designated districts to capitalize on these regulatory reforms. A round-table conference of experts was also held toward the realization of cutting-edge "super cities" embodying the fourth industrial revolution, and this was compiled into a final report in February, with work being carried out to examine the development of necessary systems and technical foundations.

The MLIT is pushing forward the development of tourism regions, with the Destination Marketing/Management Organization (DMO) as its core, creating various regional content and establishing an environment allowing Japan to become a world-class tourist destination and to create jobs by promoting the securing and development of human resources engaged in the construction, shipbuilding, transportation and other industries that underpin regional economies.

Furthermore, with the aim of reviving regional communities, we are pushing forward efforts to make regional cities compact and create transportation networks, form small stations in hilly and mountainous areas, and develop houses and towns for multi-generation residents in coordination with the comprehensive regional care system in suburban metropolitan areas. We are also promoting multi-habitation in earnest and establishing an environment for making relocation easier by facilitating the distribution of existing homes in order to create new flows of people into rural areas.

The MLIT has also been driving nationwide urban renaissance, through the development of public and public-benefit

facilities in a public-private partnership, as well as urban renaissance aimed at the enhancement of international competitiveness of cities by mainly private developers.

# Section 2 Promoting Measures Supporting Regional Revitalization

## 1 Efforts Directed at Augmenting Regional and Private Self-reliance and Discretion

### (1) Supporting Local Regional Revitalization Efforts

Regional revitalization is not an effort to be taken uniformly throughout Japan; it involves individual regions capitalizing on their distinct resources and characteristics to tackle their own distinct challenges to overcome depopulation. As local governments continue to devise plans for measures, promote projects and verify effects in line with their own individual strategies, the national government has continued to play the supporting role of providing assistance on information, personnel and financial aspects.

To provide assistance on information aspects, the government provides the Regional Economy and Society Analyzing System (RESAS), which takes big data from the public and private sectors regarding regional economies and makes it visible and intuitive. The system is used to fully understand the current state and challenges of each region; analyze strengths, weaknesses and future visions; set basic targets and KPIs, and establish PDCA cycles, thereby supporting the regional revitalization efforts of local governments, private companies, residents, NPOs and others.

To provide assistance on personnel aspects, regional revitalization colleges train and secure the human resources required for regional revitalization, while the government provides support through the regional revitalization concierge, which sets up a consultation desk at each ministry and the regional revitalization personnel support system in which government, private company and other organizations' personnel are dispatched to small local governments.

To provide assistance on financial aspects, we are providing support through such efforts as a regional revitalization promotion subsidy that consistently and continuously supports multi-year, forward-thinking projects undertaken by local governments, and a regional revitalization support tax system that provides preferential treatment in the form of tax credits for corporate donations to regional revitalization efforts undertaken by local governments (a corporate version of *furusato nozei*, which is a system of remitting local taxes to regional municipalities of the remitters' choice), thereby enabling regions to make consistent efforts toward regional revitalization from medium- and long-term perspectives.

To promote further approaches to individualistic and charming regional planning across Japan, the MLIT has awarded the Handmade Hometown Prize (awarded by the Minister of Land, Infrastructure, Transport and Tourism) since FY1986, commending initiatives for regional revitalization related to social infrastructure. At the 33rd Handmade Hometown Prize Grand Prix 2018, presentations were given by the 23 recipient organizations from that year (3 for the grand prize division and 20 for the general division), and a winning organization was chosen for the Grand Prix and Best Presentation awards for each of the general and grand prize divisions. Winner information was also shared broadly online, etc., as good examples of uses for regional development[Note 1].

Since FY1984, Community Development Awards (awarded by the Minister of Land, Infrastructure, Transport and Tourism) have been given to ingenious, independent and broad regional development activities for the purpose of encouraging regional development through regional collaboration and exchange. In FY2018, 51 organizations from 29 prefectures were nominated, and 7 groups received various awards, along with the Minister of Land, Infrastructure, Transport and Tourism Award going to the Okunoto area of Ishikawa for its efforts at regional promotion utilizing local materials in local traditional crafts. Information on the content of best practices from awards are widely disseminated through the MLIT website[Note 2].

### (2) Promoting Use of Know-how and Funds Originating from Private Sectors

In order to enhance the growth and competitiveness of local cities, MINTO provided support in the forms of investment, joint operation, and so forth in private urban redevelopment projects, such as those linked with an urban renaissance and development project undertaken by a local public entity and accredited by the minister of the MLIT. Accordingly, MINTO has established a fund with regional financial institutions, to support the improvement of value

Note 1 Handmade Hometown Prize website: http://www.mlit.go.jp/sogoseisaku/region/tedukuri/
Note 2 MLIT Regional Promotion website: http://www.mlit.go.jp/kokudoseisaku/chisei/kokudoseisaku_chisei_mn_000016.html

in certain areas linked in private urban redevelopment projects through investment, bond acquisition and subsidies, etc., through the fund.

In its bid to realize and maintain the concept of sustainable community development with community participation through maintenance and betterment of community charms and vitalities, the MLIT supports projects related to the diffusion and promotion of know-how, etc., that is possessed by private associations with experience in the practice of community development activities and that leads to continuing sources of certain profitability in the course of such activities, so that such knowledge can be horizontally extended to other associations about to embark on similar activities, and also supports experimental efforts for advanced private urban development activities, including facility maintenance based on agreements to promote convenience for cities under the Act on Special Measures Concerning Urban Renaissance.

Figure II-4-2-1 Kyoto Minamiza Kabuki Theater (Shijo, Kyoto City, Kyoto Prefecture), an Example of Joint Implementation and Other Forms of Support for Excellent Private Urban Redevelopment Projects

Source) MLIT

In addition, consideration is in progress toward the realization of measures aimed at combating aging expressways in conjunction with urban redevelopment, using the Tsukiji River and sections of the Metropolitan Expressways as model cases, on the basis of the Road Act amended in FY2014 that allows for usage of upper open spaces on roads. Regarding the project to bury the Nihombashi section of the Metropolitan Expressway, this is being developed not only as a measure against aging but as a specific private renewal project. Going forward, the national government, Tokyo city and Chuo-ku will continue to cooperate on Metropolitan Expressway projects.

In response to the Act on the Partial Revision of the Act on Special Measures Concerning Urban Renaissance, which came into effect in July 2018 and has expanded the application of the three-dimensional road system to general roads, the MLIT is now actively promoting the use of the three-dimensional road system.

Moreover, public-private partnership efforts leveraging road spaces are being pushed forward in order to create forums for regional activity/exchanges and maintain/improve road quality.

In FY2015, the Act to Partially Amend the Act on Special Districts for Structural Reform, which enables private-sector operators to operate toll roads managed by public corporations, was passed and enacted, and since October 2016, toll roads in Aichi Prefecture have been operated by the Aichi Road Concession Corporation, established by the Maeda Group (Representative corporation: Maeda Corporation).

## 2 General Endeavors to Build an Intensive Urban Structure

Compact cities and development of surrounding city transportation networks such as by rebuilding public transportation networks should be worked on continuously with the mid- to long-term perspectives as they are effective policy means to realize specific administrative purposes such as maintaining and improving convenience of lives of residents, revitalizing regional economies by enhanced productivity in the service industry, and reducing administrative costs by improved efficiency in administrative services.

With the aim of pushing forward initiatives of municipalities toward the realization of compact cities, the Act on Special Measures concerning Urban Regeneration was amended in 2014 to create the appropriate location plan system for encouraging establishment of residential and urban functions with economic incentives. As of the end of FY2017, 468 municipalities made specific efforts on creating appropriate location plans, of which 231 cities prepared and published the appropriate location plan. 644 local governments has tackled with local public transportation networking plans and 500 of them has published the plans.

In addition, we are working to improve support measures in line with actual needs, formulate and horizontally develop model cities, and make the outcomes of efforts visible through the Compact City Formation Support Team (secretariat: MLIT), which comprises relevant ministries and agencies, so that these initiatives of municipalities will be promoted as comprehensive efforts in coordination with various relevant measures concerning healthcare/welfare, housing, realignment of public facilities and the optimum use of government owned facilities.

In FY2018, we worked to improve important support measures based on the actual issues and needs of municipalities, and provided them with an overall collection of support measures in list form. In addition, a second version of the model city is being developed and efforts are being made to demonstrate the effectiveness of a Compact Plus Network that clearly indicates target values and the ideal state of cities. Furthermore, regarding smart planning, which is a method of planning in which optimal facility locations and other factors are examined from users' viewpoints, we conducted observations in multiple cities to further improve advanced systems, and made efforts to provide a wider array of quantifiable measures and evaluation indices.

Also, with the amendment of the Act on Special Measures Concerning Urban Renaissance, in response to the "sponge-ification" of cities, where vacant land and vacant houses in cities (low unused land) randomly occur, a system was introduced to promote the aggregation and reorganization and use of low unused land (Unused Land Rights Establishment Promotion Plan, Facility Location Guidance Promotion Agreements etc.).

## 3 Urban Planning and Infrastructures Development Taking Advantage of Regional Characteristics

### (1) Emergency Development of Urban Planning Roads Instrumental in Encouraging Private Investment

The development of urban planning roads is instrumental in facilitating urban reconstruction because it encourages the reconstruction, etc., of roadside buildings. For those routes under construction whose completion is bottlenecked because of small plots of land yet to be purchased, the local governments (project-implementing entities) have announced their pledges to complete the construction within a certain period of time (completion time declaration routes; as of April 2018, 239 routes were declared by 97 project-implementing entities) to speed up the development of the project benefits.

### (2) Developing Transport Nodes

Transport nodes, such as railway stations and bus terminals, are very convenient and have great potential as the core of urban reconstruction, because they attract numerous people to use the various kinds of transport facilities that converge upon them.

The MLIT leveraged the implementation of transport node improvement projects, urban and regional transport strategy promotion projects, integrated railway station improvement projects, and other projects at the transport nodes, such as the Shinjuku St. South Exit District, and in the surrounding areas, in order to improve the ease with which passengers transition from one means of transportation to another, to consolidate the urban areas disrupted by railways, to improve station functions, and to streamline urban traffic and augment the functions of these transport nodes.

### (3) Strengthening Connections between Modes of Transportation (Modal Connections)

Regarding concentrated transportation terminals, including the Shinjuku Expressway Bus Terminal, the MLIT developed strategic implementation via road projects while strengthening public-private partnerships, and is promoting the strengthening of bus service and other modal connections to accelerate the flow of people, goods and accelerate regional revitalization by creating a place in which people can choose a transportation mode from a wide variety of options, all of which are easy to use.

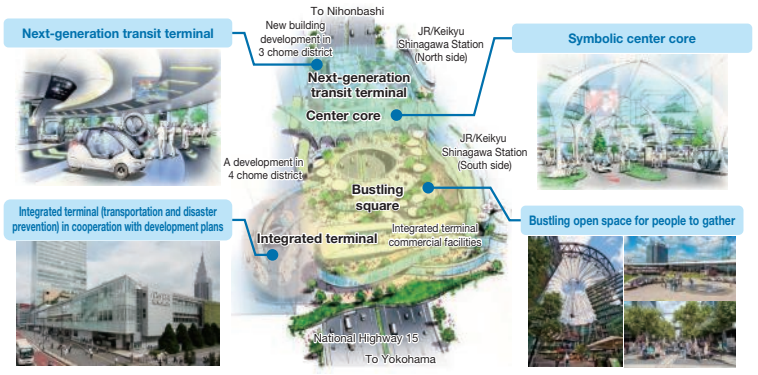
As for the user environment for buses in Japan, from the users' point of view, bus services are of much lower quality than railway and airway services in Japan and bus services in foreign countries. As user-oriented road measures that boost stock effects are promoted in the future, it is important that the road measures also include efforts to accelerate the improvement of the convenience of public transportation, including buses, while taking into account the state of the network between expressways, railways, Shinkansen and other modes of transportation in regional areas.

Under these circumstances, as an effort focused on buses, we will implement the Basuta (Bus Terminal) Project to improve the convenience of bus hubs while making full use of ITS and PPP, thereby strengthening modal connections, re-

alizing the revitalization of regions, and improving productivity in the strengthening of disaster responses.

Improvements at the Shinjuku Expressway Bus Terminal, which opened in April 2016, includes installation of souvenir shop locations and realignment of National Highway 20 for a better waiting space and less congestion. Further efforts are being made on an ongoing basis to improve convenience and to strengthen measures against congestion. Future plans include Shinagawa Station and Kobe Sannomiya Station, where strategic integrated transportation terminals will be developed as road projects through enhanced cooperation between the public and private sectors.

Figure II-4-2-2 Illustration of Future Shinagawa Station West Exit Square




Source) MLIT

We are also promoting the effective use of transfers between expressway buses at expressway service areas and parking areas, junction transportation, and expressway bus stops, as well as the improvement of environments for using local buses.

As for the new modes of transportation of car-sharing and bicycle-sharing, we are promoting efforts that strengthen connections with other modes of public transportation while making effective use of roadway spaces.

We built Japan's first on-road car-sharing station adjacent to the Otemachi subway station complex in Chiyoda City, Tokyo, and are implementing a pilot program to verify the possibilities of encouraging the use of public transportation. In addition, in March 2018, we added a car-sharing station near Shimbashi Station, which is in a different type of location. We are also implementing a separate pilot program to verify the effects of locating a bicycle-sharing port, which would be the first in the metropolis, on the national route near this car-sharing station. We will take into account the results of these pilot programs while continuing discussions toward improving convenience for road users through the effective use of roadway spaces.

### (4) Wide-area Development of Infrastructures to Induce Firm Location

Competition, collaboration, and regional buoyancy in East Asia should benefit greatly by inviting and accumulating internationally competitive growing industries in the individual regions. Motivated by this recognition, measures have been promoted to support expanding regional employment and more buoyant economy by concentrating investment on the development of those infrastructures that are truly needed to carry out unique regional approaches, such as developing airports, ports and harbors, railroads and wide-area expressway networks.

#### (i) Airport development

Aviation network connecting distant cities at home and abroad are greatly instrumental in revitalizing regional communities, boosting the tourism industry and corporate economic activities. It is expected that the aviation sector will play a key role to boost Japanese economy taking advantage of global economic growth, in particular booming economy in Asia. In an effort to enhance Japan's international competitiveness and regional competitiveness in the hinterlands of the airports, MLIT has been making efforts to enhance airport capacities and relocate or change the internal layout of airport terminal area in order to improve user-friendliness.

#### (ii) Port and harbor development

In Japan, which is surrounded by the sea, the majority of international trades are conducted by marine transportation, and domestic marine transportation serves important roles in logistics and interactions between regions. Ports and harbors are the gateway for international trades and support Japanese industries as places of corporate activities. In order to enhance international competitiveness of Japanese industries by improving logistics efficiency and to maintain and create employment and income, international logistics terminals are being developed at ports and harbors that underpin regional key industries.

### (iii) Railway development

The nationwide network of trunk railways is the lifeblood of passenger and freight transport, accelerating interaction between blocks and between regions, encouraging industrial location, and activating regional economies to energize regional living, and rail freight transportation plays a significant role in the transportation of industrial goods that support regional economies.

### (iv) Road development

The MLIT is strengthening Japan's international competitiveness by accelerating and facilitating logistics, and from the perspective of regional revitalization, is forming a new network of trunk highways, such as high-standard arterial highways.

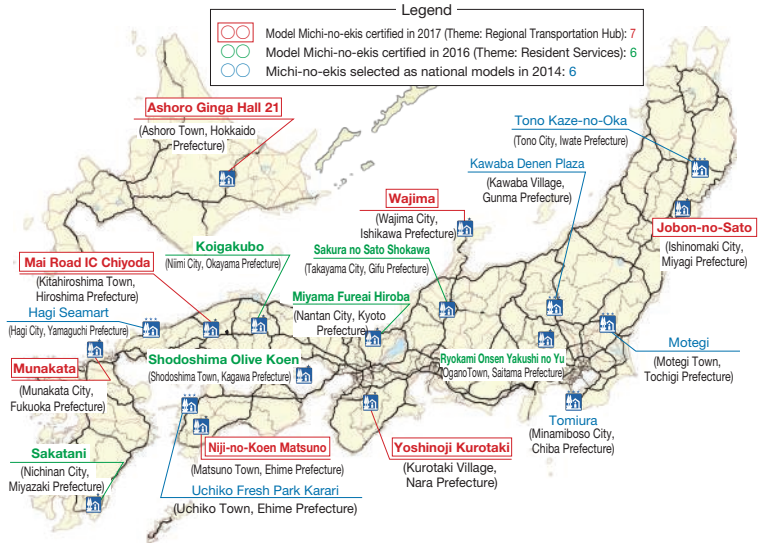
## (5) Promoting Community-conscious Projects and Programs

### (i) Michi-no-eki (Roadside Station)

Located roadside, a Michi-no-eki is a facility that provides 3 main functions, including "resting space" such as parking spaces and restrooms, "information provision" for road traffic and local events, and "hub for local integration" that encourages interaction between the local residents and road users and between regions. As of March 2019, there were 1,154 registered Michi-no-ekis.

In recent years, local specialties and tourism resources have been utilized to welcome many people to Michi-no-ekis as hubs of regional revitalization nationwide, thereby creating regional employment, reactivating economies, and helping improve resident services. As a framework to provide focused support to these efforts in coordination with relevant organizations, the priority Michi-no-eki system was created in FY 2014. In addition to six national model Michi-no-ekis selected at the time of establishment of the system and 35 priority Michi-no-ekis, a further 38 priority Michi-no-ekis were selected in FY2015 and a further 15 in FY2018. Further, beginning in FY2016, an initiative was started to establish advanced models on certain specific themes, with six Michi-no-ekis certified under the theme of "resident services" in FY2016 and seven Michi-no-ekis certified as "regional transportation hubs" in FY2017.

Figure II-4-2-3 Locations of Model Michi-no-ekis




Source) MLIT

### (ii) Creation of hubs through the use of expressway rest areas

Expressway rest areas were typically thought of as only available to users of expressways, but the development of "welcome gates," "highway oases," and the like in recent years has opened the facilities to regions along the expressways to promote regional revitalization, and to encourage those efforts, we are collaborating with relevant organizations to provide support in line with the progress of those efforts.

To this end, since July 2018, development has been in progress to consolidate the Highway service facilities at Kawanan-cho with the Higashi Kyushu Kawaminami Parking Area.

### (iii) Improvement of road management through public-private partnerships

Past efforts to work together with regions in the course of road management include cooperation with private groups and others through the Volunteer Support Program (VSP) and the like. In April 2016, the Road Act was amended and a road cooperation organization system was created in an effort to further improve road management through cooperation with private groups and others who resolve common road-related problems, take targeted action to address the needs of road users, and voluntarily implement other activities. As of the end of FY2018, we had designated 32 groups for national highways under government control.

Road cooperation organizations implement activities in roadway spaces to improve the appeal of roads, and the benefits reaped from those activities make it possible to improve road management activities. In addition, road cooperation organizations are undertaking measures to streamline and facilitate administrative procedures regarding the construction and maintenance of roads and their exclusive use of roads.

### (iv) Support system for river-town planning

In order to revitalize rivers that show various shapes from the mouth to the source and communities connected to them, we are promoting the formation of favorable spaces where rivers and towns integrate by formulating plans for river-town planning that utilizes rivers with practical use of resources; such as landscape, history, culture and foundation for tourism; and inventive wisdom of the district, under coordination among municipalities, private businesses, local residents, and river administrators. By FY2018, 213 locations had been registered in the support system for river-town planning.

### (v) Managing rivers with resident participation to suit regional characteristics

Those individuals who possess an expert knowledge of river environments and who are zealous for the good river development are appointed as river environment preservation monitors to help create and preserve river environments and carry out meticulous activities aimed at ensuring and promoting orderly river usage. Love river monitors are also at work in order to gather information about river management, such as illegal garbage dumping in to river or defects in river facilities, to report that information to river administrators and to promote the philosophy of river protection.

Furthermore, the MLIT designates private organizations, etc., that pursue voluntary activities relevant to the maintenance of rivers, the preservation of river environments, or other types of river management as river cooperation organizations, and legally accredits them as organizations working in conjunction with river administrators, with a view to promoting organized voluntary activities and driving diverse modes of river management tailored to specific regional conditions.

### (vi) Supporting efforts to take advantage of the regional features of the seaside

With the aim of stimulating the use of the seaside and enhancing its charm as a tourist resource, we support seaside environment development projects in which seaside preservation facilities are developed according to active seaside usage plans.

The MLIT designates those corporations and associations that are accredited to be capable of voluntarily conducting various activities, such as cleaning and planting seashores for preservation, protecting rare species of animals and plants along the seaside, getting prepared for natural disasters and hosting sessions of environmental education, as seaside cooperation organizations to reinforce the ties of collaboration with localities and thus to enhance coastal management to suit regional characteristics. Through FY 2018, the MLIT has designated 18 organizations.

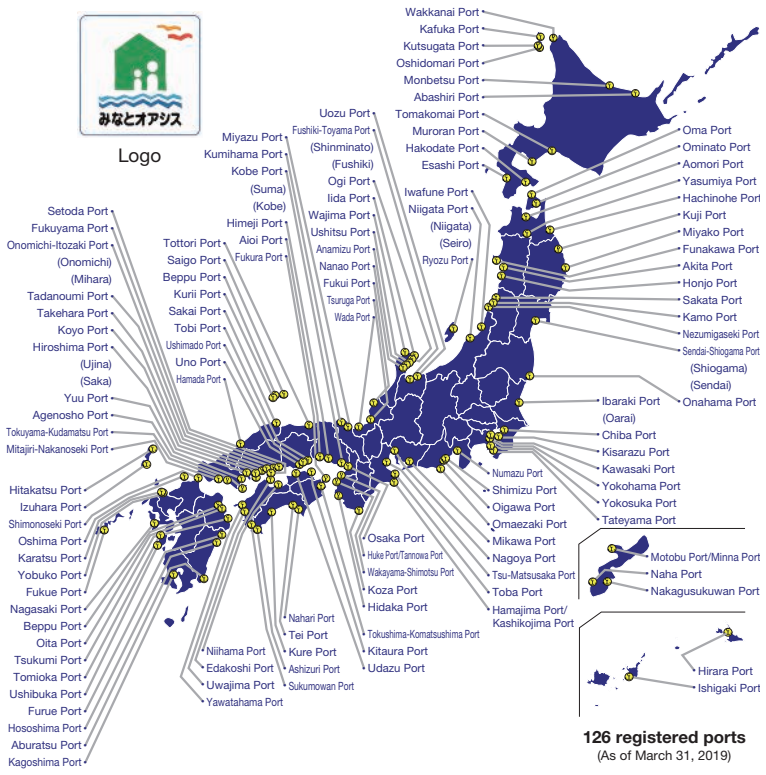
### (vii) Regional promotion built around ports

Those facilities at which continual approaches to regional development are carried on have been accredited as Minato (Port) Oases by Ports and Harbours Bureau Director-General to promote community development around the core of ports to help revitalize localities by promoting exchanges of local residents and tourism (126 ports as of the end of March 2019).

Minato Oases help generate excitement in communities through various activities such as the “All Japan Sea-Class Gourmet Competition” hosted by the National Council on Minato Oases. These facilities are also expected to serve new needs, such as accepting the rapidly increasing number of inbound tourists who arrive by cruise ship in recent years, and providing support during and after disasters.

In addition, to respond to diversifying needs of ports and harbors, such as providing Japanese-style hospitality when cruise ships dock at Japanese ports and harbors, and for purposes such as promoting management of ports and harbors through public-private partnerships, the Ports and Harbors Cooperation Association system through which port and harbor administrators designate appropriate private groups and the like is used to make further efforts to revitalize communities centered around ports (40 associations as of March 31, 2019).

Figure II-4-2-4 National Map of Minato Oases




Source) MLIT

### (viii) Building centers of marine leisure

The development of Umi-no-ekis have also been promoted as a means of improving the appeal of marine leisure and better utilizing existing port and marina facilities, etc., and as of the end of March 2019, 168 Umi-no-ekis had been registered nationwide. The selection of "Marine-tic Routes" has been developed for model routes to local sightseeing spots and gourmet spots, with Umi-no-ekis serving as way stations, and to encourage the enjoyment of cruising by tourists in addition to traditional pleasure boat users. A further 11 model routes were selected in March 2019, with the aim of expanding these "Marine-tic Routes" into more regions.

## (6) Promoting the Active Maintenance of Cadastral Maps

To further promote cadastral surveys, which contributes to rapid recovery and reconstruction after disasters and smooth infrastructure development and private urban development, the national government has prepared basic boundary information for urban areas and mountain villages where cadastral surveys have been delayed, and has promoted the use of results from other non-cadastral surveys, in addition to providing financial support to municipalities for cadastral surveys.

We are also promoting improvements in the efficiency of cadastral surveys with the creation and dissemination of manuals on cadastral survey methods using remote sensing technologies.

## (7) Deep underground utilization

Regarding deep underground utilization, in addition to proceeding with appropriate processing in accordance with the provisions of the law for cases in which applications have been made, we are also conducting technical examinations for the facilitation of these surveys and for the proper and rational use of areas deep underground through a Deep Underground Usage Council.

## 4 Self-Reliance and Revitalization of Wide-Area Blocks, and Formation of National Land

### (1) National Land and Regional Development for Creation of Convection Promoting National Land

To achieve regional revitalization and sustainable growth, it is important to deploy measures in an integrated manner while drawing out regional wisdom and devices. Therefore, with the aim of forming convection promoting land that encourages innovations by dynamically inducing convection across Japan under the National Spatial Strategies and Regional Plans, measures are being taken according to the characteristics of regions while working to form multi-layered national land and regional structures. The MLIT also works on strategies for regional revitalization through public-private partnerships and government support in developing foundations that underpin private sector activity and measures to drive forward autonomous and sustainable regional development with cooperation among various entities.

#### (i) Promotion of infrastructure development for revitalization of wide-area regions

To form self-reliant wide-area blocks, in FY2018, 35 prefectural governments established 35 common goals to work on together in groups of two to three and each government created a total of 77 wide-area regional revitalization infrastructures development plans to revitalize the regions through buoyant human and material traffic. The MLIT granted subsidies to implement structural and non-structural projects based on these plans.

#### (ii) Promoting the development of infrastructures for regional revitalization with partnership between the public and private sectors

In order to implement smooth and speedy transition from the planning stage to the implementation stage, at the time of private sector decision-making without missing opportunities for infrastructure development projects that have been worked out in a partnership between the public and private sectors to contribute to wide-area regional strategies, subsidies were provided to local governments in FY2018 for 24 feasibility studies including outline designs and implementation of PPP/PFI.

#### (iii) Promoting regional planning with diverse entities interworking

In its bid to further self-supporting, sustainable community development through the interworking of local diverse entities, the MLIT promotes efforts to build a support system with various entities interworking with one another to craft project-type community development activities (regional businesses).

#### (iv) Formation of vibrant economic and living zones through allied core metropolitan areas

In metropolitan areas that have a certain size of population and economy, the formation of allied core metropolitan areas that aim to lead economic growth, consolidate and strengthen high-level city functions and enhance services related to people's daily lives is promoted.

Originally metropolitan areas in scope were mainly regional ordinance-designated cities and core cities (population of 200,000 or more). However, the Overcoming Population Decline and Vitalizing Local Economies: Comprehensive Strategy (revised in 2015) added metropolitan areas centering on adjacent two neighboring cities with population of more than 100,000 each to the scope under certain conditions. As of the end of March 2019, the scope included 31 areas.

### (2) Promotion, etc., of regional foundation formation

#### (i) Developing foundations for self-reliant growth in diverse wide-area blocks

In core cities[Note] based on the Multi-Polar Patterns National Land Formation Promotion Act, we have continued to provide necessary cooperation to ensure smooth development for the location of business facilities and accumulation of various functions as the core of these cities. Furthermore, as the pace of urban development accelerates along the Tsukuba Express railroad line, environmentally friendly cities are being built along the Tsukuba Express railroad line by leveraging the characteristics of Tsukuba Science City. In addition, to form a new hub for the deployment of cultural, academic and research activity based on the Kansai Science City Construction Act, the construction of Kansai Science City is under way with a partnership among affiliated ministries, local governments, economic circles and so on according the Basic

**Note** Cities other than the Tokyo Metropolis which serve as core cities equivalent to the wider region around them (14 locations)

Policy on the Construction of Kansai Science City.

#### (ii) Promoting Small Station development within a village area

In some hilly and mountainous areas and other regions with declining and aging population, it is increasingly difficult to maintain life service functions, including shopping and healthcare, and community functions. Therefore, in regions that have multiple villages, including elementary school districts, we are promoting the formation of small stations in which required functions and bases of regional activities are concentrated within walking distance, and transportation networks with nearby villages are secured.

Specifically, we support the realignment and consolidation of life service functions leveraging unused facilities, and are working on penetration and boosting awareness in coordination with relevant ministries.

#### (iii) Reviews of the relocation of the Diet and other organizations

The MLIT aids the Diet in its reviews of the relocation of the Diet and other organizations based on the Act for Relocation of the Diet and Other Organizations by conducting surveys on the relocation of the Diet, disseminating information to the nation and so on.

### (3) Actions on Land with Unknown Owners

#### (i) Actions for the facilitation of use of land with unknown owners

The amount of land with unknown owners is increasing nationwide, and this is causing an obstacle for the smooth implementation of projects such as the promotion of public works, etc., and in June 2018, the Act on Special Measures Concerning Use Facilitation of Land with Unknown Owners was enacted, establishing a system whereby land with unknown owners can be used for a certain period of time for projects for the benefit of local residents and where owner searches can be further rationalized, etc. With the enactment of this law, a Guide to Applying for Approval of Undertakings[Note 1] was also published to facilitate approval of undertakings for public works, and Cooperative Councils on Land with Unknown Owners were also put in place in regional development bureaus to provide support for municipalities.

#### (ii) Efforts to solve or prevent the problem of land with unknown owners

Based on the Basic Policy for the Promotion of Measures for Land with Unknown Owners[Note 2] determined in June 2018 by the relevant Ministerial Committee for the promotion of measures for land with unknown owners, the decision was made to promote the close cooperation of relevant government agencies to solve or prevent the problem of land with unknown owners. At the MLIT, the Special Committee of the National Land Development Council Land Policy Subcommittee has examined the system for dealing with land in a depopulating society, and in February 2019, the comittee announced[Note 3] a summary of measures to support land use and management and to resolve legal obstacles, clarifying that the first responsibility for land use and management belongs to the owner, that land use and management by local community is of public interest in the case that there is difficulty to fulfill the responsibility, and that the public interest can make ownership restricted. In addition, the Review Subcommittee published an interim report in February of this same year[Note 4] on the best way for this Subcommittee's Planning Division to carry out national land surveys, considering measures for proceeding smoothly and quickly with cadastral surveys even in cases where some owners are unknown, and measures to advance investigations such as through the issuing of public notices when the whereabouts of the owner is unknown etc.

Note 1 http://www.mlit.go.jp/sogoseisaku/land_expropriation/sosei_land_fr_000476.html
Note 2 http://www.cas.go.jp/jp/seisaku/shoyushafumei/dai2/policy.pdf
Note 3 http://www.mlit.go.jp/policy/shingikai/totikensangyo02_sg_000137.html
Note 4 http://www.mlit.go.jp/policy/shingikai/totikensangyo06_sg_000047.html

## 5 Promoting Regional Partnerships and Interactions

### (1) Forming a Trunk-line Network to Support Regions

To achieve safe, comfortable travel to the central part of an area that has urban functions, such as medical care and education, the MLIT supports the elimination of bottlenecks by widening existing roads and developing road networks. Furthermore, in order to promote the integration of merged municipalities, the development of roads that connect the central area of a municipality to each of its centers, such as public facilities, bridges, and so on, is being promoted by implementing municipal merger support road development projects in collaboration with the Ministry of Internal Affairs and Communications.

### (2) Promoting Human Interaction between Cities and Rural Agriculture, Forestry and Fisheries Communities

The MLIT forms axes for human wide-area interaction and partnership through the development of trunk road networks, supplies housing and housing land to help realize country life, develops ports and harbors to serve as centers of human interaction, and more.

### (3) Promoting Regional Settlement, etc.

In order to support information dissemination by municipalities that work on expanded interactions and relocation to rural areas through hands-on exchange programs for young people in rural areas, such information is put together in the MLIT website. Information about dual habitation is also being disseminated[Note].

The MLIT also supports the utilization of vacant houses and buildings by local governments through the appropriation of General Social Infrastructures Development Subsidies to address a wide range of regional issues.

### (4) Introduction of Local Design License Plate

To promote regions and tourism and to foment a sense of unity in regions, and based on proposals from municipal governments, we decided to allow 41 areas nationwide to issue license plates with designs that feature regional characteristics, starting around October 2018, and from FY2020, license plates with designs featuring the names of a further 17 new regions nationwide will be issued.

## 6 Securing Means of Regional Transport

### (1) Securing, Maintaining and Improving Means of Regional Transport

Maintaining day-to-day means of regional transport is of vital importance to the revitalization of regional communities. Out of this recognition, the MLIT supports efforts directed at forming comfortable and safe public transport, as by securing and maintaining community transport, such as regional bus routes and sea and air routes to remote islands, in collaboration with diverse stakeholders, developing facilities that help add to the safety of local railways, and implementing barrier-free measures. In FY 2018, we continued to facilitate the realization of efficient and sustainable local public transportation through such efforts as supporting the realignment of local public transportation, leveraging the framework of the Act on Revitalization and Rehabilitation of Local Public Transportation Systems.

Also, to assist local governments in planning transportation measures, we issued a report entitled “Pearls of Wisdom for Ensuring Regional Mobility 2018”, which considers methods of establishing transportation hubs based on an analysis of human retention and mobility and on forming networks centered around these transportation hubs.

Note MLIT Regional Promotion website: http://www.mlit.go.jp/kokudoseisaku/chisei/kokudoseisaku_chisei_mn_000016.html

Figure II-4-2-5 Local Public Transport Securing, Management and Improvement Projects

Support for efforts toward the realization of sustainable local public transportation networks based on the Act on Revitalization and Rehabilitation of Local Public Transportation Systems, etc.

FY2019 Budget: 22 billion yen

**Projects for securing and maintaining local public transportation (securing and maintaining transportation for daily life based on regional characteristics)**

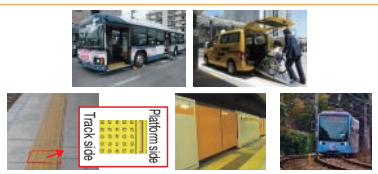
**<Support breakdown>**

○Mainline bus services
Support for vehicle purchasing and operation for mainline bus services that form interregional transportation networks

○Intraregional transportation services
Support for vehicle purchasing and intraregional transportation services such as community buses and on-demand taxis in underpopulated areas, etc.

○Sea and air route services to and from remote islands
Support for sea and air route services to and from remote islands, which residents rely on daily as their mode of transportation.

**Projects promoting the elimination of barriers in local public transportation (Building comfortable and safe public transportation services)**




**<Support breakdown>**

○Introduction of low-floor buses and welfare taxis, installation of tactile tiles with lines for delineating railway station platform edges, installation of home doors, etc.

○Renovation of facilities to improve the safety of local railways, etc.

**Local public transportation survey projects, etc. (Support planning for the formation of local public transportation networks)**

**<Support breakdown>**

○Surveys related to the formulation of plans for the formation of local public transportation networks

○Promotion of use and evaluation of projects based on plans for the formation of local public transportation networks

○Surveys related to the formulation of policies to facilitate mobility and to promote local barrier-free facilities

*Prompted by special measures for the formulation of local public transportation network formation plans and support for bus services, etc., in relation to cooperative measures led by Councils of prefecture and municipal members towards the realization of sustainable regional public transportation networks, with a view to overall traffic conditions. (Trial regional public transportation collaboration promotion project)

*Special measures support in cooperation with urban development support for projects based on railway business reconstruction plans or local public transportation reorganization plans certified by the national government (separation of in/out bound local rail, improvement of local bus route convenience, reorganization of bus routes for operational efficiency and introduction of various demand-type services, etc.)

**Projects to secure and maintain disaster area interregional trunk line systems/Specified disaster area public transportation survey projects (Great East Japan Earthquake Response: Flexible support for bus transportation, etc., in the disaster area)**

FY2019 Budget: 900 million yen
(Great East Japan Earthquake Reconstruction Special Account: Reconstruction Agency lump sum)

**<Support breakdown>**

○Trunk line bus services in affected areas ○Local bus services for temporary housing

Source) MLIT

## (2) Activating Regional Railroads and Supporting Safety Assurance, etc.

Regional railroads not only support the livelihood of the local residents living along the railroads as a means of their daily transport but also play an important role in providing them with public transport of critical importance in supporting regional interaction between tourist resorts. However, their management is in an extremely tough situation. For this reason, the MLIT supports not only the maintenance of safety facilities by implementing local public transport securing, management and improvement projects or offering tax exemptions, but also the construction, etc., of new stations on local routes that have high potential needs for railway use by implementing projects designed to activate trunk railways, etc.

## (3) Subsidizing Local Bus Routes

To address the pressing issue of securing and maintaining service buses and other regional transport services that are vital to local residents (such as interregional bus transport networks[Note] or bus, demand-responsive and other forms of regional transport closely related to trunk transport networks), the MLIT is providing support for the operation of regional transport services, updating of buses, and other needs to help secure and maintain optimal networks of regional transport tailored to specific regional characteristics and conditions. In addition, the MLIT is also working closely with key people in local areas to improve productivity with full attention paid to regional characteristics in order to secure and maintain these regional transport networks amidst projections of further depopulation.

**Note** Wide-area, integral bus routes that satisfy standards set out by the Japanese government (routes that connect multiple municipalities with service at least three times per day, etc.) and are deemed by the Council as requiring maintenance and securement

### (4) Maintaining and Revitalizing Regional Air Routes

There are many challenges facing regional aviation, including weak management foundations for regional airlines, high cost structures with a small number of aircraft and limited opportunities to expand business in cooperation with specified major airlines, and there are also limits to internal support available for major airlines as competition intensifies on high-demand routes.

It can also be difficult to secure personnel such as pilots, etc., and there are concerns that these various challenges will continue going forward.

In light of these issues, the final report of the Committee on Sustainable Regional Air Transport (March 2018) noted the need for regional airlines to review their own organizations, and in a December report in the same year, an Industry Council made up of relevant airlines noted the continuing challenge of management integration, while in Kyushu, agreement has been made to begin estimating management improvements and developing management rules toward the establishment of a limited liability partnership (LLP) in FY2019.

### (5) Supporting Transport to and from Remote Islands

Residents of remote islands rely daily on sea routes to remote islands as their mode of transportation. In FY2017, passenger transport demand for the nation's 296 sea routes fell to 43 million (an 12% decrease over the preceding decade), and most of these routes face extremely severe business conditions because they serve areas that are dealing with more pronounced depopulation and aging than mainland Japan. Therefore, projects to secure, maintain and improve regional public transportation are implemented to subsidize running costs, fare discounts for residents of remote islands, and the construction of better ships for operational efficiency on sea routes that are projected to run a deficit or are the only option in their areas (126 sea routes eligible for subsidies as of the end of March 2019).

Furthermore, the operation of bus transportation with land and sea connection that enables the elderly and those who have walking problems to use a ferry while riding on a bus started from April 2015, and 23 business operators are providing the service as of the end of FY 2018.

Air routes to remote islands are an integral mode of transportation that supports life on the islands, namely through securing medical care for the regions. Therefore, to ensure consistent air transportation to remote islands, air carriers extending their air routes to remote islands are granted comprehensive support (budget: airframe purchase grants, operational cost grants, tax and public dues: landing fee alleviation, aviation fuel tax alleviation and so on).

In FY2018, 61 remote island air routes were in service, and the national treasury subsidizes 13 routes of them.

## Section 3 Promoting the Private Urban Development

### 1 Promoting Urban Development by Private Sectors

#### (1) Promoting Urban Development by Private Sectors Based on the Specific Urban Renaissance Emergency Development Area Program

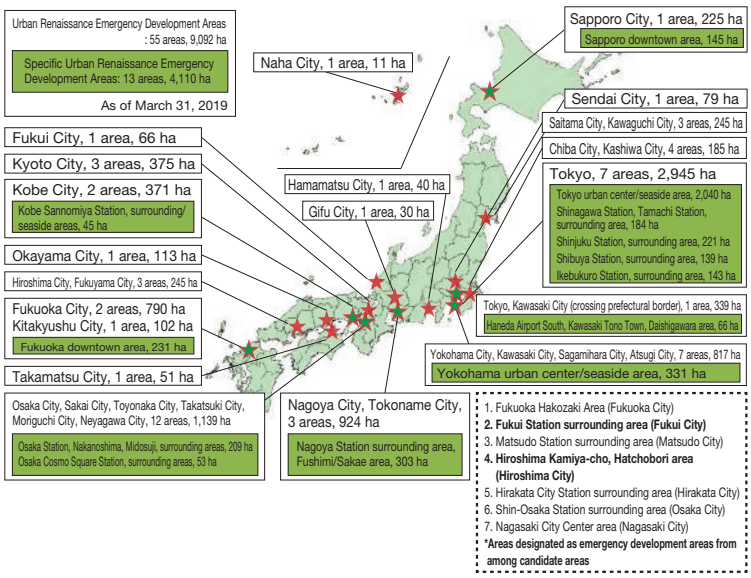
Fifty-five regions nationwide (as of the end of March 2019) had been designated by government ordinance as Urban Renaissance Emergency Development Areas to promote urgent and focused urban development through urban development projects that revitalize urban centers, and various urban development projects are steadily progressing in each region. Also, while rapidly growing Asian nations have resulted in a proportionate decline in Japan's international competitiveness, it has become an essential task to provide a powerful boost to the development of the urban areas in the nation's major cities, a source of impetus to the national growth, in a partnership between the public and private sectors to turn them into attractive urban centers that lure businesses, human resources and more from overseas. In light of this, 13 regions (as of the end of March 2019) have been designated by government ordinance as Specific Urban Renaissance Emergency Development Areas, regions in which there is a particular need to strengthen the international competitiveness of certain cities, and development plans have been formulated by councils formed in partnership between the public and private sectors in all of these regions. The International Competition Base City Development Project has also been launched to provide prioritized, concentrated support to the development of urban center infrastructures in accordance with development plans.

In order to support the formation of international business and living environments, we are providing comprehensive

support for the improvement of urban functions that contribute to improving these environments, both non-structural and structural measures regarding city sales, and the development of foreign language-capable medical facilities and other facilities that improve international competition through the Project Supporting the Improvement of International Competition and City Sales. Mezzanine support services[Note] supporting the procurement of middle-risk funds are carried out by MINTO.

Furthermore, the Act to Partially Amend the Urban Renaissance Special Measures Act was enacted in July 2018, including provisions to suggest measures to create programs for arranging parking facilities for urban revitalization and adding entities for determining urban plans, etc.

Figure II-4-3-1 Status of Designation of Specific Urban Renaissance Emergency Development Areas and Urban Renaissance Emergency Development Areas (as of the End of March 2019)




Source) Cabinet Office, MLIT

## (2) Status of Application of the Measures to Support Urban Reconstruction Projects

### (i) Zoning for Special Districts for Urban Renaissance

A Special District for Urban Renaissance is a new concept of an urban district with greater latitude for zoning (exempt from existing zoning restrictions). A total of 91 Special Districts for Urban Renaissance were zoned as of the end of March 2019, 65 of which had been proposed by private entrepreneurs, etc.

### (ii) Accreditation of private urban reconstruction project plans

Private urban reconstruction project plans accredited by the Minister of Land, Infrastructure, Transport and Tourism (123 plans as of the end of March 2019) are financially supported by the Organization for Promoting Urban Development or by tax incentives.

## (3) Promoting the Formation of Larger Blocks

Since many of the central areas of Japan's major cities have been organized into blocks through the land readjustment projects for war reconstruction, etc., the scales of these blocks, with the structure of the local streets, are not fully responsive to the prevailing needs for land use, transport infrastructure and disaster prevention functions. To enhance the international competitiveness of large cities, revitalize regional cities, and seek advanced and effective land use to fill present-day needs, the MLIT promotes the aggregation of land that has been segmented into multiple blocks, the consolidated usage of sites, and the restructuring of public facilities.

**Note** Mezzanine support activities refer to successful private urban development projects for public facilities that are certified by the MLIT and have middle risk capital (positioned between senior loans provided by financial institutions and the private business which contributes the equity for funding that is generally considered difficult to procure) provided by private organizations

### 2 Approaching National Strategic Special Districts

In addition to the special exemptions from the Building Standards Act, the Road Act, the City Planning Act and the like introduced as regulatory reforms in the Act on National Strategic Special Zones passed in December 2013, the amendment to the Act on National Strategic Special Zones passed in July 2015 included special exemptions concerning the establishment of nursery schools in city parks to address the increase in the number of children on waiting lists for admission to nursery schools in recent years, and an amendment to the Urban Park Act in 2017 nationalized the exemptions. The MLIT intends to promote specific projects and proceed with visible progress on the reform of regulations that have been difficult to change due to stiff opposition.

## Section 4 Promoting Localized Promotion Measures

### 1 Measures Directed at Heavy-snowfall Areas

The MLIT promotes the availability of transportation, the development of facilities related to living environments and conservation of national land, and the availability of people responsible for snow disposal and other measures for heavy-snowfall areas based on the Act on Special Measures concerning Countermeasures for Heavy-snowfall Areas in an effort to contribute to the economic development and improvement of residents' lives in regions where the inevitable, annual accumulation of snow inhibits improvement of residents' standards of living and industrial development. Note that 532 municipalities have been designated as heavy-snowfall areas (201 of which have been designated as special heavy-snowfall areas), and that these municipalities account for the vast area of 51% of Japan's land area (the special heavy-snowfall areas account for 20%).

### 2 Promoting Remote Islands Development

The MLIT is supporting remote islands development pursuant to the remote islands development plans formulated by the prefectures in accordance with the Remote Islands Development Act, not only by appropriating lump-sum budgets for the implementation of public works projects, but also by extending Remote Islands Rejuvenation Grants to encourage settlement in remote islands by fostering industries and increasing employment; accelerating the scope of exchanges by promoting tourism; improving and consolidating safe and secure settlement conditions and so on. We have also organized "Shimatching", an opportunity for remote islands and companies to be matched together, and "Islander", an exchange program for remote islands and cities.

### 3 Promoting and Developing the Amami Islands and Ogasawara Islands

In addition to implementing the development of social infrastructures through promotion and development projects, etc., based on the Act on Special Measures for Promotion and Development of the Amami Islands and Act on Special Measures for Promotion and Development of the Ogasawara Islands, the MLIT leverages grants, etc., to assist with regional efforts directed at boosting employment and encouraging settlement by promoting tourism, agricultural and other industries suited to regional characteristics in pursuit of more self-supporting, more sustainable growth.

### 4 Promoting Peninsulas

To support peninsula promotion measures through peninsula promotion plans developed by prefectural governments based on the Peninsular Areas Development Act, the MLIT implements projects to encourage wide-area cooperation on peninsular development in peninsula promotion measure implementation areas (as of April 2018, 23 areas (194 municipalities in 22 prefectures)), assists efforts to contribute to the facilitation of exchanges that leverage resources and characteristics of peninsular areas, promotes industry and regional settlement, and promotes industry with a Peninsular Tax System and developing roads that encircle peninsulas.

# Section 5 Promoting Comprehensive Development of Hokkaido

## 1 Promotion of the Hokkaido Comprehensive Development Plan

### (1) Promotion of the Hokkaido Comprehensive Development Plan

Japan has pursued an active policy of developing Hokkaido to contribute to resolving issues facing the nation and to achieve powerful regional growth by taking advantage of the excellent resources and characteristics of Hokkaido.

The 8th term Hokkaido Comprehensive Development Plan covers the period from FY2016 to roughly FY2025 and was adopted by Cabinet decision in March 2016. Under the plan, the government is promoting various measures that form "Hokkaido with worldwide perspectives", with the objectives of creating "Regional society where individuals shine", "Industries with global perspectives", and "resilient and sustainable national land".

Based on this plan, we are working to steadily develop Hokkaido, specifically by focusing "creating world-class tourist destinations that lead realizing advanced tourism nations of Japan" and "the sustainable development of food supply bases", and by establishing numerical targets to serve as guidelines for ideals and action while sharing and following up with relevant stakeholders.

Figure II-4-5-1 Overview of the Hokkaido Comprehensive Development Plan

**Chapter 1 Significance of the plan**

**Section 1 Background of Hokkaido Development**
- Hokkaido development was promoted under special a development policy to contribute to the stability and development of Japan as a whole.
- Growth industries are germinating, with exports of food and agricultural products doubling and the number of inbound tourists topping 1 million. On the other hand, the economy and population are shrinking tendency. Concerns exist in relation to areas in which networks have yet to be developed and to the maintenance of regional communities.

**Section 2 Today's issues of Japan**
(1) Arrival of a society with seriously decreasing and aging population
(2) Further progress in globalization and changes in the international situation
(3) Imminent dangers of large-scale disasters and global environment issues

**Section 3 Significance of the new Hokkaido Comprehensive Development Plan**
- Fundamental significance of developing Hokkaido: To take advantage of Hokkaido's resources and characteristics to contribute to resolving issues of Japan
- A concern lies on rapidly decreasing and aging population in Hokkaido, which would impede the maintenance of the "Production Space", rural regions providing Hokkaido's strengths
- The next 10 years would be a critical period about the survival of communities across Hokkaido.
- At the same time, the coming years would give the region chances of a breakthrough, since they entail notable events such as the Tokyo 2020 Olympic and Paralympic Games, the opening of Hokkaido Shinkansen (bullet train), and the extension of the highway network to the eastern Hokkaido.
- By utilizing these opportunities, create a leading example of regional society where people can have good lives without losing vitality, regardless of drastic population declines.

**Chapter 2 Objectives of the plan**

○ **Catch-phrase: Hokkaido with worldwide perspectives**
○ **Vision: Formation of a creative region that delivers globally appreciated values, in view of 2050**
**<<The 3 Objectives>>**
**(1) Regional society where individuals shine**
**(2) Industries with global perspectives**
**(3) Resilient and sustainable national land**

**Chapter 3 Fundamental principles for implementing the plan**

**Section 1 Planning Period:** 10 years from FY2016 to FY2025
**Section 2 Basic concepts for the measures of the plan**
○Forming and maintaining a Hokkaido model of regional structures
- Forming "Basic Regions" where people's daily lives take place in a three-layered structure: "Production space", "Cities and towns" and "Central cities".
- Sapporo Area: Lead Hokkaido as a whole, leveraging its concentration.

○ Fostering a climate of creativity in Hokkaido
- Human resources are among the most important resources in the era of shrinking population.
- Foster a climate of creativity throughout the region by attracting diverse individuals and by focusing on human resources development.

**Section 3 Cross-cutting measures for effective implementation of the plan**
(1) Forming of multi-layered/theme-specific platforms
- Regionally or Hokkaido-wide, develop multi-layered/theme-specific platforms through collaboration of academic, industry, finance, private, and public sectors based on themes, such as human resources development or regional development, and manage the efforts in a sustainable manner.

(2) Pioneering and proactive innovation—promotion of "Hokkaido Initiatives"
- Adjust for population declines using the power of technology, and resolve regional issues innovatively without being particular about conservative ideas.

(3) Strategic improvement of infrastructures
- Demonstrate the stock effects of infrastructures to the maximum extent. Ensure the strategic maintenance of infrastructures and enhance efforts to use them smartly, leveraging technological development.

(4) Effective management of the plan
- Management cycle: "Plan → Do → Check → Act" ; Conduct comprehensive inspections in roughly five years' time

**Chapter 4 Primary measures in the plan**

**Section 1 Establishment of the regional society where individuals shine**

**(1) Maintaining and improving the conditions for long-term living and social interactions towards the formation and maintenance of a Hokkaido model of regional structures**
(i) Formation of Basic Regions (ii) Production Space in rural areas
(iii) Cities and towns (iv) Central cities in Basic Regions
(v) Sapporo Area (vi) Promotion of areas around the borders

**(2) Securing a diversity and influx of human resources for fostering a climate of creativity in Hokkaido**
- Create a society of mutual assistance, secure an active population
- Human convection with North Japan and overseas
- Find and develop human resource for regional development.

**(3) Steady promotion of Region Neighboring the Northern Territories**

**(4) Promoting Ainu Culture, etc.**

**Section 2 Promotion of industries from global perspectives**

**(1) Promoting agricultural, forestry and fisheries industries and food industries**
(i) Promoting agricultural, forestry and fisheries industries via innovation
(ii) Creating high-value added food products and comprehensive base development
(iii) Appealing the food of Hokkaido to foreign markets
(iv) Revitalizing rural villages by utilizing local resources

**(2) Creating world-class tourist destinations**
- Becoming world-class tourist destinations, further boost tourism consumption by international visitors
- Improving the environment to receive foreign tourists
- Strategic efforts toward a new era of inbound tourism
- Promote venues for MICE, and attract foreign business guests

**(3) Fostering industries with utilizing the regions' strengths**
- Leverage the north's superiority
- Encouraging further growth in industrial clusters
- Vitalize regional economies, including local consumption industries
- Promote investments within the region
- Develop human/logistics networks that support industries

**Section 3 Formation of resilient and sustainable national land**

**(1) Establishing a sustainable regional society in harmony with a bountiful nature**
**(i) Securing sustainability of the environment and economy/society**
- Formation of a society in harmony with nature
- Creating a sound material-cycle society
- Creating a low-carbon society

**(ii) Establishing environmentally friendly energy systems**
- Efforts toward further adoption of renewable energy
- Efforts based on Hokkaido's regional characteristics, such as heating source and automobile fuels

**(2) Creating safe and secure infrastructures and contributions to building national resilience**
**(i) Responding to intensifying natural disasters**
- Develop systems for protecting human lives
- Respond to disasters during winter
- Respond to large-scale natural disasters, such as earthquake/tsunami disasters and volcanic eruptions
- Respond to flood and landslide disaster risks due to such causes as climate changes

**(ii) Contributing to resilient national land for Japan as a whole**
- Secure backup site functions in times of national-scale disaster
- Secure a stable supply of foods in times of disaster

**(iii) Establishing safe and secure infrastructures**
- Promote countermeasures against aging infrastructures
- Promote traffic safety measures
- Develop human resources that support the creation of a resilient national land

Source) MLIT

## (2) Promoting Measures that Support Plan Realization

The new plan was formulated to respond to various impending issues facing Japan, namely arrival of a society with seriously decreasing and aging population, further progress in globalization and changes in the international situation, and imminent dangers of large-scale disasters and global environment issues. We are promoting the following types of measures.

### (i) Regional society where individuals shine

The "Production Space"[Note] of Hokkaido forms a dispersed society over wide areas on a scale different from other regions, leading to the development of its strategic industries of "food" and "tourism".

At the same time, it is experiencing rapid progress in population decline and aging, leading the rest of the country, which may make it difficult to maintain these industries, thus making it important to actively promote revitalization by attracting people from diverse backgrounds and to establish community structures in both production spaces and urban areas in which people can continue to live.

Thus, in addition to studying model areas for forming and maintaining production spaces and promoting these measures throughout Hokkaido, the MLIT is promoting a system for maintaining and improving settlement and exchange environments and forming wide-area transport networks including national high-grade trunk highways and the improvement of "Michi-no-Ekis" and "Minato Oases" functions. We are promoting efforts such as the development of "Hokkaido Value Creation Partnership Activities" which aim to loosely connect the diverse population and expand opportunities for communication.

### (ii) Industries with global perspectives

Hokkaido has competitive advantages in the agricultural, forestry, and fisheries industries; the food and tourism related industries; and other industries for export to other regions in the country and other countries; and it is important to strategically develop these industries.

For this reason, we are working to strengthen the productivity and competitiveness of agriculture, forestry and fisheries by the larger division of farmland and advanced sanitation management measures at fishing ports, expand Hokkaido food overseas through the expansion of SME export support systems, promote foreign tourists driving around Hokkaido by car and the "Scenic Byway Hokkaido", which encourages the development of scenery, communities and tourist attractions, hold international conferences (MICE) in Hokkaido, improve receiving environments for cruise ships, enhance the functions of New Chitose Airport, and develop export promotion infrastructure for agriculture and fisheries products at ports etc.

### (iii) Resilient and sustainable national land

Hokkaido, which has beautiful and magnificent natural environments and abundant renewable energy sources, is expected to take a leading role in forming a sustainable regional society. Ensuring safety and security is the foundation of economic social activities, and it is important for the region to minimize damages in the event of a disaster and contribute to resilient Japan as a whole.

Therefore, we are promoting the preservation and regeneration of lakes and wetlands, public awareness relating to the formation of a hydrogen society through the "Hokkaido Hydrogen Community Development Platform", initiatives for disaster prevention and mitigation through the comprehensive mobilization of hard/soft measures by flood control measures based on damage from series of typhoons in August 2016, and the Heavy Rain Event of July 2018 and by efforts of the "Hokkaido Bureau Reconstruction and Resilience Promotion Headquarters", which was established to promote restoration, reconstruction and building national resilience after the 2018 Hokkaido Eastern Iburi Earthquake in September 2018, the strategic management and renewal of infrastructures to deal with aging, etc., and the improvement of safety and reliability of transportation in winter.

**Note** Refers to areas with a Hokkaido-model of regional structures, which has vast farmland and abundant fisheries and forest resources as its strengths, providing a rich natural environment and unique landscape and contributing as a food supply base for Japan

## 2 Promoting Distinctive Regions and Cultures

### (1) Promoting the Regions Neighboring the Northern Territories

Targeting the Northern Territory's neighboring regions[Note], where desirable development of regional society is inhibited because of unresolved territorial issues, we are promoting necessary measures in a comprehensive manner under the Eighth Northern Territory Neighboring Regions Revitalization Plan (FY2018 to FY2022), which is based on the Act on Special Measures concerning Advancement of Resolution of Northern Territories Issues.

More specifically, the MLIT pursues measures to build appealing regional communities and initiatives to increase visitors in these neighboring regions, including the promotion of agricultural and fishery industries, implementation of public-works projects for development of transportation systems, supporting the implementation of non-structural measures by providing subsidies for project implementation expenditures.

### (2) Promoting Ainu Culture, etc.

Based on the Basic Policy on the Development, Management, and Administration of Spaces Symbolic of Ethnic Harmony for Promoting the Restoration of Ainu Culture (adopted by a Cabinet decision on June 13, 2014, partially amended on June 27, 2017) and the like, preparations for the public opening of the National Ainu Museum and Park (also known as Upopoy) are being accelerated ahead of its opening on April 24, 2020, in advance of the Tokyo 2020 Olympic and Paralympic Games and the National Park for Ethnic Harmony and a memorial facility will be established, and development preparation will be promoted in pursuit of realizing the target of 1 million visitors.

Figure II-4-5-2 Upopoy logo


Source) MLIT

In addition, we are working on public awareness activities such as the hosting of music festivals, implementation of onboard guidance in the Ainu language on buses, and other efforts as part of the "i ran karap te" (an Ainu greeting meaning "how are you") campaign developed through industry-academia-government collaboration in accordance with the Act on the Promotion of Ainu Culture, and Dissemination and Enlightenment of Knowledge about Ainu Tradition.

Note Nemuro City, Betsukai-cho, Nakashibetsu-cho, Shibetsu-cho, Rausu-cho (1 city and 4 towns)

## Column

### "Upopoy" to Open April 2020 !

The National Ainu Museum and Park, a base for the reconstruction and creation of the Ainu culture, will open on April 24, 2020, on the shore of Lake Poroto in Shiraoi-cho, Hokkaido.

The National Ainu Museum and Park consists of the National Ainu museum, the first national museum in northern Japan, the National Ainu Park to experience Ainu culture, and a Memorial to pay respect to the Ainu people. Visitors will be able to experience various aspects of Ainu culture, including clothing, food, and housing, as well as dance and crafts, with a variety of exhibitions and programs planned to provide opportunities for exchange between people. We are also working on an "experiential" field museum that doesn't just stop at watching and learning.

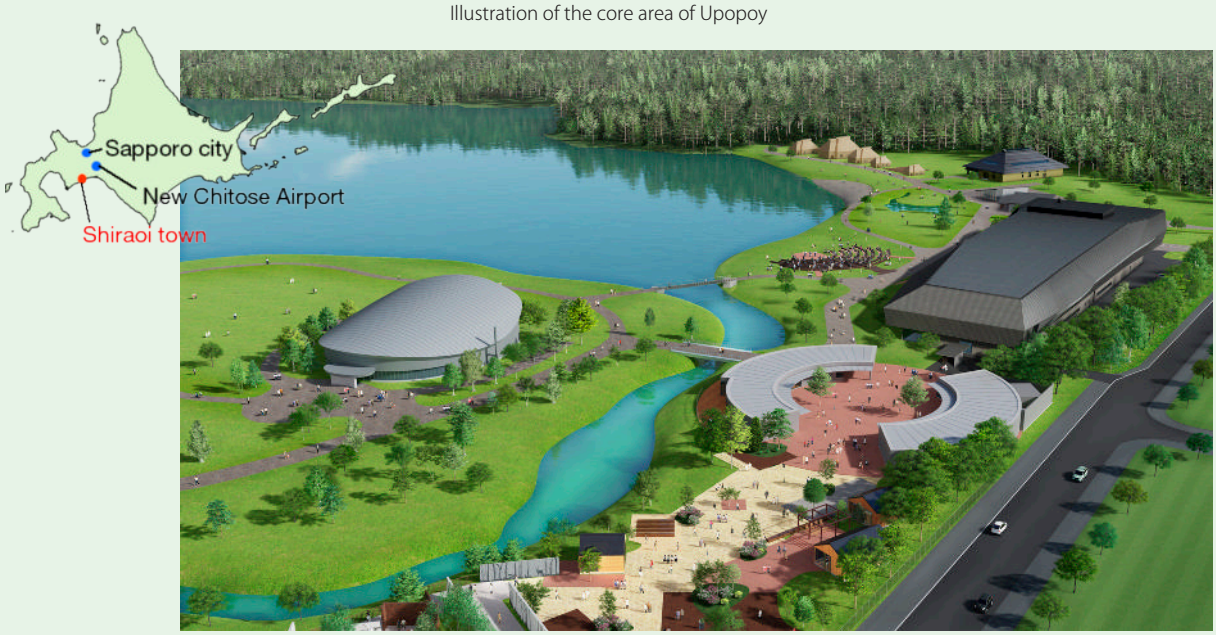
Announcement of nickname and logo
(Ceremony 500 days before opening Upopoy)


Picture) MLIT

The official nickname of the National Ainu Museum and Park was decided in December 2018 to be Upopoy, which means to sing together. This was decided through a national online poll (held between October and November 2018), which received 10,641 total votes from all 47 prefectures.

In addition to these facilities, the MLIT is promoting the preparation of an Ainu traditional performing arts program and experience exchange programs, and various PR activities for Japan and overseas to raise awareness of Upopoy ahead of its opening, to meet the government goal of achieving 1 million visitors annually.。

Illustration of the core area of Upopoy




Source) Created by MLIT from materials from the Foundation for Ainu Culture

# Chapter 5 Creating a Comfortable Living Space

## Section 1 Realizing Affluent Residential Living

### 1 Securing Stability of Residential Living and Advancing its Betterment

The Basic Housing Policy (National Plan), which covers the period from FY2016 to FY2025 and was adopted by a Cabinet decision in March 2016, was devised in light of changes to the socioeconomic climate, namely the full-scale emergence of an aging society with falling birth-rates and declining population and families. The plan sets out eight targets and fundamental measures: From the perspective of inhabitants, (i) Anxiety-free housing situation for child-rearing households and member of young generation wishing to marry and have children, (ii) Housing that allows the elderly to live independently, and (iii) Ensure a steady supply of housing for individuals requiring special consideration from the perspective of housing stock, (iv) Structure a new housing circulation system exceeding the property ladder, (v) Upgrade to safe and higher-quality housing stock through rebuilding and renovation, (vi) Promote use or elimination of increasing vacant homes; and from the perspective of industry and community, (vii) Housing industry growth that contributes to a strong economy, and (viii) Maintain or improve the appealing aspects of residential area. Based on this plan, the MLIT is driving forward with efforts to provide residential living that meets the needs of each and every citizen, as well as measures toward the realization of safe, secure, high-quality living environments.

#### (1) Goals and Basic Policies

**(i) Anxiety-free housing situation for child-rearing households and member of young generation wishing to marry and have children**

To establish an environment in which child-rearing households and member of generation wishing to marry and have children can choose and be ensured of obtaining desired housing, we are executing support to enable them to live in a house meeting the required quality and area according to the income of household.

In addition, in order to establish an environment that enables people to want to have and raise children, leading to desired birthrate of 1.8, we are promoting measures to ensure families the ability to live with or near grandparents to enable childrearing with the help of grandparents.

**(ii) Housing that allows the elderly to live independently**

To improve and supply housing that elderly individuals can live in safety without anxiety, we are continuing work to promote barrier-free homes and heat shock measures (the effects of sudden increases in temperature on the human body), and promoting elderly housing with supportive services attached for elderly life support facilities.

We are also working to ensure housing in the area in which elderly residents wish to live and on environment where elderly individuals receive nursing, medical and life services. As part of this, approval requirements for lifelong leases have been relaxed by a revision to the Ministerial Ordinance for the further utilization of the lifelong lease system.

**(iii) Ensuring a steady supply of housing for individuals requiring special consideration**

We are striving to establish an environment in which individuals with difficulty in ensuring residence in the housing market independently can find housing and live without anxiety. Such individuals include low-income earners, elderly, handicapped, single-parent household, multiple birth households, public financial support recipient, foreigners, homeless, etc. (persons requiring special assistance in securing housing).

### a. Creating a new housing safety net utilizing private rental housing and vacant houses

Under the new housing safety net system, which utilizes private rental housing and vacant houses, we provide support for the mitigation of tenant burdens and residential renovations while promoting the registration of rental housing which does not refuse individuals requiring special consideration in ensuring residence (safety net housing).

### b. Supplying public rental housing

To adequately support the supply of public housing by local governments to low-income earners in serious need of housing, and to promote the supply of quality rental housing to households consisting of elderly people who need special consideration to stabilize their housing in each area, the MLIT set up the Regional Excellent Rental Housing Program as a scheme that complements public housing by subsidizing the expenses required to develop public rental housing and reduce rents.

**Figure II-5-1-1 Purposes and Results of Public Rental Housing**

| | Purpose | Number of houses managed |
|---|---|---|
| Public Housing | Supplies quality rental housing to low-income earners who are in serious need of housing with low rent | About 2.16 million houses (FY2017) |
| Improved Housing | Supplies public rental housing to existing residents who are in serious need of housing with improved living environments in deteriorating residential areas | About 144,000 houses (FY2017) |
| UR Rental Housing | Supplies quality rental housing that is conveniently located for access to work, focusing on family-oriented rental housing not in ample supply from private business operators, in major urban areas, and also develops residential districts | About 720,000 houses (FY2018) |
| Agency Rental Housing | Supplies quality rental housing to meet the regional demand for rental housing | About 132,000 houses (FY2017) |
| Quality Regional Rental Housing | Provides subsidies to private land-owners to fund maintenance and other expenses and cover rent cuts to provide quality rental housing for households consisting of elderly people, child-raising families, etc. | ・About 81,000 designated quality rental houses (FY2017)<br>・About 42,000 designated quality rental houses for elderly people (FY2017) |

Notes:1 The number of rental houses managed by the Urban Renaissance Agency includes designated quality rental houses for elderly people.
2 The number of agency rental housings does not include Designated Quality Rental Housing and Designated Quality Rental Housing for the Elderly.
3 The Designated Quality Rental Housing System and Designated Quality Rental Housing for the Elderly System were reorganized and the Quality Regional Rental Housing System was established in FY2007.
Source) MLIT

### c. Using private rental housing

In order to facilitate the promotion of smooth move-ins to private rental housing by elderly people, disabled people, foreigners and families with small children, we are providing housing assistance such as information services and consultation services through residential support corporations based on the amended Act on Housing Safety Net, in addition to the 82 Residential Support Councils nationwide (in 47 prefectures and 23 municipalities) established as of the end of FY2018 that comprise local government, real estate related organizations and housing assistance organizations.

## (iv) Structuring a new housing circulation system exceeding the property ladder

The revitalization of the existing housing circulation market is crucial toward effectively using housing stock, creating economic effects from market expansion, and realizing prosperous residential living through the streamlining of the process of moving in different life stages; thus, we are developing measures to improve the quality of existing housing, to form markets that properly appraise high-quality existing housing, and to develop environments in which people can confidently purchase and sell existing housing.

### a. Improving the quality of existing housing

The MLIT pursues the dissemination of housing that is structured and equipped to meet or exceed certain levels of performance requirements, such as durability and ease of maintenance and management (“Long-life Quality Housing”) under the Act on the Promotion of Dissemination of Long-life Quality Housing. (Certified houses in FY2017: 106,611) In addition, in FY2016, we launched a system for certifying Long-Lasting Quality Housing regarding renovations and additions to existing housing. (Certified houses in FY2017: 296)

Furthermore, we provide support concerning aid and taxes for renovations that strive to extend the life, strengthen the earthquake resistance, or improve the energy efficient performance of existing housing.

b. Formation of markets that properly appraise high-quality existing housing

The general thinking in Japan is that housing has absolutely no market value 20 to 25 years after it is built; it is important to correct this convention and create an environment in which high-quality existing housing is properly appraised.

Toward that end, we are continuing to define and diffuse proper appraisal methods for real estate brokers and appraisers so that the performance and renovated condition of buildings is properly reflected in their appraisals.

In addition, in order to establish a market environment in which high-quality housing stock is appropriately assessed, we are providing support for integrated efforts to develop and diffuse systems for renovating, assessing, circulating and financing housing stock.

c. Developing environments in which people can confidently purchase and sell existing housing

A 10-year defect liability obligation has been mandated for the basic structural part of new housing in accordance with the Housing Quality Assurance Promotion Act. In addition, a housing performance marking program has been put into effect to objectively assess the basic performance characteristics of new and existing houses, such as earthquake-resistance, energy-saving measures, preventing measures against deterioration, etc.

Also, the Real Estate Brokerage Act (effective April 2018), revised in 2016, encourages the use by real estate brokers of building inspections carried out by experts to promote the development of a market environment in which consumers can trade existing houses with peace of mind.

We also began the use of the "Anshin-R-Jutaku" symbol from April 2018, which recognizes the use of the national trademarked logo in company advertising for existing homes that meet certain requirements such as earthquake-resistance, so that people can select existing homes that they would like to buy or live in.

### (v) Upgrade to safe and higher-quality housing stock through rebuilding or renovation

Housing investment has major ramifications for the economy, and plays a substantial role as a key element of internal demand. We are driving forward with housing investment to improve housing quality by encouraging the improvement of earthquake resistance, insulation and other energy-efficient properties, and durability through such efforts as rebuilding housing that is not sufficiently earthquake resistant and otherwise updating old stock, and renovating housing to make it universally accessible.

In addition, a Housing Complex Regeneration Manual was developed in March 2018 to promote the regeneration of housing complexes by making use of multi-building condominiums site sales systems and redevelopment frameworks.

a. Preparing the market environment in which consumers can remodel their homes without worry

Consumers planning to remodel their homes are concerned about how much the remodeling will cost them and how to select the right contractors. Reassuring worried consumers is essential to expanding the home remodeling market.

Efforts currently taken in this regard include the Check Quoted Remodeling Costs for Free service available from the Housing Telephone Consultation Desk at the Center for Housing Renovation and Dispute Settlement Support, in which consumers can receive consultation on specific quotations, and Free Expert Consultation Programs at local bar associations.

In addition, the MLIT is promoting initiatives so that consumers can remodel their homes without worry, such as the Remodeling Defect Liability Insurance Program, an insurance package that combines an inspection on remodeling works in progress with warranties against possible defects in the works or the large-scale repair work liability insurance program for large-scale apartment building repairs. Also, the Association of Housing Warranty Insurers website features a list of general contractors who fulfill the requirements that make their work eligible for the insurance; consumers can refer to this list when selecting general contractors.

Further, under the "Housing Renovation Business Organization Registration System," we are working on building an environment in which there is a healthy development of the housing renovation business and consumers renovate their homes with confidence, by having housing renovation business operators that meet certain standards registered to ensure that the work of housing renovation businesses is properly managed and information can be provided to the consumers.

#### (vi) Promote the use or elimination of increasing vacant homes

The MLIT encourages municipal governments to develop the Vacant Housing Countermeasure Plan, depending on their local circumstances, based on the Vacant Houses Special Measures Act, which was fully enforced in May 2015 (848 municipalities have completed their plans (as of October 1, 2018)), which promotes the use and removal of vacant houses and buildings, and reinvigorates circulation of housing.

#### (vii) Housing industry growth that contributes to a strong economy

To contribute to the realization of a strong economy, we are encouraging the expansion of the housing industry by promoting the development of high-quality wooden housing and buildings, supporting the cultivation of skilled woodworkers and other people to build them, the development and diffusion of new technologies such as cross-laminated timber (CLT), and the creation and expansion of new business markets involving housing, such as the use of IoT.

#### (viii) Maintain or improve the appealing aspects of residential areas

In line with the features of the region, including nature, history, culture etc. aiming to create not only individual houses but also to enrich the living environment and the community and are striving to maintain and improve the appeal of residential areas by forming prosperous communities and improving the safety of residential areas by improving crowded urban areas and the like.

### (2) Comprehensive, Systematic Promotion of Measures

#### (i) Housing finance

It is important that a variety of mortgages, which include short-term adjustable-rate or long-term fixed rate type, are stably available so that consumers can choose and obtain houses in the housing market.

The Japan Housing Finance Agency offers securitization support businesses to support the availability of long-term, relatively low fixed-rate mortgages from private financial institutions. Its operations include Flat 35 (Purchase Program), which consolidates housing loan receivables of private financial institutions, and Flat 35 (Guarantee Program), which supports private financial institutions themselves becoming originators[Note] to handle the securitization. For houses that are entitled to Flat 35, property inspections are carried out against a defined set of technical requirements, such as durability, to assure their quality. In addition, the framework of the securitization support service has been leveraged to launch Flat 35S, which reduces the interest rate of loans for the acquisition of houses that meet any one of the performance requirements: earthquake-resistance, energy-saving performance, barrier-free readiness, and durability/modifiability, for the first 5 years of repayment (for the first 10 years for long-life quality housing, etc.).

The Agency also provides direct financing services in those areas that are significant in policy but difficult to be conducted by private financial institutions, such as financing housing designed for disaster recovery or elderly rental housing with supportive services.

#### (ii) Housing tax system

In order to promote the circulation of existing housing and the invigoration of the market for renovated houses, the FY2019 tax reform extended preferential tax measures for the real estate acquisition tax for a further two years and streamlined requirements for energy-saving repairs to achieve a certain level of quality improvements when resale businesses acquire existing houses. In addition, as well as extending by four years preferential measures for transfer income in the case of old vacant homes being acquired by heirs and then removed or reformed to make them earthquake resistant prior to transfer, the preferential measures were also expanded to apply to cases of transfers after April 1, 2019, in which the decedent was in a nursing home immediately prior to the start of the inheritance, provided that certain requirements were met such as the decedent requiring certified care, etc.

**Note** A business enterprise that possesses assets to be liquidated. An originator raises funds by securitizing its assets, by transferring its credit, real estate properties, etc. to a special-purpose company.

### (3) Housing Acquisition Measures based on the Increase in the Consumption Tax Rate

With the consumption tax increase scheduled for October 1, 2019, as measures to stabilize economic fluctuations and to level off fluctuations in demand, the mortgage tax credit deduction period will be extended from 10 to 13 years, and a new point system will be created for houses that meet certain performance standards. Together with already decided measures to expand housing benefits, every effort is being made to ensure that the economy is not adversely affected.

## 2 Supply and Utilization of Good Housing Land

### (1) Land Price Trends

The official land prices in Japan for 2019 (as of January 1, 2019) showed that the average prices of commercial land and those of all categories of land use increased for the fourth consecutive year, as residential land prices also increased for the second consecutive year. Looking at the trends in averages in the three major metropolitan areas, increases continued on average for all uses, residential and commercial land, with the increases coming at a greater rate. Looking at the average rate of change in regional areas, there were rises in the average for all uses and residential land for the first time in 27 years. Commercial land prices also rose for the second consecutive year, showing a greater rate of increase. The average of the four cities of Sapporo, Sendai, Hiroshima and Fukuoka in particular showed increases at greater rates than those in the three major metropolitan areas for both residential and commercial land.

### (2) Present Status and Problems in Housing Land Supply

We are steadily implementing housing land measures based on population and household trends. In particular, we are promoting the supply of residential land with good living environments by supporting the development of necessary public facilities in connection with residential land developments.

### (3) Using Fixed-term Land Leases

A fixed-term land lease in which the land lease ends for certain at the determined contract term and there is no renewal of the land lease — is an effective system for making residential acquisition at a low cost possible.

In order to spread this system smoothly, we are conducting the Fact-finding Investigations of the Use of Fixed-term Land Leases by Public Entities.

### (4) Revitalizing Aging New Towns

The large-scale urban housing areas (New Town) that were systematically developed mainly in the suburbs of the metropolitan areas during the economic boom period are facing issues of decline in community vitality resulting from the quickly aging population and the continued decrease in population. There is a growing need for renewing the dilapidated housing and communal facilities as well as improving the functions that support daily life, in order to renovate these new town areas into cities that are easy to live in for everyone.

Also, in order to promote initiatives by residents, business owners, landowners/leaseholders and others with the aim of maintaining and enhancing good regional environments and regional value to contribute to the revitalization of aging new towns, we establish liaison councils that comprise local governments, private business operators and others for the revitalization of housing developments, and provide information, hold discussions and make other efforts regarding methods of promotion and examples of initiatives.

# Section 2 Realizing Comfortable Living Environments

## 1 Developing City Parks and Creating a Good Urban Environment

City parks are key urban facilities that fulfill a wide variety of functions, from serving as recreation spaces for people and as hubs for regional tourism and activity to creating good urban environments and improving urban disaster preparedness. Thus, we are systematically establishing national parks throughout Japan, and using general subsidies for social infrastructure development to support local governments' efforts to establish city parks and the like.

In addition, in April 2016, Subcommittee for Urban Management for a New Era under the Panel on Infrastructure Development set out policies for improving stock effects, accelerating public-private collaboration, and creating more flexible usage of city parks and the like to realize the potential of city parks of the future.

Figure II-5-2-1 Miharashi Hills of Hitachi Seaside Park, a Reviving Tourism Base (Hitachinaka City, Ibaraki Pref.)

Source) MLIT

As of the end of FY2017, city parks were maintained at 109,229 locations nationwide, covering approximately 126,332 ha, or about 10.5 $m^2$ per capita. In FY2018, 40.55 million people visited national parks, with 17 locations being developed and maintained.

Regarding green spaces, etc., in urban areas, the MLIT is providing comprehensive support in financial and technical aspects, pursuant to the initiatives based on the "Green Master Plan" formulated by municipalities to properly respond to global environmental issues, such as global warming and biodiversity preservation, and to aim at realizing green-rich city environments by preserving and creating good natural environments.

In addition, we are driving forward with efforts to realize city development in which cities coexist with greenery and agriculture, such as by surveying initiatives that contribute to the formation of good urban environments that are in harmony with green spaces and farmland and the exhibition of the multitude of functions of urban agriculture. In addition, along with holding events such as national "Protecting Greenery" gatherings and National City Greening Fairs to gain public awareness regarding greening, the MLIT is working on various measures such as awarding certificates of commendation for people promoting greening, as well as evaluating/certifying greening/green area conservation efforts by businesses.

To intensify efforts to form a green urban environment, open spaces such as parks, green spaces and farmland must exhibit a multitude of functions, and measures must be taken to tackle various challenges, such as the existence of areas with low parkland area per capita, the progression of the deterioration of park facilities, and the decrease of urban farmland that constitutes valuable green space in cities. In addition, the Basic Plan on Promotion of Urban Agriculture was adopted by a Cabinet decision in May 2016, and urban policy has changed to include urban farmland as a crucial part of cities, while indicating the direction of important measures.

In light of the above, the Bill to Partially Amend the Urban Green Space Conservation Act was promulgated in May 2017, and portions of it were enacted in June of that year with the goals of further promoting the conservation of green spaces in cities, the greening of cities and the appropriate management of urban parks, and contributing to the formation of quality urban environments through efforts to systematically conserve farmland within cities. The bill contains provisions to, among other things, relax area requirements in productive green zones and to establish several systems, including a system to certify plans to establish and manage green spaces opened to citizens through the establishment of green spaces on the same level as parks by NPOs and other private entities using open land and the like, a system to determine through public invitation who can establish and manage park facilities, and a rural residential area system for preserving good living environments in harmony with agriculture. With its enforcement in April 1, 2018, meetings have been held by officials of the certification system for citizen green space management plans, and efforts have been made to ensure that local governments are thoroughly informed about conservation measures of urban farmland under each system.

## 2 Advancing Roads that Prioritize Pedestrians and Bicycle Riders

### (i) Creating people-oriented, safe, and secure walking spaces

To achieve social safety and security, it is important to make people-oriented walking spaces that assure pedestrian safety. In particular, based on the results of an emergency joint inspection that was carried out in FY2012, we are advancing efforts to improve school routes used by children who walk to school. Schools, the Board of Education, road administrators, police, and other related organizations have worked together to implement traffic safety measures such as maintaining sidewalks, painting colors on curbs, and installing guardrails, as well as implementing joint periodic inspections based on the "School Route Traffic Safety Program" to ensure the safety and security of children through these enhanced measures.

In addition, we prohibit the exclusive use of roads with a significantly heavy traffic or with extremely narrow widths if utility poles are deemed to obstruct the efficient operation of vehicles and the safe and smooth flow of pedestrians.

### (ii) Creating a safe and comfortable cycling environment

Over the past 10 years, while the total number of bicycle-related accidents has almost halved, the number of accidents involving bicycles colliding with pedestrians has decreased by just 10%, which indicates a need for a safer, more comfortable cycling environment. Therefore, the MLIT is working together with the National Police Agency to spread the word about Guidelines for Creating a Safe and Comfortable Cycling Environment. In addition, under the Bicycle Use Promotion Plan determined by a Cabinet decision in June 2018, efforts are continually being made to promote the use of bicycles, such as the increased promotion of the creation of bicycle network plans and bicycle lanes, mainly in roadways, effective public awareness campaigns on compliance with the traffic rules, and the dissemination of information that contributes to the promotion of tourism in regions where bicycles are used.

### (iii) Developing quality walking spaces

The MLIT supports the development of pedestrian roads and rest facilities that create high quality pedestrian environments and that also tie together rich scenery and abundant nature with historical sites, in order to develop regions that are attractive and that promote health through walking.

### (iv) Developing road signs that are easy to understand

The MLIT is working on the installation of road signs that are easy to understand to help guide pedestrians who are in an unfamiliar place to their destinations.

### (v) Building a flexible system of road administration

To implement a flexible system of road administration that provides a diversity of road functions tailored to the needs of the local residents, including safe walking spaces and places of regional buoyancy and human exchange, and making motor-vehicle traffic smoother and safer, the MLIT is implementing: (a) preferential measures, such as the construction of new sidewalks on national or prefectural highways by municipalities other than the designated cities; (b) a system for suggesting that municipalities refurbish pedestrian safety facilities; (c) preferential measures for road occupancy, such as boulevard trees planted by NPOs or others, street lamps, etc.; (d) preferential measures for the administration of offstreet convenience facilities to keep roads and roadside facilities under integrated management; (e) preferential measures for road occupancy regarding facilities installed by road cooperation groups, etc.; and (f) flexible management of permits for road occupation for regional activities involving the use of roads.

# Section 3 Realizing Traffic with Enhanced Convenience

## (1) Advancing Implementation of Integrated Urban/Regional Traffic Strategies

Intensive city planning that ensures safe, smooth traffic requires a cross-sectional approach to the available transportation modes - such as cycling, railway, and bus - from the users' standpoint, rather than reviewing the transportation modes or their operators individually. To this end, each local government should inaugurate a council composed of public transportation operators and other stakeholders and allow the council to define a future vision of its cities and regions, and the types of transportation services to be made available, so that it can formulate "Integrated Urban/Regional Transportation Strategies" that cover relevant traffic measures and working programs, with the stakeholders taking their respective shares of responsibility for implementing measures or projects. (As of March 2019, Integrated Urban/Regional Transport Strategies had been formulated or were being formulated in 107 cities.) The national government is expected to support the implementation of integrated and strategic packages of traffic projects, such as the development of LRT[Note] pursued according to the Strategies, as well as city planning programs.

## (2) Approaches to Improve Public Transportation Usage Environment

For local public transportation, the MLIT supports the deployment of LRT, BRT, IC cards and other less constrained systems through the implementation of local public transportation assurance, maintenance and improvement projects, etc., to accelerate the improvement of local public transportation usage environment as part of its barrier-free community planning effort. In FY2018, efforts were made such as the introduction of an IC card system on the Aichi Loop Railway.

## (3) Upgrading Urban Railway Networks

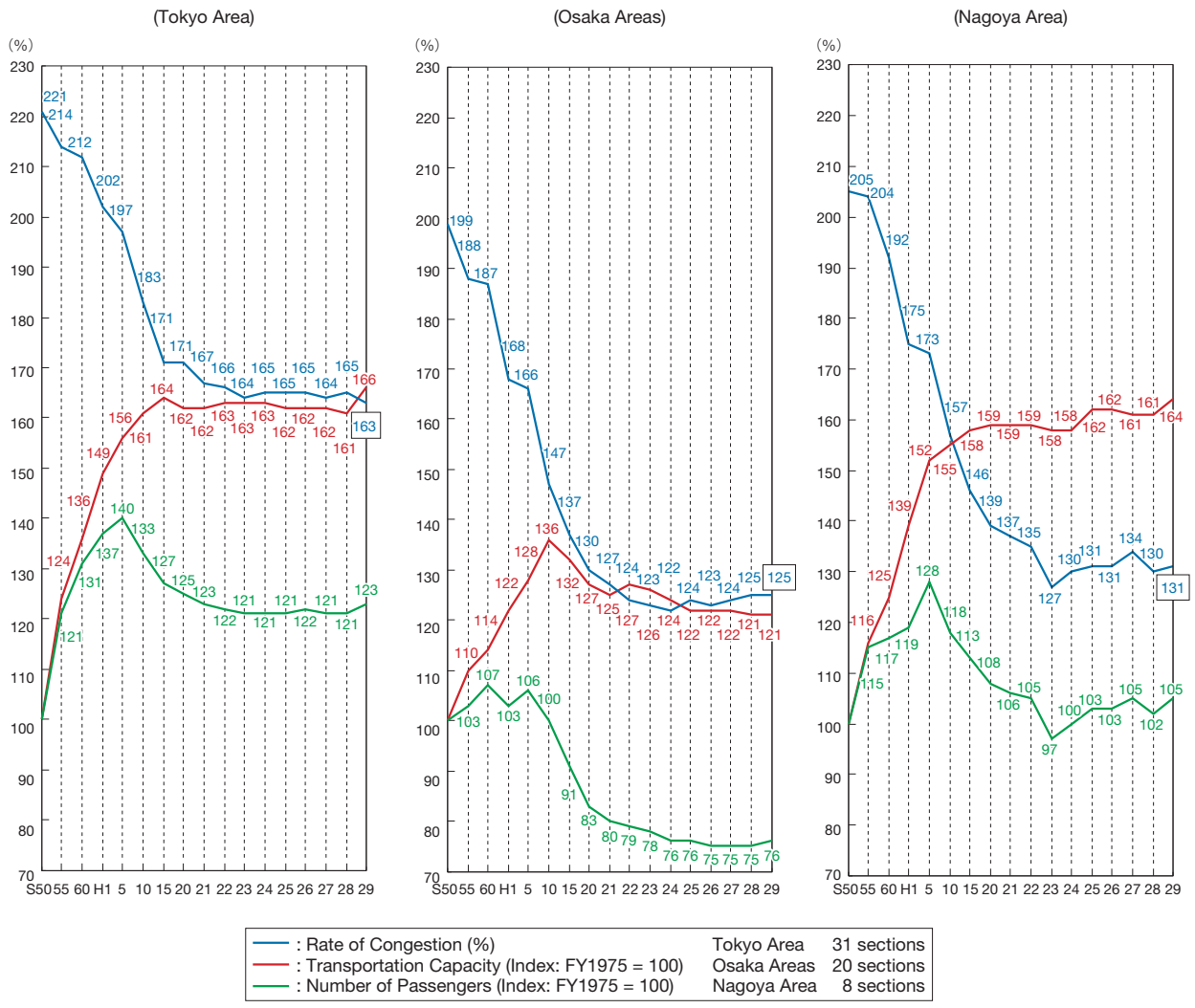
Traffic congestion in the major metropolitan areas during commuting to and from work and school by train is improving substantially as a result of efforts such as establishing new lines, quadruple tracking and adding cars onto trains. However, the rate of congestion on some routes exceeds 180%, and requires continued efforts to mitigate congestion. In March 2018, under the Designated Urban Railway Development Reserve Program, the quadruple tracking of the Odakyu Electric Railway Odawara Line was completed, with peak hour congestion rates on this route decreasing from 192% to 151% (FY2018 survey). For the 31 major routes in the Tokyo Metropolitan area, from 2018 the congestion rates one hour each side of peak hours (peak side) have been newly announced.

In addition, we are driving forward with efforts to improve user convenience by, among other things, continuing to develop the Kanagawa Eastern lines (Sotetsu - JR/Tokyu Through Line) by leveraging the Act on Enhancement of Convenience of Urban Railways, etc., a piece of legislation aimed at upgrading the speediness of existing urban railway networks, to further enhance the urban railway networks.

In April 2016, the Council of Transport Policy issued a report regarding the future of urban railways in the Tokyo Metropolitan Area, which sets out ways for urban railways and the like to contribute to the strengthening of competitiveness on the world stage and other ways for the urban railways of the Tokyo Metropolitan Area to reach their potential, and we are engaged in efforts to realize that potential.

**Note** Short for Light Rail Transit. A next-generation rail transit system that offers excellent characteristics derived from the use of light rail vehicles (LRV), improvements to rails or stops - such as ease of getting on and out - punctuality, speediness and passenger comfort.

Figure II-5-3-1 Changes in the Average Rate of Congestion, Transportation Capacity and Passenger Capacity in the Three Major Metropolitan Areas (Index: FY1975 = 100)

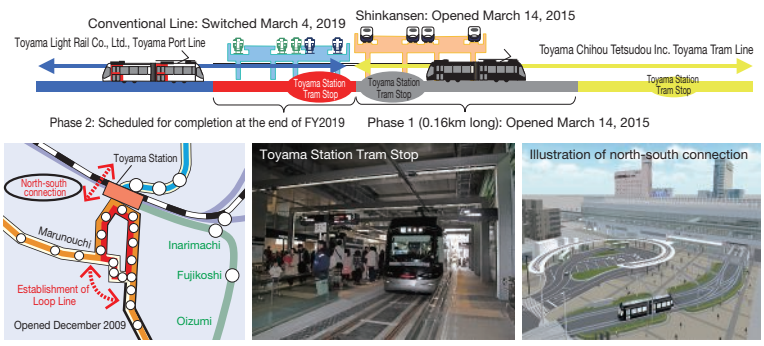



Source) Prepared by the MLIT from "Urban Transport Annual Report" compiled by the Institution for Transport Policy Studies and other relevant literature

## (4) Development of Urban Monorails, New Transport Systems, and LRTs

The MLIT promotes the development of LRTs to encourage users' migration to public transportation facilities in order to streamline urban traffic flow, lighten environmental loads, and revitalize central urban areas, while keeping vulnerable road users assured of mobility in this era of aging population and falling birthrates. In FY2018, in addition to development in Toyama City to connect the north-south tram lines with east-west conventional lines due to their elevation, reconstruction is under way for public transport networks in various cities to ensure barrier-free tram stop access.

Figure II-5-3-2 Tram Line North-South Connection Project (Toyama City)




Source) Toyama City

### (5) Augmenting the Convenience of Bus Usage

The convenience of bus usage has been augmented by improving the punctuality and speediness features of bus services by using a Public Transportation Priority System (PTPS) and bus lanes, introducing bus location systems that provide information about the location of buses in service, and IC card systems that facilitate smooth boarding and disembarking.

# Chapter 6 Building Competitive Economy and Society

## Section 1 Developing Trunk Road Networks

### 1 Developing Trunk Road Networks

#### (1) Developing Trunk Road Networks

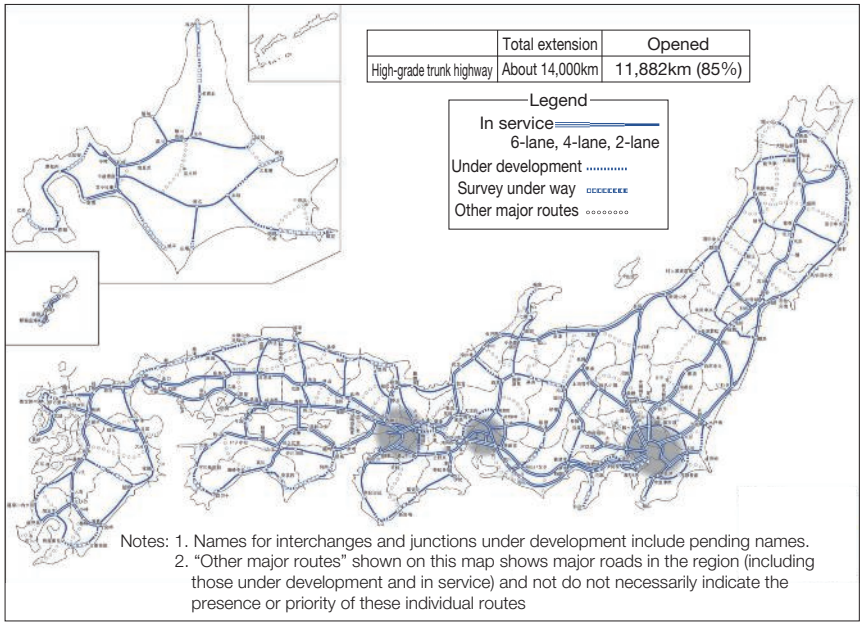
Since the First Five-Year Road Construction Plan formulated in 1954, Japanese highways have been continually constructed. For example, the construction of national highway networks, including expressways, has provided a major impetus in the rejuvenation of regional economies by encouraging plant locations near expressway interchanges. Additionally, it has helped enhance the quality and safety of national life by making broad-area medical services accessible to rural areas and allowing broad rerouting to avoid highway disruption by natural disasters.

For example, a section of 15.5 km of the Tokyo Outer Ring Road (Misato Minami IC to Koya JCT) opened on June 2, 2018, connecting about 60% of the Tokyo Outer Ring Road, helps reduce travel delay arising from congestion on the Inner Ring side of the Central Circular Route (including the Central Circular Route) by about 30%.

The MLIT will continue to advance the development of Japan's trunk road network in order to maximize stock effects of this type, with a focus on accelerating development of the metropolitan ring roads that form the core of the nation's logistical networks utilizing the current low interest rate and the Fiscal Investment and Loan Program.

Meanwhile, improvements, including expressways, are being systematically carried out to connect regions that are not yet part of the nationwide highway network.

Figure II-6-1-1 Development Status of High-grade Trunk Highway




As of March 31, 2019

Source) MLIT

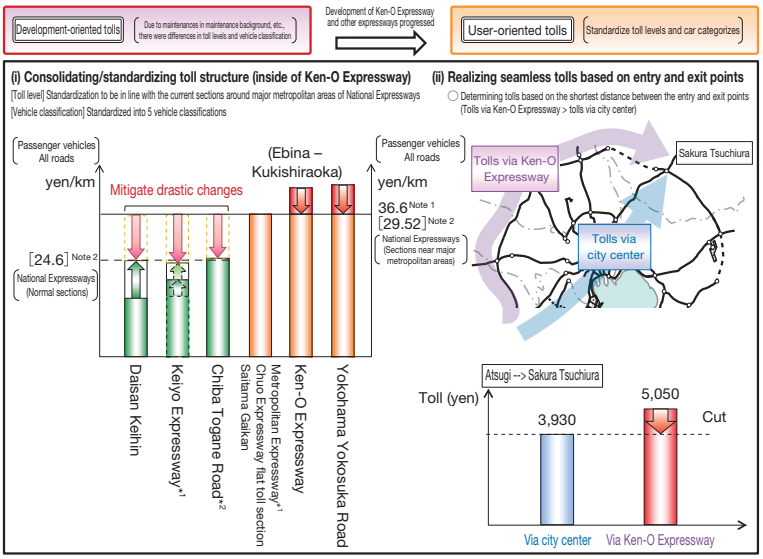
## (2) Promoting Smart Use of the Roads

In the interest of improving productivity and thereby achieving economic growth and improving traffic safety, efforts are under way to make intelligent use of all road network functions by developing necessary networks, as well as improving operations and small-scale enhancements. Electronic toll collection (ETC) 2.0 is one of these efforts, which started full service in August 2015.

### (i) ETC 2.0 that supports smart use

With data communication both ways between about 1,700 roadside units across Japan and vehicles on the road, ETC 2.0 (compared to the previous ETC version) is capable of: (a) sending and receiving a large volume of data, and (b) capturing route information, in addition to IC entry/exit data. With these much more advanced functions, ETC 2.0 greatly contributes to the promotion of ITS.

**Figure II-6-1-2** Toll System for Making Intelligent Use of Tokyo Metropolitan Area Expressways (Implemented April 2016)




Note 1: National Expressways (near major metropolitan areas) are examples of Tomei Expressway
Note 2: Toll levels excluding consumption tax and terminal charges
*1 In consideration of logistics impact and other factors, measures to mitigate drastic changes such as setting of upper limits on tolls were taken (however, tolls inside the district of Keiyo Expressway were unchanged).
*2 To be organized after expressway networks in Chiba (Chiba Gaikan, Ken-O Expressway (between Matsuo-Yokoshiba and Daiei)) become almost complete.
*Also, vehicle classifications are consolidated into five categories (to be implemented for Metropolitan Expressway in phase)
Source) MLIT

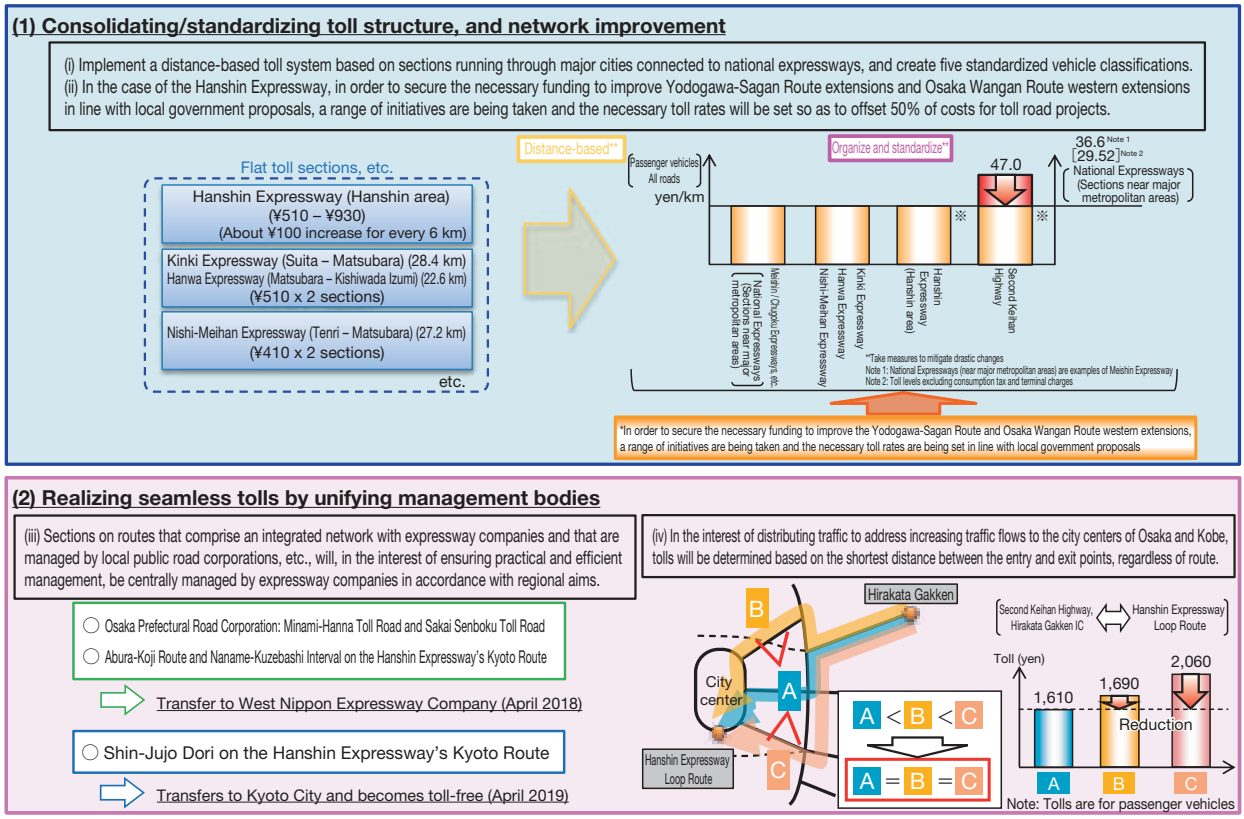
### (ii) Smart toll system

New expressway tolls were introduced in April 2016 in the Tokyo Metropolitan Area and in June 2017 in the Kinki region. These new tolls have begun to show effects including diversion of traffic to the outer ring roads to deconcentrate the inflow to the city center. We will continue to review these effects.

On April 1, 2018, the Minami Hanna Toll Road and Sakaisenboku Toll Road were transferred to Nexco West Japan. We have also begun a study of a smart toll system for expressways in the Chukyo region, taking into account the specific challenges of the region.

We have also conducted flexible toll tests at 20 locations nationwide in which vehicles equipped with ETC 2.0 devices were allowed to temporarily exit expressways to use rest facilities while being able to continue to use their original toll payment without interruption. The intention of this initiative is to eliminate sections of road with no rest facilities or gas stations nearby in order to improve the driving environment.

Figure II-6-1-3 Toll System for Making Intelligent Use of the Kinki Region Expressways (Implemented in June 2017)




Source) MLIT

### (iii) Smart toll stations

Towards introduction of stress-free smart toll stations based on ETC, we experimented with the operation of keeping ETC bars open at Ken-O Expressway toll stations and mainstreaming the use of ETC lanes at Metropolitan Expressway toll stations.

### (iv) Smart investments

As part of efforts to achieve maximum effect with the existing networks at minimum cost, we are implementing a specific point congestion measure to identify places where deceleration or traffic congestion occurs from structural factors, such as uphill sections and tunnels, by using detailed deceleration, acceleration, and other big data collected through ETC 2.0 and other means for effective measures. Until now, additional lanes and other features have been implemented within the existing road width at nine locations, including at Yokkaichi Junction on the Higashi-Meihan Expressway. Congestion relief measures are being taken at specific points at 10 locations, such as near the Takasaka SA on the Kan-etsu Expressway.

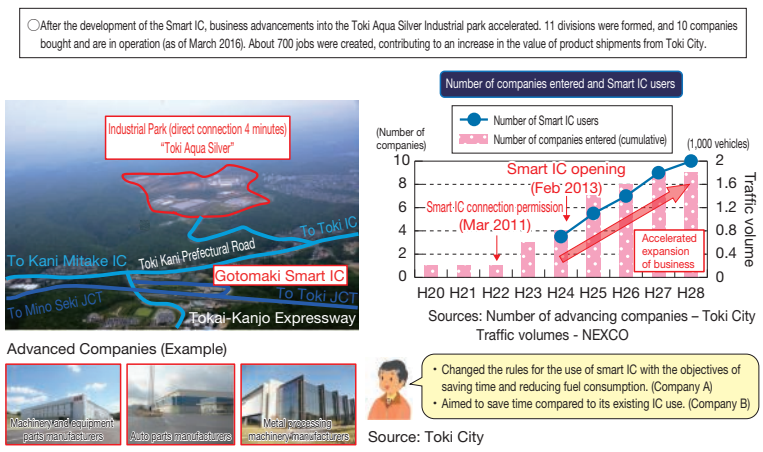
### (vi) Other initiatives

In order to promote cooperation among local areas, the MLIT is improving accessibility, including direct connections between expressways and facilities. By being flexible in building additional Smart ICs, we are increasing accessibility to the distribution centers and tourism hubs from expressways through the consolidation and sophistication of measures based on the concept of "compact" and "networked" roads and reducing traffic congestion around the existing ICs. In July 2017, we established concrete rules for a Smart IC system that would directly connect expressways and private-sector facilities. In addition, in order to facilitate the development of these Smart ICs, in March 2018 we created a new system in which part of the development costs incurred by the private-sector businesses engaged in IC development is provided as interest-free loans, and introduced measures to exempt private-sector businesses from the registration and license tax when they acquire land related to IC development. Based on preparation phase surveys, the national government is implementing the prepa-

ration and examination of Smart ICs in systematic and efficient manner in places where necessity is found.

The Council for Traffic Congestion Relief Measures was established in order to institute effective measures for congested areas around the country. In FY2017, we enhanced cooperation between the Council for Traffic Congestion Relief Measures and user groups for buses, trucks and other modes of transportation, and, after identifying areas of congestion based on the perspective of these road users, advanced initiatives towards the implementation of measures that would have a rapid effect.

**Figure II-6-1-4 Examples of Smart IC Impacts**




Source) MLIT

Advanced traffic assessments targeting developers of commercial facilities and other structures, as well as new initiatives for requesting additional measures after siting, are being planned with the goal of reducing congestion as more people begin to use the land along roads.

In tourist destinations that are prone to traffic congestion across wide areas, we will integrate ETC2.0, a range of sensors and analytic technologies using AI in order to strengthen traffic management that takes fluctuations in space and time into consideration.

## 2 Constructing Arterial Railway Networks

### (1) Development of Shinkansen Railways

A rapid transit system of vital value to Japan, Shinkansen [bullet train] Lines significantly cut the time spent moving from region to region and help greatly boost regional activities and rejuvenate local economies. Shinkansen Lines feature safety (no record of passenger death accidents since opening of the Tokaido Shinkansen Line in 1964) and eco-friendliness (the railway $CO_2$ emissions per unit of energy (g-$CO_2$/passenger-kilometer) being one fifth of aircraft and one sixth of automobiles). With regard to the New Shinkansen routes specified by the Development Plan established in 1973 based on the Nationwide Shinkansen Railway Development Act, since the opening of the Hokuriku Shinkansen (between Takasaki and Nagano) in October 1997, the Tohoku Shinkansen, Kyushu Shinkansen, Hokuriku Shinkansen and Hokkaido Shinkansen have been successively opened.

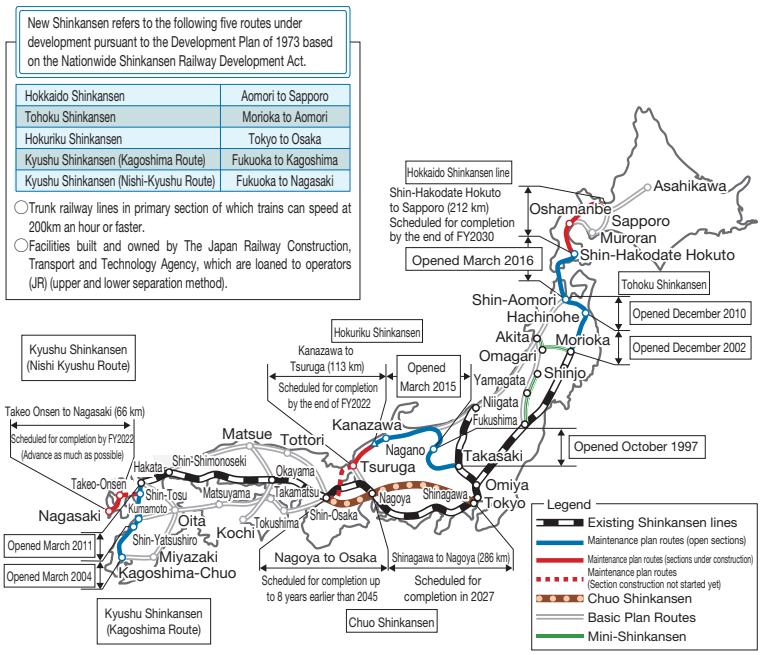
Steady improvements are being made in preparation to complete and open the Hokkaido Shinkansen line (between Shin-Hakodate Hokuto and Sapporo), the Hokuriku Shinkansen line (between Kanazawa and Tsuruga) and the Kyushu Shinkansen line (between Takeo Onsen and Nagasaki), in accordance with the Handling of New Shinkansen Lines (agreed upon between the government and the ruling party on January 14, 2015). Construction costs for the Hokuriku Shinkansen (between Kanazawa and Tsuruga) and the Kyushu Shinkansen (between Takeo Onsen and Nagasaki) are expected to increase by about 345.1 billion yen, but in the process for organizing the budget for FY2019 a stable financial outlook has been established for the necessary additional expenses, and in January 2015 the government and ruling party agreed to continue steady development towards the target completion and opening dates.

Regarding the portions of the Hokuriku Shinkansen line that have not yet started operation (between Tsuruga and Shin-Osaka), environmental impact assessment procedures are moving forward (about 4 years) from FY2019, performed by railway and transportation organizations and based on the route selection decision of the ruling party's Development Shinkansen Construction Promotion Project Team in March 2017. Regarding the securing of development resources, this is to be considered by the ruling party during the period of the environmental impact assessment and will continue to be looked at as appropriate toward the opening of the entire line as soon as possible.

Regarding the Kyushu Shinkansen (Nishi-Kyushu route), the ruling party's Development Shinkansen Construction Promotion Project Team Kyushu Shinkansen (Nishi-Kyushu Route) Review Committee examined three types of lines

(free-gauge trains, full standard and mini Shinkansen) for transferring on the same platform after the start of service in FY2022, and according to the interim report issued in July 2018, it was decided that transferring on the same platform should not be permanent and that the introduction of free-gauge trains would have to be abandoned, given the need to select either a full standard or mini Shinkansen that would be capable of going directly to Shin-Osaka. In light of this, as of August of the same year, the ruling party's Development Shinkansen Construction Promotion Project Team had moved forward with considering the selection of either the full standard or mini Shinkansen system.

**Figure II-6-1-5 Present Status of Nationwide Shinkansen Railway Network**




Source) MLIT

With respect to the Hokkaido Shinkansen, operation began in March 2019 at 160km/h in the Seikan Tunnel on the sections in which the Shinkansen trains travel on the same rails as freight trains. An examination will continue with full consideration of the duel functions of high-speed Shinkansen operation and rail freight transportation to ensure safety. In addition, given that the operator, JR Hokkaido, is currently facing a difficult business situation, we will also give consideration to matters including the status of efforts to contribute to increased profits on the Shin-Aomori to Shin-Hakodate-Hokuto section and the effect of opening the Shin-Hakodate-Hokuto to Sapporo section.

In addition, under the Nationwide Shinkansen Railways Construction and Improvement Act, a total of 11 routes including the Shikoku Shinkansen and Shikoku-Odan Shinkansen have been positioned as part of the so-called Basic Plan Routes. Since FY2017, a Survey on the Optimal State of the Shinkansen Network has been carried out, including for these Basic Plan Routes, and more specifically, a study is being conducted on the verification of the social and economic impacts of Shinkansen development, and methods for the effective and efficient development of Shinkansen, including single-line Shinkansen.

Turning to the Chuo Shinkansen, the opening of all lines will connect Tokyo and Nagoya in approximately 40 minutes and Tokyo and Osaka in approximately one hour. This will place Japan's three major cities within a traveling time of one hour from each other, and form an immense metropolitan area with a population of 70 million people. In addition to significantly changing Japan's national land structure and increasing the nation's international competitiveness, this development will generate growth potential that will ripple throughout the country, spurring the development of the Japanese economy as a whole. Regarding the timing of opening all lines, the Japan Railway Construction, Transport and Technology Agency Act was amended in 2016 to utilize the Fiscal Investment and Loan Program (3 trillion yen), making it possible to bring forward the opening of all lines to Osaka by up to 8 years from the previous plan of 2045. At present, in accordance with the Plan for Constructing the Chuo Shinkansen Line Section between Shinagawa and Nagoya Stations (No. 1) and (No. 2) approved by the Minister of Land, Infrastructure, Transport and Tourism, Central Japan Railway Company is proceeding with work including new construction at Shinagawa Station and the construction of tunnels in the Southern Alps, looking towards the opening of the Shinagawa to Nagoya section in 2027.

Regarding Shin-Osaka Station, the Basic Policy for Economic and Fiscal management and Reform 2018 (Cabinet Decision on June 15, 2018) included "examining project schemes such as private project composition etc. and enhancing the Shinkansen network to strengthen nodal functions and eliminate capacity restrictions from the perspective of transit convenience for the Linear Chuo Shinkansen and Hokuriku Shinkansen (detailed routes under review) etc.", and from FY2019 we have been working to conduct the necessary surveys and realize this initiative.

### (2) Driving Technical Development

#### (i) Superconducting maglev trains

In the area of efforts to develop superconducting maglev trains, based on the basic plan for the technological development of the superconducting magnetically-levitated transport system, development will proceed aiming at the realization of greater maintenance efficiency and increased comfort in already developed technologies.

#### (ii) Gauge Changeable Train

Free-gauge trains connect line sections of different rail widths to enhance the convenience of users, and, for the moment, technical development is still ongoing as to where to utilize free-gauge trains, assuming direct operation between different conventional lines.

## 3 Constructing Aviation Networks

### (1) Expanding Aviation Networks

#### (i) Enhancing metropolitan airports functionalities

Enhancing the functions of airports in Tokyo (Tokyo International Airport [Haneda Airport] and Narita International Airport [Narita Airport]) is essential in order to achieve government goals of 40 million overseas visitors in 2020 and 60 million in 2030 established in the Tourism Vision to support the Future of Japan, strengthening international competitiveness of Tokyo, revitalizing local economies, ensuring the smooth holding of the 2020 Olympic and Paralympic Games, and more. Initiatives are now underway to increase the number of slots to a million per year at two airports in total. This number is at the world's highest level rivaling London and New York.

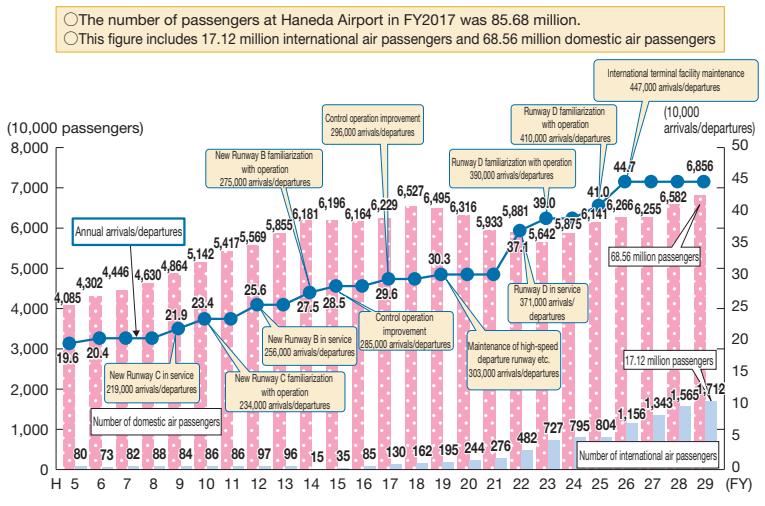
In concrete terms, efforts are being made to increase the number of slots by approximately 40,000 by 2020, by means of initiatives including reviewing the flight paths to and from the airport. At present, steady progress is being made in areas including the development of necessary facilities and the establishment of countermeasures for noise and falling objects. In addition to this, CAB held fifth series of citizens' information sessions between December 2018 and February 2019, and we will continue to provide detailed information and obtain the understanding of citizens.

In addition, route selection has begun

Figure II-6-1-6 Overview of Tokyo International Airport


Source) MLIT

Figure II-6-1-7 Trend in Number of Passengers and Number of Arrivals and Departures at Tokyo International Airport

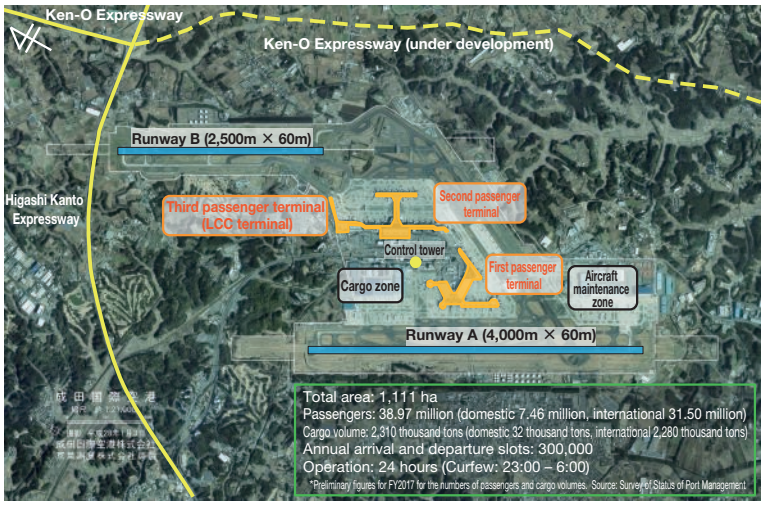



Source) MLIT

in line with this expansion of capacity.

At Narita Airport, NAA(Narita International Airport Corporation) and CAB will increase the number of slots by approximately 40,000 by means of initiatives including the construction of high-speed exiting taxiways by 2020. NAA and CAB are also moving forward with the further enhancement of functions including the development of a third runway and the easing of restrictions on night flights based on the agreement of four-party council made up of NAA, CAB, Chiba Prefecture, and surrounding municipalities. Furthermore, in order to increase the number of slots to half a million per year after 2020, steady progress is being made including the establishment of countermeasures for noise and falling objects, and the development of necessary facilities in surrounding areas under the Act on State's Financial Special Measures for Improvement of Areas around Narita International Airport.

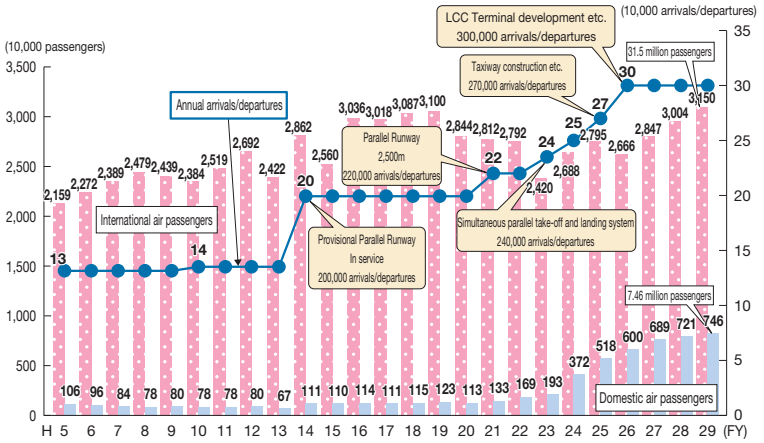
**Figure II-6-1-8** Overview of Narita International Airport




Source) MLIT

**Figure II-6-1-9** Trend in Number of Passengers and Number of Arrivals and Departures at Narita International Airport

○The number of passengers at Narita Airport in FY2017 was 38.96million.
○This figure includes 31.5 million international air passengers and 7.46 million domestic air passengers.



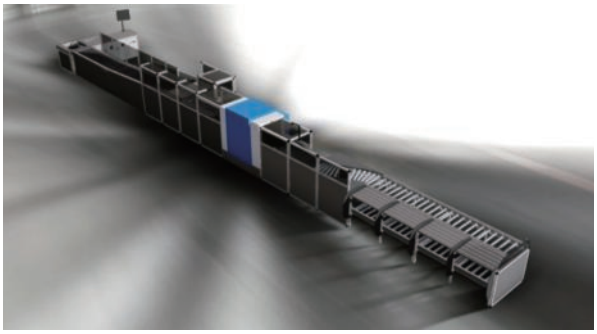

Source) MLIT

### (ii) Enhancing functions at Kansai International Airport and Chubu Centrair International Airport

The operation of Kansai International Airport has been contracted to a private-sector operator since April 2016. Kansai Airports Co., Ltd., the airport operator, is introducing smart security into Terminal 1, following from the introduction into Terminal 2 (International), and is developing business jet facilities etc. to enhance functions to take advantage of private business ingenuity. The 2018 passenger record was surpassed, with more than 15 million international passengers on international flights arriving for the first time since the opening of the airport.

At Chubu Centrair International Airport, the construction of a dedicated LCC terminal proceeded in order to respond to new LCC services and other flights, and a commercial facility business operated by the airport corporation opened adjacent to this terminal on October 12, 2018.

Figure II-6-1-10 Kansai International Airport Smart Security System – Smart Lane



Source) Kansai Airports Co., Ltd.

Figure II-6-1-11 Commercial facility "Flight of Dreams," located adjacent to Chubu Centrair International Airport dedicated LCC terminal

Source) Central Japan International Airport Co., Ltd.

### (iii) Enhancing functions at regional airports

For further revitalization of Okinawa at Naha Airport, which plays critical roles as a travel and logistics base connecting Okinawa and mainland Japan/overseas, the project to increase runways was carried out. At Fukuoka Airport, the project to increase runways continued with the aim of fundamentally resolving the issue of chronic airport congestion at peak times.

Measures taken at New Chitose Airport include increasing the number of departures and arrivals per hour from 32 to 42 from the end of March 2017. Additionally, in order to relieve facility congestion caused by a sudden increase in international flight passengers, among other factors, and to accommodate greater demand for international flights, development projects are underway to expand the apron for international flights, construct a new taxiway, and improve the functions of the terminal building servicing those flights (CIQ facility). At other regional airports also, initiatives including apron expansions and CIQ facility renovations are being advanced in response to increases in the number of aircraft and the introduction of new flights.

Also, the MLIT has been implementing countermeasures against aging airport facilities based on strategic maintenance to ensure safe flights of airplanes, while pushing forward with quake-resistant technologies and structures at airports so that airports can maintain their operations in the event of an earthquake.

### (iv) Driving the Open Skies strategically

The Ministry has strategically pursued the Open Skies[Note 1], including a metropolitan airport, to respond to changes in the competitive climate resulting from global trends towards air services liberalization while accommodating vigorous economic leaps in Asian and other overseas nations, and as of March 2019, open sky agreements have been realized with a total of 33 countries and regions[Note 2].

Note 1 Refers to the bilateral scrapping of restrictions on the number of companies involved in international air transportation, and on routes and the number of flights, in order to boost the level of service (for example by reducing fares) by means of realizing new entries to the market and increased flight numbers, and promoting competition between companies. Recently, numerous countries have advanced this type of measure.

Note 2 The number of passengers between Japan and these 33 countries represents approximately 92% of the total number of passengers arriving in or departing from Japan.

Also, discussions with ASEAN are ongoing with a view to concluding a regional air service agreement between Japan and ASEAN.

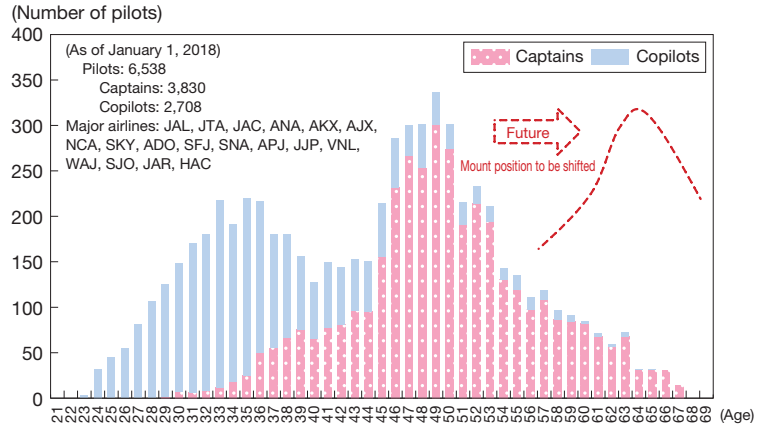
### (v) Fostering and securing aircraft pilots, etc.

In the Japanese aviation industry, while drastic leaps in the demand for aviation focusing on international lines and massive retirement of pilots in their 40s, who form a primary workforce at present, are predicted in the future.

In response to this situation, in July 2014 the Joint Subcommittee for Studying Crew Policies, established under the Basic Policy Taskforce and Technology and Safety Taskforce of the Transport Policy Council's Aviation Group, compiled a report concerning the orientation for concrete measures to be taken in future. In addition, the formulation of the Tourism Vision to support the Future of Japan in March 2016 set targets of 40 million overseas visitors to Japan in 2020 and 60 million in 2030. Against the background of increased demand for flights, the training and securing of pilots and mechanics is becoming an increasingly important issue.

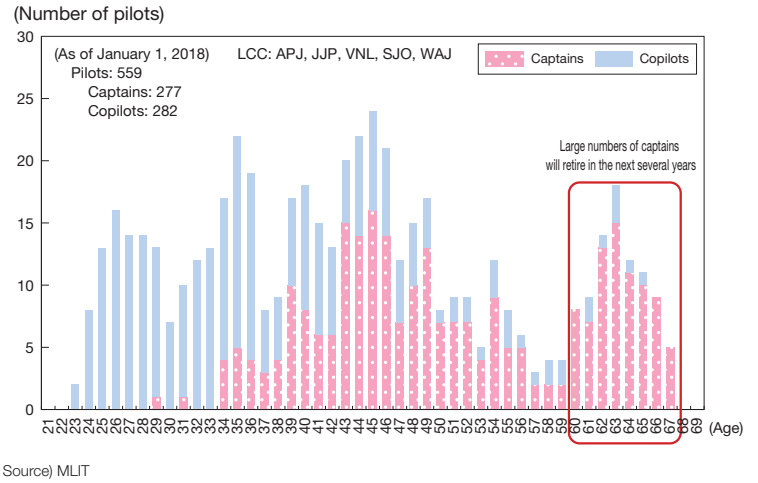
Based on this, regarding pilots, in addition to steadily expanding the scale of Civil Aviation College training from FY2018 (72 people to 108 people), efforts have been made to introduce efficient training for private activities and capabilities for SDF pilots. For mechanics, efforts have been made to utilize foreign human resources through the new resident status (specific skills), and to strengthen the foundations of domestic training facilities.

**Figure II-6-1-12 Age Compositions of Japan's Major Airline Pilots**




Source) MLIT

**Figure II-6-1-13 Age Compositions of Japan's LCC Pilots**




Source) MLIT

## (2) Enhancement and Optimization of Airport Operations

### (i) Driving airport management reforms

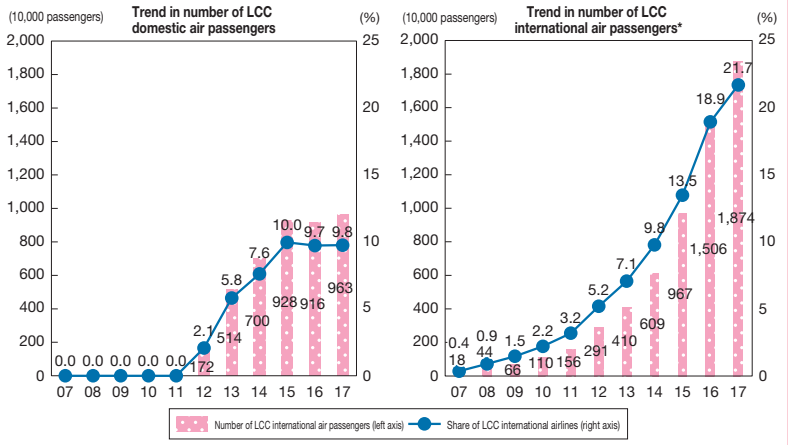
Using the Act on Operation of National Airports Utilizing Skills of the Private Sector, the MLIT is committed to driving airport management reforms at national airports and the like to suit specific local conditions through utilization of private-sector capabilities, integrated management of Aeronautical activities and Non-aeronautical activities and so on in order to expand the amount of population who are engaging in domestic and international interactions, etc. on the support of the airports and thus to encourage regional revitalization.

Amid these initiatives, in July 2016, Sendai Airport became the first of Japan's national airports to begin undergoing privatization using concession scheme. Following on from Sendai Airport, the consignment management of Takamatsu Airport commenced in April 2018, and procedures are being advanced for Fukuoka Airport, Kumamoto Airport, 7 airports in Hokkaido and Hiroshima Airport.

### (ii) Efforts to achieve sustainable growth for LCCs

An LCC originating from Japan went into service in March 2012. As of April 2019, Peach Aviation operated 16 domestic routes and 15 international routes; JetStar Japan, 22 domestic routes and seven international routes; Vanilla Air, six domestic routes and six international routes; and Spring Airlines, three domestic routes and four international routes, and Air Asia Japan, one domestic route and one international route.

Figure II-6-1-14 Trend in Number of LCC Passengers in Japan




* Aggregation based on data as of August 2018
Source) MLIT

Promoting the entry of LCC is expected to create new demand, for example increasing the number of overseas visitors to Japan and expanding domestic tourism. The government has set a target for LCC passengers to make up 14% of total passengers on domestic routes and 17% of total passengers on international routes by 2020, and a variety of measures are being put in place nationally and at airports in order to promote the entry of LCC.

Government measures are being studied and implemented based on the following three perspectives: (1) Changing the airport fee structure; (2) Reforming airport management; and (3) Upgrading the environment for receipt of passengers by LCC. With regard to the airport fee structure, in order to promote LCC flights airport usage fees including landing fees are being reduced or reconsidered at Narita International Airport and Kansai International Airport, which are LCC hubs. Since FY2017, measures to provide relief for landing fees for domestic routes originating at Narita, Kansai or Chubu Centrair International Airports and landing at domestic airports have also been expanded. In addition, in July 2017, 27 airports throughout the country were certified as airports that help encourage travels to Japan, and the government is providing a full range of support, for example by providing support for the introduction of new international routes or the addition of more planes (including by LCC), and upgrading the environment for receiving passengers by LCC. In the area of reform of airport management, initiatives including integrating the operation of runways and other airport facilities with the management of airport buildings by introducing private sector operators will enable the introduction of strategic fee systems and business activities, revitalizing airports utilizing private sector knowledge and funding, and in FY2018 necessary procedures for privatization have been implemented for Fukuoka Airport, Kumamoto Airport, 7 airports in Hokkaido and Hiroshima Airport. Further, in relation to (3) upgrading the environment for the receipt of passengers by LCC, the development of dedicated LCC terminals is underway, and development is moving forward at Chubu Centrair International Airport for the commencement of service in the first half of 2019.

### (iii) Accelerating the reception of business jets

A business jet is a small aircraft with the capacity to hold a few to more than a dozen passengers at the most. Business jets are typically used by businesspersons valuing time because they are able to adjust times according to their schedules or utilize the plane as a secure space to carry on business meetings and such on board.

Business jets have become a means of global corporate activity in the U.S. and Europe. As Japan's economy goes on global, further capitalizing on economic growth in Asia through mainly Tokyo International Airport and Narita International Airport has been an important aim, recent years have seen greater importance placed on winning more affluent passengers and otherwise capturing inbound tourism demand.

As a result, initiatives including the upgrading of facilities, in particular at airports in the Tokyo metropolitan area, in order to improve the environment for acceptance of business jets are being advanced. For example, at Tokyo International Airport, development is proceeding in order to increase the number of aircraft parking spots at the same time as the operation of existing parking spots is being modified in order to realize the maximum possible number of parked aircraft, and parking spot information is being made more visible in order to increase convenience for users. Discussions are also

being held at Narita Airport towards upgrading the airport's business jet acceptance system and expanding the number of spots available for the 2020 Tokyo Olympic and Paralympic Games.

#### (iv) Promotion of international flight services at regional airports

Enabling visitors to Japan to arrive and depart from regional airports via international flights will be extremely important to realizing the targets of 40 million overseas visitors to Japan in 2020 and 60 million in 2030 set out in the Tourism Vision to support the Future of Japan formulated in March 2016.

In the case of national airports, landing fees for international flights have already been reduced by 30% for regular flights and by 50% for charter flights. In FY2016 a measure was introduced as a cooperative scheme with regional areas seeking to be added to flight routes, under which landing fees are reduced by a further 50% when new routes are created or additional flights are added for international passengers at regional airports. In addition, in July 2017, 27 airports throughout the country were certified as airports that help encourage travels to Japan, and these airports are the target of measures including the reduction of landing and ground handling fees in order to support the introduction of new routes or additional flights, and support for efforts to improve passenger acceptance facilities, such as the upgrading of boarding bridges and CIQ facilities.

### (3) Upgrading Our Air Traffic System

In 2010, air traffic experts from the industrial, academic and governmental sectors formulated a long-term vision for future air traffic systems as CARATS (Collaborative Actions for Renovation of Air Traffic Systems) with a view to realizing a globally interoperable air traffic system and addressing increases in long-term demand for air traffic capacity and diversified needs. Studies are underway to make this vision a reality in conjunction with ICAO's Global Air Navigation Plan (GANP).

As an initiative in FY2018 to introduce new technologies and methods, the introduction of the high-standard approach method RNP-AR, which is a high accuracy navigation system utilizing GPS, was promoted, with a total of 55 systems having been established at 30 airports. This installation will continue going forward, to improve the operational efficiency of aircraft, and to improve service rates in bad weather.

Also, at the Tokyo International Airport (Haneda Airport), the Ground Based Augmentation System (GBAS) was introduced to make precise approaches using GPS possible. A study is also ongoing concerning the introduction of a new information sharing platform to share aviation and flight information necessary for air traffic management around the world.

### (4) Strategic Promotion of Overseas Aviation Infrastructures

The Asia and Pacific region is expected to grow into the world's largest aviation market before too long. Under these circumstances, important issues for the growth strategy of Japan are not only to contribute to strengthening of the aviation networks in this region, but also to actively capture the impetus of the emerging countries in which numerous aviation projects are in progress.

In FY2018, a survey was carried out in the Republic of Poland, under the activities of the Council for International Deployment of Aviation Infrastructure, and the information was shared with relevant companies. We have also promoted new initiatives toward future overseas airport deals to introduce Fast Travel, utilizing the face recognition technology in which Japanese companies have an advantage.

In addition, along with the agreement to extend the contract for the operation of the Laos Wattay International Airport International Terminal (August 2018), the shareholder agreement signed for the joint construction and operation of the new Russia Khabarovsk Novy Airport Terminal (December 2018), sales activities and invitations to key government officials in partner countries were carried out to seize opportunities for Japanese company projects such as the maintenance and management of the Long Thanh International Airport in Vietnam, the Hanthawaddy International Airport in Myanmar and the New Ulaanbaatar International Airport in Mongolia.

### 4 Facilitating Traffic Access to Airports

With respect to the rail networks for accessing these airports, efforts have been made to further improve railway access to international hub airports in accordance with the Approaches to Future Urban Railways in the Tokyo Area Report from the Council of Transport Policy, which was put together in April 2016, including promoting barrier-free construction at airport stations and stations providing access to airports. We have also promoted projects for the development of access lines to major international hub airports, such as through providing budget measures for the development of the Nani-wasuji Line connecting the Kansai International Airport with Shin-Osaka Station and the Osaka city center. In addition, preparations are in progress to assess the environmental impact of implementing the JR East Haneda Access Line (Higashi-Yamanote Route) to connect the Tokyo city center with Haneda Airport.

In addition, to improve bus access to airports within National Strategic Special Zones, all necessary measures are being taken to ensure greater procedural flexibility, including shortening the time given to submit fare and service schedule plans.

## Section 2 Implementing Comprehensive and Integrated Logistics Policies

We are advancing a logistics productivity revolution that seeks to improve the operational efficiency of logistics businesses and increase added value. In addition, logistics policies are being implemented in a comprehensive and integrated manner in coordination with related ministries and agencies and the public and private sectors in accordance with the Comprehensive Logistic Policy Guidelines (FY2017-FY2020).

### 1 Implementing Logistic Policies to Correspond with Deepening Global Supply Chains

To keep up with deepening global supply chains, efforts directed at reinforcing Japan's international logistic facilities are underway, including driving overseas deployment of the nation's logistic systems.

#### (1) Promoting Overseas Deployment of Japan's Logistics Systems

As supply chains continue to get globalized at a deeper level than ever, grabbing the evolving Asian markets would be essential to sustaining and enhancing the international competitiveness of Japan's industries. The formation of a sophisticated international logistics system should be of prerequisite importance to meet this urge. Capturing the Asian markets has become an urgent task for Japanese logistics companies that support the business expansion of the nation's industries in Asia.

However, the existence of institutional and customary constraints in the partner countries is posing challenges to Japan in expanding its high-quality logistics systems into Asian nations. Therefore, the MLIT is developing an environment to encourage overseas expansion of Japan's logistics systems in collaboration with the private sector through logistics pilot projects, intergovermental logistics policy dialogues, support for the development of logistics-related infrastructure, projects for development of human resource, international standardization of logistics systems, and other means.

#### (2) Strengthening the Functioning of the International Marine Transportation Network

As the globalization of economy progresses, the volume of international marine transportation continues to grow year to year. From the perspective of optimizing marine transportation through large bundle shipments, container carriers and bulkers continue to grow in size. In the meantime, key Asian ports have successfully increased their volumes of freight handling, resulting in concentrated ports of call, international trunk routes making fewer calls at Japan. Furthermore, slow responses to larger vessels to carry bulk cargo[Note] raise concerns over diminishing competitiveness in domestic industries forced into a mutually disadvantageous business environment.

In light of such conditions, Japan carries on its effort to streamline the flow of logistics that supports economic activity in Japan and life of citizens, improving the shipping entities at their location at home, which would in turn augment Japan's industrial competitiveness and realize economic reconstruction by maintaining and expanding the calls of international trunk routes at Japanese ports and simplifying and stabilizing imports of lifeblood materials, such as resources and energies.

**Note** Generic name for cargoes that are shipped without being packaged, such as grain, iron ore, coal, oil and timber.

In parallel with these approaches, efforts to shape an efficient network of marine transportation in which international and domestic transport services are integrated will be carried on, and relevant measures will be enhanced and developed at a deeper level of refinement.

### (i) Enhancing the facilities of International Container Hubs

To strengthen Japanese economy's international competitiveness and to maintain and create citizens' employment, the international shipping trunk routes that directly connect Japan to North America, Europe, and other places need to be consistently maintained and even expanded.

For this purpose, MLIT chose Hanshin Port and Keihin Port as International Container Hubs in August 2010 to implement a full package of structural and non-structural measures. In terms of cargo collection, "the government's International Strategic Port Competitiveness Enhancement Project" which subsidizes the collection activities of port operators is starting to show some success. Specifically, in Hanshin Port, the container cargo volume handled at Kobe Port hits the highest record in 2018. New North American route services were also launched in April 2017 and August 2018 at Yokohama Port in Keihin Port.

In terms of cargo creation, the interest-free loan system was used at Yokohama Port for logistics facilities with distribution processing functions to contribute to the creation of demand for container cargo. In addition, the subsidy system was used at Kobe Port to reorganize and upgrade logistics facilities. Some effect of cargo creation expects to appear.

In terms of strengthening competitiveness, in addition to the formulation and announcement of specific goals and processes towards the realization of AI terminal with world-class productivity and good working environments, specific measures were taken, such as the formulation of Model Operating Regulations to ensure the Safety of Remote Control RTG and the development of new port information systems, "CONPAS" through demonstration projects from FY2016 to FY2018 . In addition, a demonstration project on terminal operation efficiency improvement utilizing AI has been carried out since FY2018.

The above initiatives have been implemented, and it has been five years since the start of the International Container Hubs Policy. Therefore, we summarized comprehensive examination of the status of efforts already implemented and new main initiatives towards the sustainable development of this policy in "Final Summary Follow-up Report".

Based on "Final Summary Follow-up Report" formulated in March 2019, we will continue to move forward with efforts of cargo collection, cargo creation and strengthening competitiveness, to enhance the frequency and diversity of direct services, such as North American and European routes, as well as Latin American and African routes.

### (ii) Development of LNG Bunkering Bases

With the strengthening of international regulations on the sulfur content of ship fuels starting in 2020, LNG fueled ships are expected to increase, and a subsidy system was established (subsidy rate of 1/3) in FY2018 for construction of facilities needed to build LNG bunkering bases. Two projects, the Ise and Mikawa Bay Project and Tokyo Bay Project, were adopted in June 2018. We promote the spread of LNG fueled ships with low environmental impact, and provide further support to the formation of two LNG bunkering bases in Japanese ports by FY2020, ahead of neighboring countries while promoting cooperation with the world's top oil bunkering port, Singapore Port, in order to increase port calls for container ships etc. to Japanese ports.

### (iii) Forming a marine transportation network for moving resources, energy sources and so on with stability and efficiency

Supply-demand balances for resources, energy, and so on, assuring Japan of stable, low-cost imports of these substances to build up industrial competitiveness of the nation's industries and to maintain and even create employment and revenues should be one of the tasks of foremost importance as the nation depends on imports for virtually 100% of its requirements.

Ten "strategic international bulk ports" were therefore chosen in May 2011 to serve as bases for resources and energy. In order to enhance the functions of these ports to allow them to serve as marine transport network hubs for bulk freight and the promotion of cooperative transportation using large vessels through corporate partnerships are being targeted, and both structural, the development of quays that can accommodate large vessels and non-structural measures are being taken with the help of subsidies and preferential tax measures.

In FY2018, we are advancing the development on quay walls at five ports, Onahama, Kushiro, Tokuyamakudamatsu, Mizushima and Shibushi, and the Kushiro Port International Logistics Terminal commenced operation in March 2019.

Private investment has also been activated looking ahead to the service of strategic international bulk ports.

Going forward, we will seek to dramatically increase productivity and strengthen Japan's international competitiveness by means of efficient transportation using large ships and joint transportation involving cooperation between companies.

#### (iv) Building functionally core ports on the Japan Sea

Among the ports located on the coastal line of the Japan Sea geographically close to the fast economically growing nations across the sea, core ports were selected in an effort to capture the economic booms in these nations into Japan's growth through selection of functions and concentration of measures and through port-to-port linkage and efforts are being made to contribute to the building of a resilient logistics network in light of disasters such as the Great East Japan Earthquake.

#### (v) Enhancing functionalities of international ports

The MLIT not only develops international physical distribution terminals, etc. in the international maritime transport network or at regional hub ports for consolidated competitiveness, etc. of local key industries but also pushes efforts directed at enhancing the functionalities of these ports, as by pushing their migration to ICT. To address increasingly sophisticated and diversified needs for East Asian logistics, which is not much different from domestic logistics in both terms of time and distance and build a low-cost logistics system, the Ministry pushes ahead with functional enhancements to unit loading terminals[Note] and with the construction of facilities designed to smooth the flow of cargo transshipment.

#### (vi) Developing a marine transportation environment

Among all international backbone routes, those that could interfere with bay navigation because of shallow waters, etc. have been improved and Aids to Navigation have been established to develop a marine transportation environment that combines the safety of navigation with the efficiency of marine transportation.

### (3) Developing Advanced Aviation Logistics Facilities to Pursue Increased International Competitiveness

The MLIT pushes efforts to consolidate the functionalities of the metropolitan airports, drive an airfreight hub implementation of Japan's hub airports, such as Kansai International Airport and Chubu International Airport, and simplify the transportation process flow in its bid to positively capture airfreight originating from and arriving in Asia as it promises further leaps.

### (4) Improving Logistics for Promoting Exports of Agricultural and Marine Products and Food Products

In 2018, the export value of agriculture, forestry and fisheries products and foodstuffs from Japan was 906.8 billion yen, the sixth consecutive year of increase. To achieve the government's target of an export value of 1 trillion yen in 2019, we are conducting research and development into a new type of refrigerated container for air transportation that is suited to the needs of air transportation from regional production areas, surveying the export strength from regional airports, developing port facilities that contribute to export promotion and promoting the international standardization of cold chain logistics services.

### (5) Strategic Development and Utilization of a Logistically-Important Road Networks

Building an efficient logistics network is of crucial importance to motor-truck transportation, which accounts for about 90% of domestic transportation. Because of this, the construction of ring roads in the three major metropolitan areas, access roads to airports and ports is underway. In March 2018 the Road Act and other laws were revised in order to ensure stable transportation during both normal periods and natural disasters. The Minister of Land, Infrastructure Transport and Tourism designated the most important road transport network for logistics as "Logistically-Important Roads," and created a "Logistically-Important Road System" to enhance functions including strengthening the structure of roads to respond to the increasing size of trucks and speeding up the opening and restoration of roads following disasters and to provide priority support.

**Note** Terminals compatible with transportation systems that consolidate cargoes into chassis, containers, etc. (break them down into units) for loading and unloading, in order to increase the speed and efficiency of logistics.

In addition, we are steadily pushing forward with initiatives using ETC 2.0, such as the simplification of the overweight/oversize vehicle passage permit for vehicles with ETC 2.0 and a demonstration experiment of the operation management support services for ETC 2.0 vehicles etc., and the national government is working to promote an integrated review of the conversion of road structures into electronic data utilizing in-vehicle sensing technologies, including on regionally administered roads, and to speed up the approval process for overweight/oversize vehicle permit.

In another initiative, a strategy to save labor in truck transport and improve productivity saw the October 2016 launch of a demonstration project for double-trailer trucks (trucks able to transport the equivalent of two large trucks in a single unit) in the field, primarily on the Shin-Tomei Expressway, which was fully introduced in January 2019.

We have also enhanced the functions of the Shin-Tomei and Shin-Meishin Expressways with 6 lanes, etc., looking ahead to the convoying of trucks, with a project launched in August 2018 to develop 6 lanes for the Shin-Tomei Expressway on the Shizuoka Prefecture section (Gotemba JCT to Hamamatsu Inasa JCT). We will also implement 6 lanes for the Shin-Meishin Expressway (Kameyama Nishi JCT to Otsu JCT), using FILP. Further, efforts are also underway to effectively utilize and enhance the functions of existing road networks, for example by promoting the use of a smart IC system that directly connects expressways and private sector facilities and continuing to construct smart ICs.

We are also proceeding with a detailed study, focused on the Shin-Tomei Expressway, of the utilization of the expressway infrastructure towards the realization of a new logistics system with safe driving sections for truck convoying etc.

### (6) Measures That Help Strengthening of International Logistics Facilities

The MLIT will push the development and redevelopment of physical distribution sites and facilities around international ports, etc., which are nodal areas for international physical distribution in metropolitan zones. They will also undertake this at the ports that are the strongpoints of physical distribution and industry. This will be done to build up international competitiveness and form an efficient network of physical distribution as an integral part of urban environment improvement activity, while also seeking better disaster preparedness to deal with massive disasters as they occur.

## 2 Measures Aimed at Building an Efficient and Sustainable Logistics System in Japan

Additional approaches are underway to build an efficient and sustainable logistics system at home to toughen Japan's industrial competitiveness and increase logistics productivity while easing environmental loads.

### (1) Flow of Interregional Logistics

The MLIT proceeds to develop nodal points of logistics, such as ports and freight stations, to drive combined multimodal transportation. We are expecting improved efficiency in rain freight through utilization of facilities that have been developed for capacity enhancment. The construction of combined multimodal transport terminals is also being proceeded at Toyo Port and elsewhere to consolidate coordination between marine transportation and other modes of transport.

Key road networks will also be constructed to streamline the flow of truck transportation.

### (2) Optimizing Local Logistics in Cities, Depopulated and Other Areas

Urban distribution centers[Note] have been developed in 20 cities and 29 locations (27 of which were already in service) by the end of March 2018, in accordance with the Act on the Improvement of Urban Distribution Centers, to enhance the urban functions of logistics and streamline road traffic through the intensive location of distribution facilities.

To prevent roadside parking for cargo handling purposes, the Ministry has encouraged local governments to include the mandatory installation of parking spaces for cargo handling in their municipal parking ordinances. As of the end of March 2018, municipal ordinances that stipulate mandatory installation of parking spaces for cargo handling at commercial facilities of above certain size were established in 88 cities.

In addition, we have publicized a handbook concerning the design and operation of buildings that take logistics into consideration in order to promote design of large buildings that consider logistics, and we are promoting its use.

Measures taken to optimize traffic flow include making focused attempts at eliminating congestion bottleneck points, constructing graded intersections, and resolving railway crossings that are closed at nearly all times. In parallel, nonstruc-

Note A built-up area constructed in a suitable location, such as close to an expressway interchange, as a large-scale logistics hub, and featuring intensive siting of logistics-related facilities (truck terminals, warehouses, etc.)

tural measures, such as those aimed at encouraging joint transportation and delivery pursuant to the Low Carbon City Promotion Act to boost loading efficiency, have been promoted.

Furthermore, under the framework of the Act on Advancement of Integration and Streamlining of Distribution Business, we are working on efforts to promote the construction of regionally sustainable logistics networks in depopulated areas, such as with the support of a demonstration project for mixed passenger and local produce cargo on the Tadami Line. In addition, with the system revision in September 2017, efforts are underway to enable improved productivity such as by having passenger transportation and freight forwarding businesses in depopulated areas working together to commence a "two birds with one stone" approach to package collection and delivery.

As a shortage of truck drivers become serious, we are working on a public awareness campaign called "COOL CHOICE Campaign-Why Not Receive Packages For The First Time" to reduce redelivery for courier services by asking people. We also have established a Council for the Improvement of Home Delivery and EC Business Productivity, working with relevant ministries and agencies to promote initiatives such as summarizing and sharing opinions on examples of efforts to reduce redelivery and the creation of $CO_2$ Reduction Guidelines and information networks on open type delivery boxes etc.

### (3) Further Efforts to Implement Logistic Services That Are More Sophisticated, Comprehensive, and Efficient

In response to a declining labor force and a rising volume of frequent, small-lot deliveries in the logistics sector, efforts are underway to economize on labor in logistics businesses and reduce their environmental impact, the Act on Advancement of Integration and Streamlining of Distribution Business seeks to support wide-ranging logistics integration and streamlining efforts conducted via collaboration between companies and organizations involved in the sector, and comprehensive efficiency plans for a total of 138 projects (as of March 31, 2019) have been certified for joint transportation, modal shifts and transport aggregation, with support provided in the form of operating expense subsidies and special tax measures. Also, by promoting quantity leveling and the standardization of packaging and data specifications through cooperation between logistics companies and shipping companies, we are aiming to improve loading efficiency and facilitate smooth collaboration between operators.

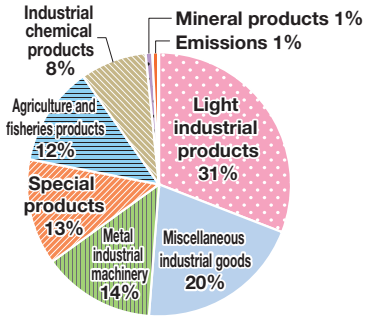
Figure II-6-2-1 Results and effects for the number of total efficiency plans certified as of the end of March 2019

**By type** Certified as good plans

| Item | Cases |
|---|---|
| Modal shift | 62 |
| Joint transportation | 12 |
| Transport network consolidation | 74 |
| Other (business equalizing) | 1 |

Note: Initiatives corresponding to multiple cumulative totals are aggregated for each type

**Major handling items** Widely certified for various items




**$CO_2$ reduction**

▲60,000 t-$CO_2$/year

Equivalent to $CO_2$ absorbed by about 6.8 million cedars (When converting the number of cedars to area, about 67.9km$^2$ = approx. area of Lake Hamana (64.92km$^2$))

Source: Created by Logistics Policy Division based on formula on Forestry Agency website

**Labor saving**

Equivalent labor saving of ▲760,000 hours/year

Securing labor saving of the equivalent of about 351 truck drivers

Source: Created by Logistics Policy Division based on Labor Force Survey (Ministry of Internal Affairs and Communications)

**Reduction of load waiting time** Introduction of 45 truck reservation reception systems

Reservation for arrival time by truck driver → Truck arrival times are equalized and load waiting times are reduced

### (4) Realizing a "Logistics Revolution" through the Use of New Technologies (the IoT, BD, AI, etc.)

The utilization of new technologies in the field of logistics will turn current approaches on their heads and bring about revolutionary changes.

Unmanned aircraft (drones, etc.) are expected to be used for the delivery of packages in depopulated areas such as remote islands and mountainous areas, as well as in urban areas, and in September 2018 the review procedure for the approval of permits based on the Aviation Act was revised, with reference to the Roadmap for the Industrial Revolution of the Skies, compiled by the Public and Private Council for the Development of an Environment for Small Unmanned Aircraft. Following this, in October of the same year, package delivery was carried out by un-assisted non-visual flight.

In addition, in an effort to solve logistics issues in depopulated areas etc., demonstration tests were carried out in 5 regions nationwide, including with unassisted, non-visual flights, and the issues were investigated, while also assessing cost effectiveness.

The advancement of unmanned truck convoys is expected to greatly improve productivity and resolve the issue of driver shortages. Therefore, efforts are being made to develop this technology, with the start from January 2018 of a demonstration test on the Shin-Tomei Expressway with conveying and manned following vehicles.

### (5) Reform of Work Styles in the Field of Logistics

Against the background of a falling birthrate and an aging and declining population, the aging of the workforce is also affecting the field of logistics, in particular the trucking and coastal cargo transportation industries, making measures to respond to large-scale retirement and the difficulty of securing human resources in the face of the decline of the productive-age population an ongoing necessity.

The Liaison Committee among Relevant Ministries and Agencies on the Reform of Work Styles in the Motor Carrier Industry was formed with a view towards the establishment of an environment allowing correction of the issues of long working hours in the motor carrier industry, including the trucking industry, formulating 88 measures incorporating the Government Action Plan for the realization of Work Style Reforms in the Motor Carrier Industry, and we are promoting initiatives to improve labor productivity, secure and develop diverse human resources and optimize transaction environments.

With regard to the coastal shipping industry, measures, such as improving the onboard living and working environments, are being advanced to promote the employment of young seafarers.

## Section 3 Reactivating Industries

## 1 Trends in Railway Industries and Measures

### (1) Initiatives to Improve Productivity in the Rail Sector

We are promoting initiatives in response to future shortages of human resources and to reduce local railway costs particularly in difficult to manage railways, such as considering the introduction of highly accurate position detection systems using autonomous driving and quasi-zenith satellites on general lines such as where there are level crossings etc., and contributing to improvements in productivity in the rail sector towards the spread of control systems for trains utilizing wireless communications between the ground and the train for information transmission.

### (2) Railway Business

#### (i) Trends and measures in the railway business

The number of railway passengers carried in FY2016 increased from its year earlier level. At Japan Railway, transportation on the Shinkansen increased and as did transportation on conventional railway lines, with transportation on private railways on the increase, too.

In FY2016, the annual volume (tons) and distance (kilometers) of railway freight increased from the previous fiscal year for container freight, while carload freight slightly decreased.

The railway operators are working on such initiatives as presenting guidance information in multiple languages, showing route and station names along with their alphanumeric notation and offering free public wireless services in order to enhance railway competitiveness, increase convenience in coordination with livelihood services and be better prepared

in receiving inbound foreign tourists.

Additionally, traffic IC cards continue to gain growing popularity across the nation since their pioneer "Suica" was launched by JR East in 2001. Since March 2013, 10 kinds of traffic IC cards used by JR and major private railways and the like have been made interoperable. As IC cards penetrate more railway operators and areas, they could help improve passenger convenience and reactivate regional economies.

#### (ii) Initiatives towards the complete privatization of Japan Railways

Japan's national railways were once operated as a centrally-managed organization run under a state-owned corporation. Improper business management and a failure to account for actual conditions in the areas of service led to high levels of long-term debt and eventual bankruptcy. This led to the division and privatization of Japanese National Railways in April 1987 and a rebirth of the rail business in Japan. April 2017 marked 30 years since the formation of the JR companies.

The breakup and privatization of Japanese National Railways resulted in the formation of a system characterized by efficient and responsible management. This led to a dramatic increase in the comfort and reliability of rail services as a whole. On the management front also, the anticipated goal of reform of Japanese National Railways is being fulfilled, for example with Kyushu Railway Company becoming a fully private entity following on from East Japan Railway Company, West Japan Railway Company, and Central Japan Railway Company.

Of these companies, Hokkaido Railway Company in particular is facing a difficult business situation, and has announced the sections of its routes that will be difficult to maintain independently, and has commenced holding explanatory meetings and discussions with regional stakeholders regarding the best direction for the realization of more efficient and convenient transportation services based on each line, depending on the specific region. In July 2018, the MLIT announced the details of national support for JR Hokkaido, including the issue of supervisory orders, for the steady progress of initiatives to improve management, including the review of business scope under the JR Companies Act. The MLIT is seeking to provide JR Hokkaido with all necessary support and cooperation, together with local officials, for the purpose of seeking thorough management efforts towards management independence by FY2031.

### (3) Rolling Stock Industry

The production value of newly manufactured rolling stocks moved flatwise for domestic shipment and varied depending on the status of orders for overseas shipment. The production value in FY2017 stood at 196.6 billion yen (2,047 cars). The composition ratio of production value was 76.3% (150.1 billion yen) for domestic shipments and 23.7% (46.6 billion yen) for overseas shipments, with the former increasing by 4.7% and the latter by 159.6% over FY2016 values.

The production value of rolling stock parts (such as power generators and bogies) was 363.8 billion yen and that of signal protection devices (such as automatic train control devices and electrical interlocking devices) was 105.2 billion yen.

Rolling stock manufacturers and others are working to develop rolling stocks that fill diverse social needs, such as speed, safety, passenger comfort, low noise and being barrier-free, by partnering with railway operators.

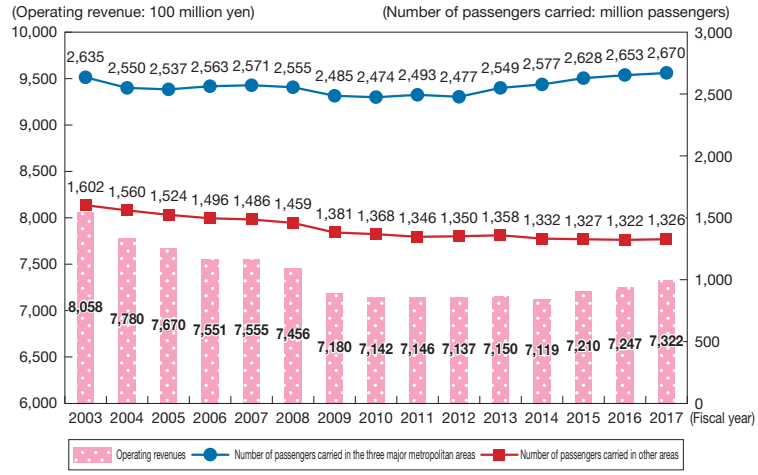
## 2 Trends in Motor Truck Transport Business and Measures

### (1) Passenger Vehicle Transport Business

#### (i) Motor bus business

While motor buses in major cities in which populations have increased have seen slight increases in passenger volume and revenues, factors that include increasing ownership of private vehicles in rural areas continue to push down the demand for public transport. The climate surrounding the motor bus business remains extremely harsh.

Figure II-6-3-1 Changes in the Number of Passengers Carried by Motor Buses and Operating Revenues

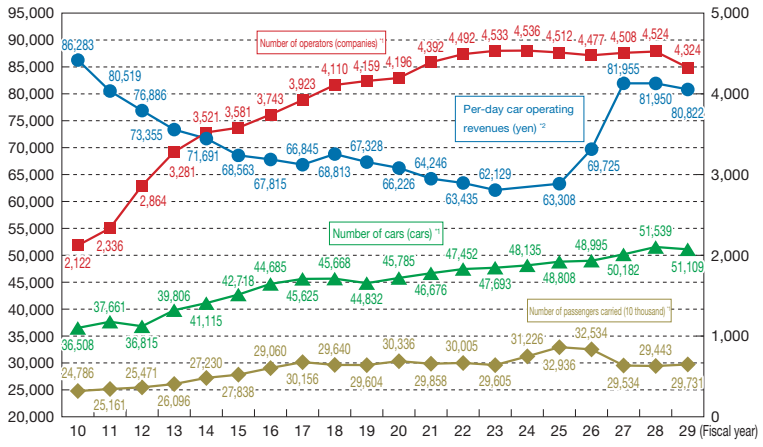



Source) MLIT

#### (ii) Chartered bus business

Since deregulations in February 2000, the chartered bus business has sponsored low-cost, diversified bus tours in its effort to deliver better user services, but competition is stiffening with increase in the population of operators in play, and based on the Comprehensive Measures for the Realization of Safe and Secure Charter Bus Operations in light of the Karuizawa ski bus incident, there has been a lowering of the number of operators as businesses withdraw from the sector with the introduction of the business license renewal system in April 2017 and the start of patrol guidance by designated private organizations from August of the same year. Transportation revenue was also on a downward trend with smaller group travel trips and the lowering of travel product prices, but this has started to correct as the environment surrounding the charter bus business has improved with the introduction of fares and charges that properly reflect the cost of safety and an increase in international visitors to Japan etc.

Figure II-6-3-2 Chartered Bus Business Overview



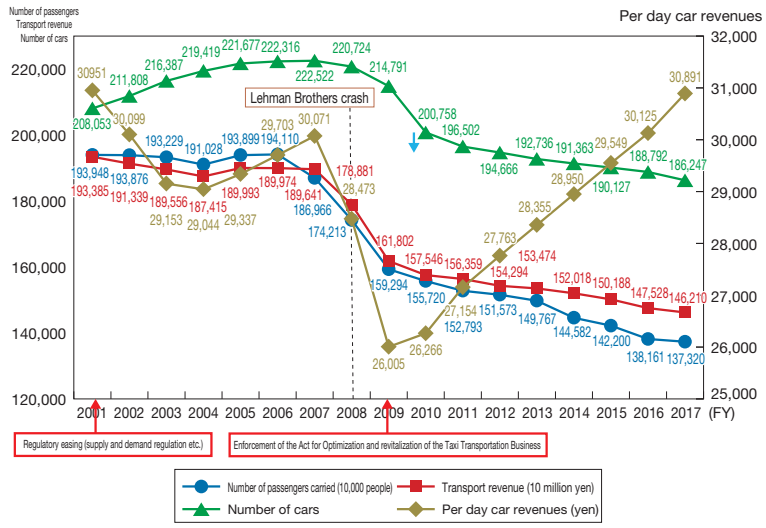

Source) MLIT

### (iii) Taxi business

In the taxi business, the Act on Special Measures Concerning the Optimization and Revitalization of the General Passenger Car Transportation Business in Specified and Semi-Specified Areas was put into effect in January 2014 in order to, among other things, improve working conditions for drivers while providing better taxi services.

Pursuant to provisions of the law, the MLIT has designated 26 specified areas and 110 semi-specified areas, working to improve taxi business productivity by making efforts to rectify the current oversupply and stimulate demand.

Figure II-6-3-3 Developments in Per Day-Vehicle Reviews of Hires and Taxes




Source) MLIT

## (2) Replacement Driver Service

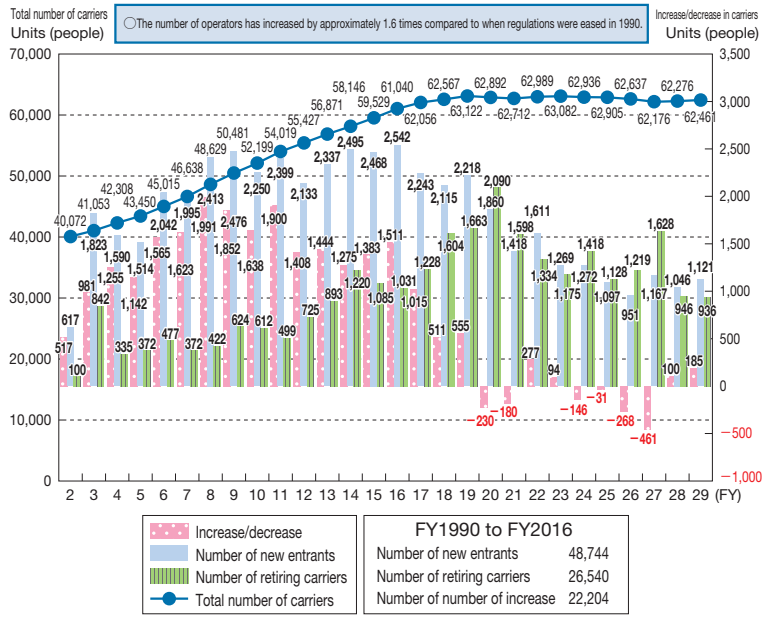
The replacement driver service is used as an alternate means of transport for drunken drivers. As of the end of December 2018, 8,637 replacement driver service providers are in operation. Keen to add to further soundness of the replacement driver service, the MLIT has formulated "Measures for Making the Replacement Driver Service More Sound for Added Safety and Security" in collaboration with the National Police Agency in March 2012 as part of its continuing effort to drive various relevant measures. Furthermore, the MLIT developed "measures to address issues concerning user protection toward appropriate operation of replacement driver services" in March 2016 in order to further ensure protection of users in replacement driver service, and these measures were implemented from April 2016.

## (3) Truck Transport Business

The number of motor truck carriers had been on the rise for long, but the number of carriers has been moving crabwise at about 62,000 since 2008.

Because 99% of truck transport business operators are small and medium-sized businesses, they face issues such as being forced to accept long waiting times due to the circumstances of shippers, resulting in long working hours for drivers, and being in a weak position in relation to shippers and thus unable to demand appropriate fares. Therefore, in July 2017, in an attempt to understand the actual status of waiting times in order to reduce them, a measure was introduced obliging trucking business operators to record waiting times occurring at due to the circumstances of shippers. In other initiatives, the shipper recommendation system used when shippers have been involved in violations of laws and regulations by trucking businesses has been revised in order to increase its effectiveness, and a

Figure II-6-3-4 Trends in the Number of Motor Truck Carriers




Source) MLIT

new approach to the operation of the system has been adopted; for example, the standards for judgment of the involvement of shippers have been clarified, and action is demanded from shippers at an early stage. In addition, from FY2016 to FY2017, the Guidelines for the Improvement of Trading Environments and Long Working Hours through the Cooperation of Shippers and Carriers were formulated as a result of a pilot program implemented in cooperation between truckers and shippers with the expectation of lower waiting times and an improvement to long working hours, and at the same time, an Investigative Commission for Proper Trucking Industry Fares and Fees has been established, and has begun holding discussions aimed at ensuring that the appropriate fares and fees are received. In order to clarify the scope of "fares," the compensation for transportation, and "fees," the compensation for services other than transportation, the standard truck freight transportation contract was revised in August 2017, and the revision went into effect on November 4 of the same year. Further, regarding the need for a certain level of cost to ensure sustainable truck transportation functions while preventing compliance violations, Guidelines on project implementation cost structures and operations were formulated and announced in December 2018 to promote a common understanding between shippers and carriers.

Efforts have also been made toward improving business terms for truck transport business operators and conducting projects that seek to improve productivity. As changing working arrangements is important to make working in the truck transport industry more attractive, efforts will continue to carry out these policies on a comprehensive scale.

### (4) Securing and Fostering Bearers of Motor Carrier Businesses, etc.

Motor carrier businesses that undertake the movement of people and goods (trucking, bus and taxi businesses, and automotive maintenance business that contributes to safety assurance in these businesses) are a social infrastructural industry of vital importance to sustaining Japan's economy and means of regional transportation.

A look into the employment structure of the motor carrier businesses, however, suggests that the workforce more or less depends on middle-aged and elderly workers, with female workers accounting only for about 2%. If this condition lasts, a serious shortage of bearers of these businesses is feared to occur in the future.

Because of this, motor carrier businesses (trucking, bus and taxi businesses), the Liaison Committee among Relevant Ministries and Agencies on the Reform of Work Styles in the Motor Carrier Industry, chaired by Deputy Chief Cabinet Secretary Kotaro Nogami, was launched in 2017, and is cooperating with related ministries and agencies to promote appropriate measures.

For trucks, in addition to organizing work initiatives and sharing handbooks for the spread of relay transportation, we are working on measures to secure bearers by, for example, disseminating information about the license for quasi-medium-size trucks program, enhancing information dissemination and awareness of business managers, leveraging "Female Truck Driver Promotion Project Site."

The bus industry is advertising the job of bus driver as a choice for employment, and is creating flyers and leaflets targeting young female jobseekers. Bus companies are also working to recruit and train more bus drivers by creating recruiting and training handbooks.

In the taxi industry, June 2016 saw the launch of the Female Driver Support Enterprise certification program, which seeks to get and keep more women in the taxi workforce by supporting

**Figure II-6-3-5 Employment Structure of the Motor Carrier Business etc.**

| | Buses | Taxis | Trucks | Auto maintenance | Total industry average |
|---|---|---|---|---|---|
| Number of drivers and mechanics | 130,000 people (FY2015) | 340,000 people (FY2015) | 860,000 people (FY2018) | 400,000 people (FY2017) | — |
| Female ratio | 1.7% (FY2016) | 2.7% (FY2016) | 2.3% (FY2018) | 1.4% (FY2017) | 44.2% (FY2017) |
| Average age | 49.8 years (2017) | 59.3 years (2017) | 48.6 years (2018) | 45.0 years (2017) | 42.5 years (2017) |
| Working house | 210 hours (2017) | 189 hours (2017) | 215 hours (2018) | 187 hours (2017) | 178 hours (2017) |
| Annual income | 4.57 million yen (2017) | 3.32 million yen (2017) | 4.57 million yen (2018) | 4.27 million yen (2017) | 4.91 million yen (2017) |

Notes: 1. Number of drivers and mechanics: Figures for buses and taxis based on Road Transport Bureau Survey
2. The ratio of females in auto maintenance is for second level auto mechanics
3. Figures for working hours were estimated by the MLIT's Road Transport Bureau from scheduled hours worked + nonscheduled hours worked in the Basic Survey on Wage Structure.
Scheduled working hours indicate the number of hours actually worked during the hours from start time and finish time on scheduled work days in June each year as stipulated in employment rules or other such documents of the business office.
Nonscheduled working hours indicate the number of hours actually worked outside the scheduled working hours and the number of hours actually worked on prescribed days off.
4. Annual income = Value estimated by the MLIT Road Transport Bureau from the "Basic Wage Structure Survey" as the "regular cash salary payable x 12 + annual bonuses and other special salaries
Regular cash salary = Cash salary paid for June (amount before the deduction of income tax, social insurance and premiums etc.), including the amount of basic salary, work allowance, employee allowance, commuting allowance, family allowance, overtime pay, annual bonus and other special salaries etc. = Salary, bonuses and special salaries for the year from January to December of the year prior to the survey
Sources: Created by MLIT Road Transport Bureau based on Ministry of Internal Affairs and Communication "Labor Force Survey", Ministry of Health, Labor and Welfare "Basic Wage Structure Survey", Japan Bus Association "Japanese Bus Business", Japan Federation of Hire-Taxi Associations "Hire Taxi Yearbook", and the Japan Automobile Service Promotion Association "Automobile Maintenance White Book".
Sources: Created from the Labor Force Survey (Men and women), Basic Wage Structure Survey, Nihon Bus Association "Japanese Bus Business", Japan Federation of Hire-Taxi Associations "Hire Taxi Yearbook", Japan Trucking Association "Basic Truck Transportation Industry Data: and the Japan Automobile Service Promotion Association "Automobile Maintenance White Book".

and advertising efforts aimed at improving female driver employment and by businesses trying to make it easier for women with children to continue working.

In the automotive maintenance industry, public and private entities are working together to conduct PR and improve the perception of being a maintenance mechanic among women and younger people by means of initiatives including visiting high schools and putting up posters, and in partnership with the industry, efforts are being made to accept internes to develop workplace experience, and to utilize the internet to share information. In addition, Human Resource Seminars are being held for motor vehicle maintenance companies with a plan to secure and foster human resources for motor vehicle maintenance.

## 3 Trends in Maritime Industries and Measures

### (1) Achieving Stable Marine Transportation

#### (i) Achieving Japanese-flagged vessels and Japanese seafarers

As Japan is a nation with limited resources surrounded by the sea in all its sides, international shipping, which depends on 99.6% of the Japan's trade, plays a significant role in ensuring the country's economic security. As such, even in emergencies, it is critical to maintain a sufficient number of Japanese vessels and Japanese mariners to eliminate jurisdictional competition between Japan and the country of registry of vessels.

To address this issue, a tonnage tax system[Note] went into effect in FY2009 for Japanese vessels owned by Japanese overseas ship operators who have been certified under the Japanese-flagged Vessels and Japanese Seafarers Securing Plan in accordance with the Marine Transportation Law, and in FY2013 a system was implemented to secure Japanese vessels and mariners by expanding overseas vessels to be flagged as Japanese (quasi-Japanese vessels) when navigation orders are given, to supplement the number of Japanese vessels to those foreign vessels operated as foreign subsidiaries of Japanese overseas vessel operators.

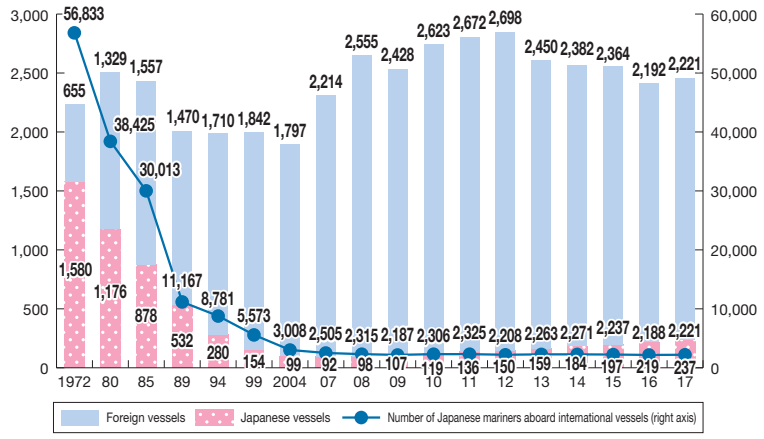
In addition, from FY2018, the system began to be expanded to foreign vessels which meet similar requirements as those quasi-Japanese vessels owned by Japanese shipowner subsidiaries, with the aim of securing stable maritime transportation as quickly as possible.

These measures aim to stabilize the maritime transport business in Japan as quickly as possible.

#### (ii) Acquiring and fostering seafarers (Seamen)

Acquiring and fostering Japanese ship's seafarers, human resources of marine transportation, is of essential importance to boosting Japan's economy and maintaining and upgrading national life. The ratio of coastal shipping seafarers aged 60 or older is increasing, but the number of young seafarers is also on the increase, in part as an effect of public-private efforts to secure young seafarers. However, it is also essential to secure and foster an adequate number of young seafarers in the future. In response, efforts are underway to expand employment opportunities for new seafarers. One such effort involves strengthening the system for supplying seafarers, for example by diversifying the avenues by which seafarers are able to find employment through measures including providing support for conducting shortterm training courses for individuals

Figure II-6-3-6 Trend in Number of Japanese Seafarers Aboard International Vessels, Japanese Merchant Fleet



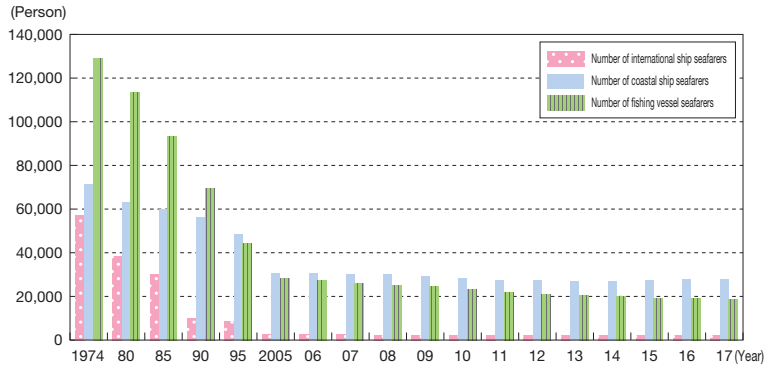

Source) MLIT

**Note** A tax system in which the amount of corporate tax is calculated in relation to a fixed deemed profit based on the tonnage of the company's ships rather than annual profit. This system has been introduced by major shipping nations throughout the world.

who have not graduated from a mariner training institute, and offering direct invitations to culinary schools to participate in company briefing sessions. Another effort involves supporting business operators that systematically employ and foster new seafarers.

On the other hand, a certain number of ocean-going Japanese sailors need to be secured and fostered from economic security and other perspectives. Therefore, we are making efforts to secure Japanese seafarers, including steady implementation of the plan to secure Japanese vessels and seafarers.

Figure II-6-3-7 Changes in the Number of Japanese Seafarers




Source) MLIT

As Asian seafarers account for a greater proportion of the total seafarers aboard Japanese merchant fleet, training aimed at improving the skills of mariner's instructors in the developing nations has been conducted to help secure and foster more capable Asian seafarers.

Japan agency of Maritime Education and Training for Seafarers (JMETS) is Maritime Education and Training institutions over which the MLIT holds jurisdiction. JMETS is the largest Maritime Education and Training institute in Japan. It provides education and training for newcomers, practical training according to needs of shipping companies, and on board training for students of maritime universities and colleges of technology.

Going forward, JMETS is steadily pushing forward the securing and fostering young seafarers by advancing training contents and making the best use of its resources.

In addition to these efforts to secure and foster seafarers, continued efforts will be directed at promoting On-board Occupational Health and Safety Management System and Work Improvement on Board (WIB), a continual approach to reducing seafarers accidents to add to the vocational charms of the job of being a seafarer.

#### (iii) Promotion of the understanding of ocean by the public

While achieving stable marine transportation is crucial in supporting the Japanese economy and national life, the understanding of sea by the public is not necessarily sufficient. To this end, the MLIT is working with local governments, businesses, related groups, schools, boards of education, and other organizations to promote the understanding by the public -young people in particular- on maritime affairs through initiatives that include a variety of events such as the Sea-Festa (held in Niigata City, Sado City and Seiro Town in 2018) in Ocean Month, which centers on Marine Day, and commending those who have been instrumental in helping Japan to grow into a maritime nation (Prime Minister's Commendation). In addition, we worked on "The Ocean and Japan Project" throughout the year.

Further to this, maritime education programs for elementary and secondary school education have been created in response to the fact that the description of the importance of the oceans and maritime affairs has been enhanced in the Ministry of Education's curriculum guidelines revised in March 2017, and in FY2017 a marine education program was developed, with trial classes conducted in FY2018. We will continue to develop education curricula about the maritime industry for elementary and secondary schools.

### (2) Marine Transportation Industry

#### (i) International shipping

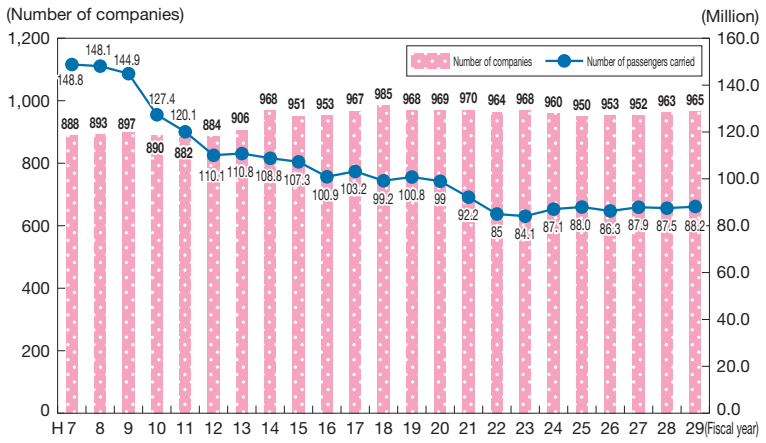
The volume of cargo movement on ocean in the world for 2017 stood at 11.58700 billion tons (up 3.9% year-on-year) with Japan's volume of seaborne trade for the same year at 0.93302 billion tons (down 0.2% year-on-year).

Despite negative factors in international shipping in FY2017 such as increased fuel prices etc., there were improvements in international shipping business conditions in FY2017 such as overall improvements of cargo movement on the ocean as a result of global economic recovery, mainly in the US and China.

### (ii) Domestic passenger shipping business

Domestic passenger shipping business demand was 88 million passengers (up 0.3% from the previous year) in FY2017, but the trend is downward on a long-term basis attributable to changes in Japan's demographic structure, among other factors. Recently, fuel prices are stable, but business environment is still in difficult situation. The domestic passenger shipping business plays an important role as a means to transport people and daily commodities from region to region, and holds promise as a way to increase tourism among those interested in maritime scenery and other opportunities. The ferry business has modal shift potential and serves a key role in providing transport after natural disasters occur.

Figure II-6-3-8 Trends in the Number of Domestic Passenger Ship Companies and Number of Passengers Carried




(Notes) 1 Sum total for general passenger liner routes, specified passenger liner routes and passenger non-liner routes
2 Number of companies as of April 1 of each year
Source) MLIT

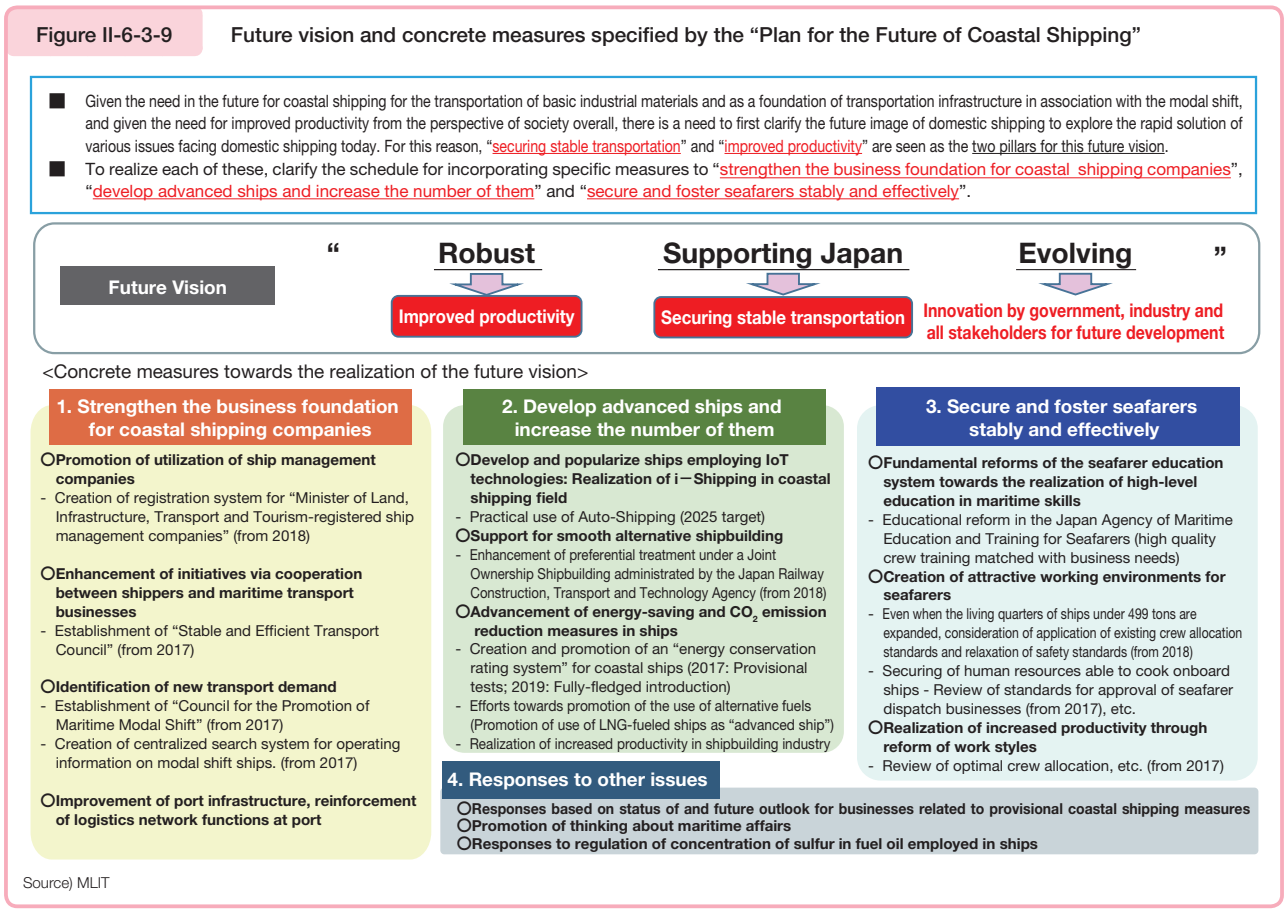
In response to these issues, MLIT has supported for the construction of highly energy-efficient vessels through preferential tax measures and the "Joint Ownership Shipbuilding" administrated by the Japan Railway Construction, Transport and Technology Agency. In addition, in order to further promote modal shift in shipping, "Council for the Promotion of Maritime Modal Shift" (established in November 2017), consisting of RORO ships, container ship and ferry companies, consigned freight forwarding businesses companies, trucking companies, shipping companies and the authorities etc., has discussed the creation of centralized search system for operating information on modal shift ships and the establishment of a new award, the "Maritime Modal Shift Award".

Also, to promote the development of new boat tourism-related services, the "Model Zones for Boat Travel Revitalization" system was established for three years from April 2016, on a trial basis for flexible operating systems for the passenger ship businesses targeting use in tourism routes. Based on these results, the "Boat Travel Promotion for Inbound Tourist" system will be established in April 2019, with the aim of developing the environment for capturing inbound tourism demand. In addition, the "Project for Emergency Measures to Develop the Environment for Receiving Foreign Tourists Visiting Japan" is advancing necessary measures to increase convenience for overseas visitors, for example by supporting the establishment of free public wireless LAN environments and the use of multiple languages on information signs, etc.

### (iii) Coastal shipping

The coastal shipping volume in FY2017 was 180.9 billion ton-km. Although recent years have not seen any significant decline, the long-term view trends downward for transport demand for industrial base materials, in particular, due to factors that include a stagnant domestic economy, intensifying international competition, and business mergers among shippers. Coastal shipping accounts for about 40% of domestic logistics and roughly 80% of industrial basic materials transport and constitutes a core transport infrastructure supporting Japan's economy and the lifestyles of its people. However, with 70% of ships older than the legal service life (14 years), and mariners that tend to be older than in the past, there is a structural issue of "double aging" of ships and mariners. In response to these issues, the "Panel to Consider Future Measures for Coastal Shipping Revitalization" was established in April 2016, and commenced discussing directions for measures to promote development of coastal shipping that ensure the sustainable provision of safe, high-quality transport services. In June 2017, the panel compiled the "Plan for the Future of Coastal Shipping" as a new industrial policy. As a future vision for the coastal shipping, the plan positions "securing stable transportation" and "improved productivity" as its twin axes, and sets out concrete measures towards the realization of these goals, including strengthening the business foundation for coastal shipping companies, developing advanced ships and increasing the number of them, and securing and fostering seafarers stably and effectively, etc., and the Registered Ship Management Company System commenced in FY2018 (22 registered as of the end of March 2019), with the content compiled into the construction of the centralized search system for operating information on modal shift ships etc.

Figure II-6-3-9 Future vision and concrete measures specified by the "Plan for the Future of Coastal Shipping"

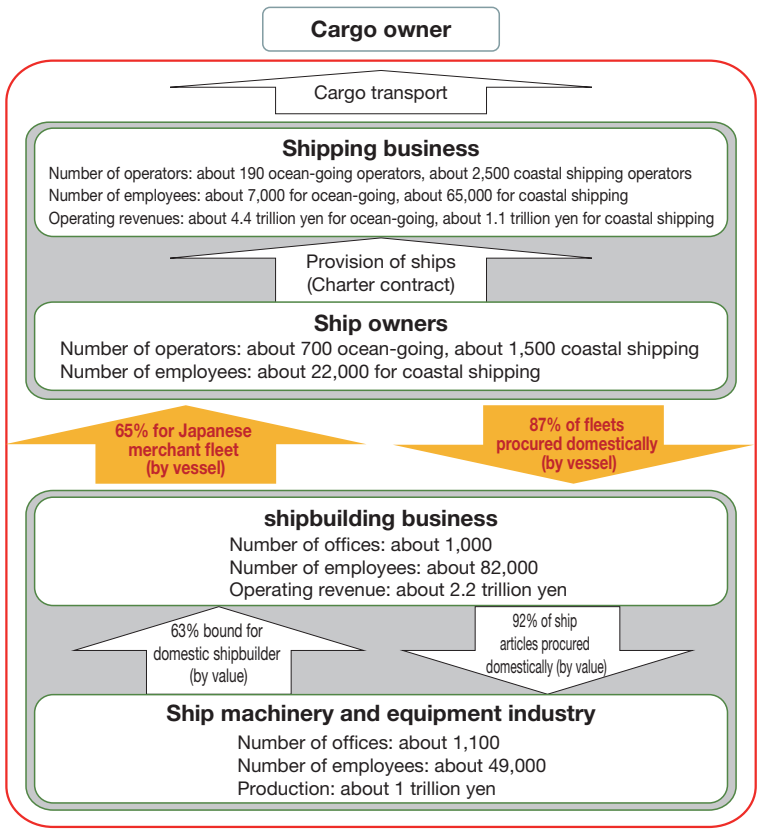



Source) MLIT

### (iv) Port and harbor transportation business

The port and harbor transportation business plays a significant role as an interconnecting node between marine sea and land transportation in support of Japan's economy and national life. As of the end of March 2018, there were 861 transporters (0.5% down from the previous year) in the general port and harbor transportation business at the 93 ports nationwide that are governed by the Port and Harbor Transportation Business Act. Vessel loading and unloading volumes for FY2016 were approximately 1.4 billion 5,486 million tons nationwide (up 0.3% from the previous year).

Figure II-6-3-10 Japan's Maritime Industry Cluster




Source) MLIT

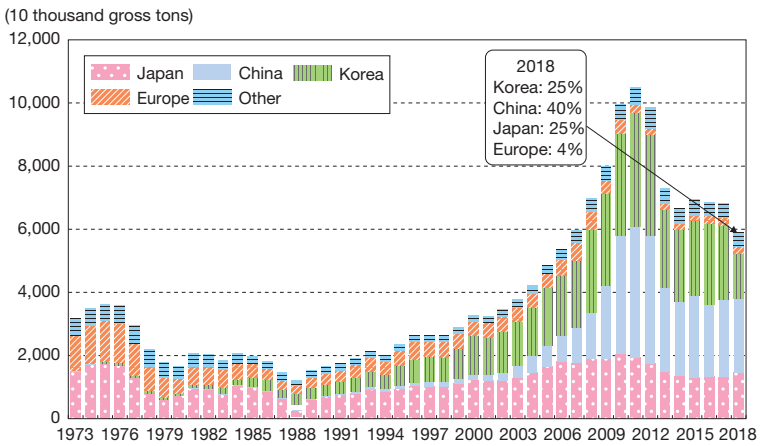
## (3) Shipbuilding Industry

### (i) Present status of the shipbuilding industry

Japan's shipbuilding industry is an extremely important industry that contributes to regional economy and employment by providing a stable supply of quality vessels tailored to ship owner's varied needs. Japan possesses a clustered integration of maritime industries in which the marine transport business, shipbuilding business and ship machinery business are closely linked to one another.

The global shipbuilding industry is in a difficult condition due to excess maritime shipping volumes and excess shipbuilding capacity, etc., and global shipbuilding orders bottomed out in 2016, but Japan's share rose significantly in 2018.

Figure II-6-3-11 Developments in the Volume of Newly Built Ships in the World

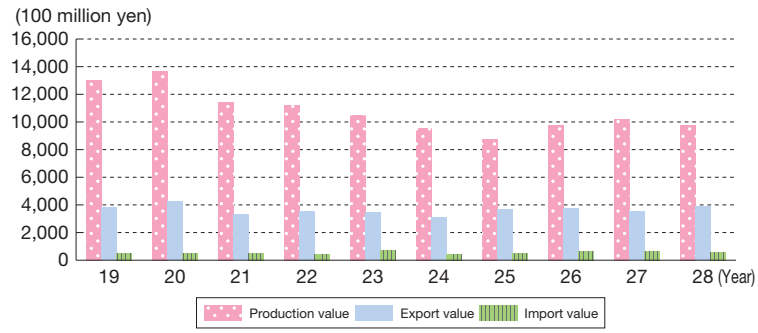



Source) Prepared by MLIT from IHS (former Lloyd's Register of Shipping)

The 2018 domestic construction volume was 14.53 million gross tons (versus 58.86 million gross tons globally), giving Japan 24.7% of the global market (a 5.3% year-over-year increase). The manufacture of ship machinery products for 2016 was valued at 975.7 billion yen (down approximately 4.5% year-over-year), with an export amount of 387 billion yen (up about 9.8% year-over-year).

### (ii) Approaches to consolidating the international competitiveness of the shipbuilding industry

Figure II-6-3-12 Trends in manufacture and import and export of marine engineering products for Japan




(Note) Import value refers to the amount imported by shipbuilding operators
Source) MLIT

The MLIT has strongly promoted the maritime productivity revolution around "i-Shipping" to improve the competitiveness of shipbuilding and shipping, "autonomous ships" to realize efficient maritime logistics, and the j-Ocean initiative which is aimed at entering the ocean development market to contribute to securing resources. Based on changes to the shipbuilding market and trends in shipbuilding policies among major shipbuilding nations in recent years, and in response to the changing situation of active international discussions on the introduction of autonomous vessels, the Transportation Policy Council's Maritime Innovation Subcommittee has compiled a report examining measures to focus on future issues to deepen the maritime productivity revolution. The MLIT is currently engaging in efforts based on this report.

More specifically, to improve shipbuilding productivity in all phases from development and construction to operation, a demonstration project is being implemented towards the practical application of autonomous vessels, including support for the development of innovative technologies using ICT etc., as well as tax measures for capital investment.

Also, to improve the professional teaching of young instructors to take charge of shipbuilding education at high schools and secure and develop human resources for the shipbuilding industry, we are promoting teacher training programs and working to strengthen shipbuilding education systems at technical high schools. In addition, with the partial revision of the Immigration Control and Refugee Recognition Act in December 2018, a new system to accept already-trained foreign human resources with certain expertise began operation from FY2019, with shipbuilding and the maritime industry positioned as target fields for the appropriate acceptance of foreign workers.

Further, as the global oversupply issue continues in the shipbuilding sector, discussions are under way with the OECD Shipbuilding Division for the development of new international regulations to prevent public subsidies in the shipbuilding industry for a fairer competitive environment. At the same time, the Korean government has engaged in large-scale public subsidies for their domestic shipbuilding industry through government financial institutions, and dispute settlement procedures were commenced in November 2018 under the WTO Agreement to attempt to resolve this issue.

## (4) Offshore Industries

Offshore development, represented by offshore oil and natural gas production, is an area in which medium- to long-term growth is expected, making this an important market for the Japan's maritime industry (shipping, shipbuilding, marine industry). However, as there is no domestic field for offshore resource development, the offshore industries in Japan are still immature. j-Ocean, one element of the MLIT's Productivity Revolutionization Project, is therefore aiming to improve such areas as the technical capabilities of Japan's maritime industries in a wide range of fields, from the design to the construction to the operation of facilities used in the area of offshore development, and gain business in offshore development market. Since FY2018, MLIT has promoted technological development of products and services with additional value which can contribute to cost reduction and better risk management on offshore development, and we are promoting initiatives for the spread of floating offshore wind turbine and autonomous underwater vehicles.

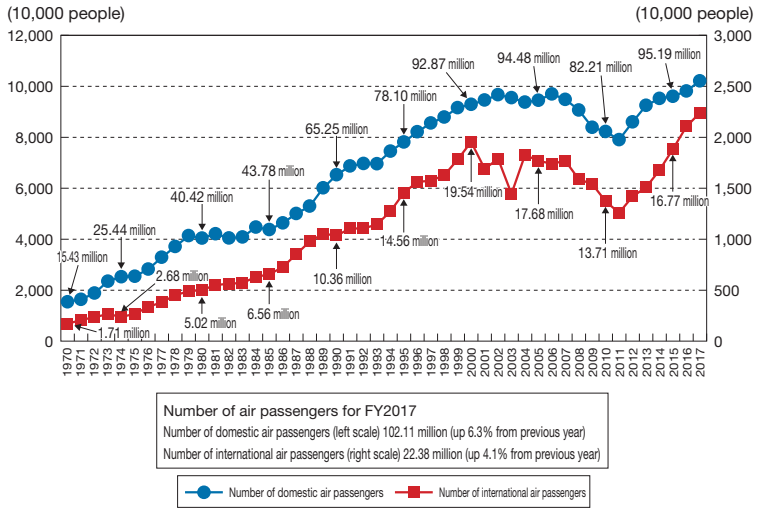
### (5) Promoting Awareness of Maritime Affairs (C to Sea Project)

On Marine Day in 2017, the Prime Minister issued a message expressing his hope that each and every citizen of Japan would bring interest and understanding to the ocean, would make contact with the ocean, and would come to know the ocean. Based on this message, MLIT commenced the "C to Sea Project" as part of its "Sea and Japan Project", strategically providing information in cooperation with ambassador "STU48", utilizing its website and social media, and engaging in various joint public and private sector initiatives to create opportunities to get close to the sea and ships, including boarding experiences and tours etc.

## 4 Trends in Air Transport Business and Measures

With regard to circumstances surrounding the aviation industry, while fuel market conditions remained low for the first half of the year, the fuel market soared in the second half, and the number of domestic and international air passengers rose for the 6th consecutive year, due to the expansion of LCC lines and an increase of international visitors to Japan. Looking at the transportation results of Japanese airline companies, FY2017 set records in both the number of domestic passengers, with 102.11 million people (up 4.1% from the previous year) and international passengers, with 22.38 million people (up about 6.3% from the previous year).

Figure II-6-3-13 Trends in Number of Air Passengers (Japan-based Airlines)




Source) Prepared by MLIT based on the "Air Transportation Statistical Year Book"

Since March 2012, LCC have successively entered the Japanese market, and as of April 2019, five Japanese LCC were in operation. Peach Aviation operates 16 domestic and 15 international routes; JetStar Japan, 22 domestic routes and seven international routes; Vanilla Air, six domestic routes and six international routes; Spring Airlines, three domestic routes and four international routes; and Air Asia Japan, one domestic route and one international route. In FY2017, Japanese LCC held a 9.8% share of passengers on domestic routes, and a 21.7% share of passengers on international routes.

## 5 Trends in the Consigned Freight Forwarding Business and Measures

The consigned freight forwarding business[Note] is combined with multiple means of transport to provide services specific to varied user needs. Recent years have witnessed growing entry into the use of shipping for international transportation, reflecting the cargo owners' needs for globalization.

While international trade is becoming more important and its quickness is required, it is also important to ensure safety. The MLIT works to ensure the availability of safe and secure logistics services, as by conducting audits, etc. to consolidate thorough operator code compliance.

**Note** Businesses that provide cargo transportation services using the transport methods (motor freight vehicles, rail, airplanes, ships) of actual transportation companies (i.e., companies that actually transport freight themselves) to provide door-to-door service, from cargo collection to delivery.

## 6 Trends in the Warehousing Business and Measures

Commercial warehouses play a significant role as nodal points for logistics. With an increase in the scale of logistics facilities in order to increase operational efficiency and introduce a greater range of functions in warehouse work in response to an increase in mail order sales and the need to concentrate functions, demand for human resources to work in logistics facilities including warehouses is increasing. On the other hand, there have been difficulties in securing human resources due to increasing relocation to suburbs. Based on this, we are promoting initiatives which contribute to improved productivity at logistics facilities.

## 7 Trends in the Truck Terminal Business and Measures

The truck terminal business plays a significant role in improving transportation efficiency as a nodal point of trucking between a trunk line and a terminal. In recent years, facilities have been improved with distribution center functions (sorting and distribution processing etc.) to meet increasingly sophisticated and diverse logistics needs.

## 8 Trends in the Real Estate Business and Measures

### (1) Real Estate Business Trends

The real estate business is one of the key industries that command 2.8% of the total sales of all industries and 11.5% of the total number of corporations (FY2017).

According to the results of land price announcements for 2019 (as of January 1, 2019), in terms of average variance, the national averages have risen for residential land for the second consecutive year, for commercial land for the fourth consecutive year, and for industrial land for the third consecutive year. In the three major metropolitan areas, increases were seen in each of residential, commercial and industrial land. In regional areas, residential land rose for the first time in 27 years, while commercial and industrial land rose for the second consecutive year. In the existing housing distribution market, the number of successful deals was 1,820,000 in FY2018 (up 1.3% from the previous fiscal year) according to the Real Estate Information Network System (REINS)[Note].

### (2) Status of the Real Estate Industry

The Ministry endeavors to ensure precise administration of the Real Estate Brokerage Act to protect consumer interest involved in housing land and building deals and to expedite distribution. The number of real estate dealers was 123,782 at the end of FY2017.

The MLIT, along with prefectural and municipal governments, endeavor to prevent complaints and disputes by working in conjunction with the bodies concerned while imposing severe supervisory dispositions on those entities that have breached the law. In FY2017, 208 supervisory dispositions were imposed (including 146 revocations of licenses, 36 suspensions of business and 26 orders).

To ensure the proper management of condominiums, the MLIT is taking measures aimed at registering condominium managers and ensuring proper business operations in accordance with the Act on Advancement of Proper Condominium Management. As of the end of FY2017, the number of condominium management service entities was 2,001.

Moreover, on-site inspections are being conducted and the necessary guidance and oversight is being provided to condominium management service entities in the interest of, among other things, preventing wrongdoing.

Since December 2011, a "system of rental housing management entity registration" that places a certain set of rules on the fulfillment of rental housing management services has been put into effect to foster sound rental housing management. The number of registered contractors at the end of FY2017 was 4,065. Also, in response to problems with sub-leasing, measures were implemented in FY2018 in cooperation with relevant ministries and agencies to spread awareness of sub-lease contracts. In addition, based on the Residential Accommodation Business Act (effective from June 2018), efforts have been made to promote the registration of those running rental accommodation businesses to ensure proper operation

**Note** A system by which the parties to a real estate transaction register information regarding the transaction with a designated distribution mechanism, and the information is exchanged between businesses. Information including the transaction price of contracted properties is accumulated by the designated distribution mechanism.

and that residential accommodation management companies are thoroughly compliant with relevant laws etc.

### (3) Conditioning the Environment for Market Reactivation

#### (i) Status quo of the real estate investment market

Japan's real estate had a total asset value of about 2,607 trillion yen as of the end of 2017[Note 1].

Under the MLIT Future Investment Strategy 2017, the goal was set of total REIT assets of about 30 trillion yen by around 2020[Note 2], but the J-REIT which is the center of the real estate investment market had 4 new listings in FY2018. As of March 31, 2019, 63 stocks were listed on the Tokyo Stock Exchange, and the total value of target real estate as of the end of March 2018 was about 18.6 trillion yen, with private placement REIT and real estate specified joint ventures totally 21.8 trillion yen.

The TSE REIT Index, which shows price movements across the J-REIT market rose to the mid 1,700 point range in the first half of 2018 as funds flowed from the high US stock market into the relatively cheap J-REIT market, but later fell to the 1,600 point range due to worsening investor sentiment on the back of a fall in domestic stocks caused by a rising US long-term interest rate. It later rose back to the high 1,700 point range due to strong real estate market conditions, in spite of the impact of the long-term interest rates etc. In the second half of 2018, the index remained stable in the 1,700 point range, before rising above 1,800 points due to the inflow of funds to this stable investment vehicle from stocks and commodities. As stock prices continued to fall towards the end of the year, the index temporarily fell back to the low 1,700 point range, before rising back to the mid-1,700 point range.

Also, the total assets acquired in J-REIT for the year of 2018 was about 1.8 trillion yen.

#### (ii) Promotion of real estate specified joint enterprises

Regarding the crowdfunding regulations related to real estate specified joint enterprises under The Act for the Partial Revision of the Act on Specified Joint Real Estate Ventures, enforced from December 2017, in addition to the development of guidelines for business management systems and information disclosures, other measures included support for model projects utilizing real estate securitization for small scale real estate specified joint ventures etc. and the promotion of efforts to regenerate obsolete real estate utilizing private funds and ideas. Also, to promote the composition of long-term, stable real estate investment products into which private individuals can safely invest, Regulations on the Enforcement of the Real Estate Specified Joint Project Act were revised, to include the rationalization of regulations relating to real estate conversion contracts.

#### (iii) Promotion of spread of environmental real estate

Environmental development was examined, based on the expanding movement demanding consideration for ESG. It was also decided in FY2018 to invest 4.5 billion yen into seismic and environmental real estate promotion projects to promote the formation of strong environmental real estate assets.

#### (iv) Creation of an environment for real estate information

MLIT is publishing information related to real estate by the following means, in order to increase the transparency of the real estate market and facilitate and invigorate transactions in the market.

##### (a) Real estate transaction price information

We conduct surveys of real estate transaction prices throughout the country. Based on the information that we obtain by means of these surveys, we publish information including the location, area and price of the real estate subject to the transactions (there were about 3.6 million offers as of the end of March 2019).

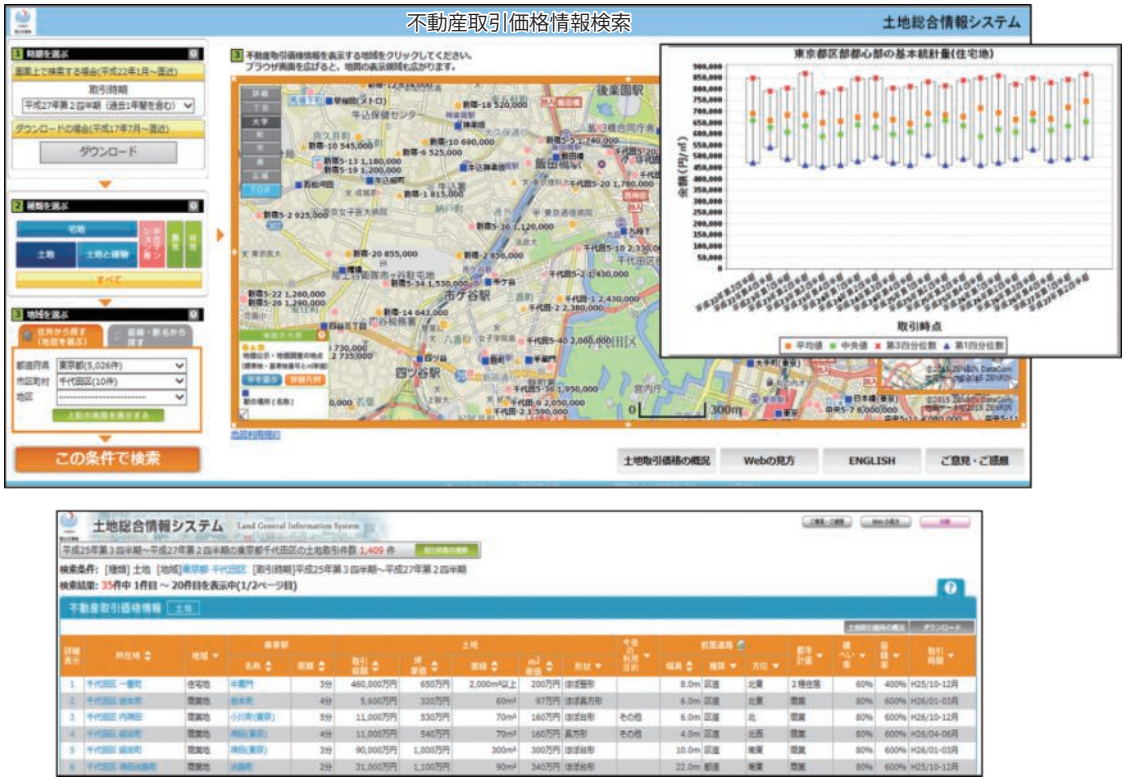
##### (b) Property price index

Based on standards formulated by the IMF and other international organizations, we publish a property price index (residential) every month. We also publish property price index (commercial) on a quarterly basis, but this is currently at the stage of test operation.

Note 1 Total of buildings, structures and land assets based on national accounts
Note 2 J-REIT, private placement REIT, real estate specified joint ventures

Figure II-6-3-14 Land General Information System

○Since April 2006, transaction price information based on questionnaires conducted among parties to real-estate deals has been posted every quarter on an MLIT website, with care to protect the properties in question from being identified easily.
○As of the end of March 2018, information on 3,265,830 properties was posted, attracting a total of about 790 million Web accesses.




Source) MLIT

### (v) Conditioning the existing home circulation market

The MLIT is working to condition the existing home trading environment to promote the circulation of existing homes, which have a low share of the total volume of housing in circulation when compared with the U.S. and Europe. In FY2018, the Reliable R Housing system commenced operation, whereby existing houses that satisfy certain requirements such as obtaining building condition inspections are permitted to use the nationally trademarked logo. Also, based on the 2016 revision to the Building Lots and Building Transaction Business Act (enforced from April 2018), the use by residential building contractors of building condition inspections by experts was encouraged to establish a market environment in which consumers can make transactions for existing homes with peace of mind. Further, the operation of the National Vacant House/Vacant Land Bank by two selected public operators went live from April 2018, for easily accessing and searching information on vacant houses etc. throughout Japan, and other efforts to strengthen matching for vacant houses were made, including support for advanced initiatives by real estate organizations to utilize vacant houses.

### (vi) Utilization of land tax system

Under the 2019 tax reform, in addition to extending deadlines for the application of land ownership registration license tax etc., special measures related to assets were implemented including extending the application period for special measures related to real estate acquired by J-REIT etc., and the extension and expansion of application periods for the acquisition of real estate by special operators (the abolition of requirements to “transfer target real estate within 10 years of the completion of construction” and review of “land and building” acquisition requirements (addition of building floors) among the requirements for tax registration by special operators or related qualified special investors under the Special Measures Act), as well as assets for regional welfare promotion projects as specified under the Special Measures Act for the Facilitation of Land for Whom the Owner is Unknown.

### (vii) Improvement of institutional infrastructure supporting the real estate market

The monitoring of appraisals was conducted, including the content of on-site inspections to real estate appraisers, to further improve the reliability of real estate appraisal. A study was also made to respond appropriately to changes in social needs and environment with respect to real estate appraisal standards etc.

## 9 Building a Sustainable Construction Industry

### (1) Conditions Surrounding the Construction Business

As an essential player in developing social infrastructure, the construction industry plays a major role in helping to achieve a bright future for Japan through efforts that include urban revitalization and rural area development. It is also a very important defender of Japan's communities, helping with recovery from earthquakes, taking measures to prevent and mitigate disasters, carrying out strategies to address aging facilities, and performing maintenance.

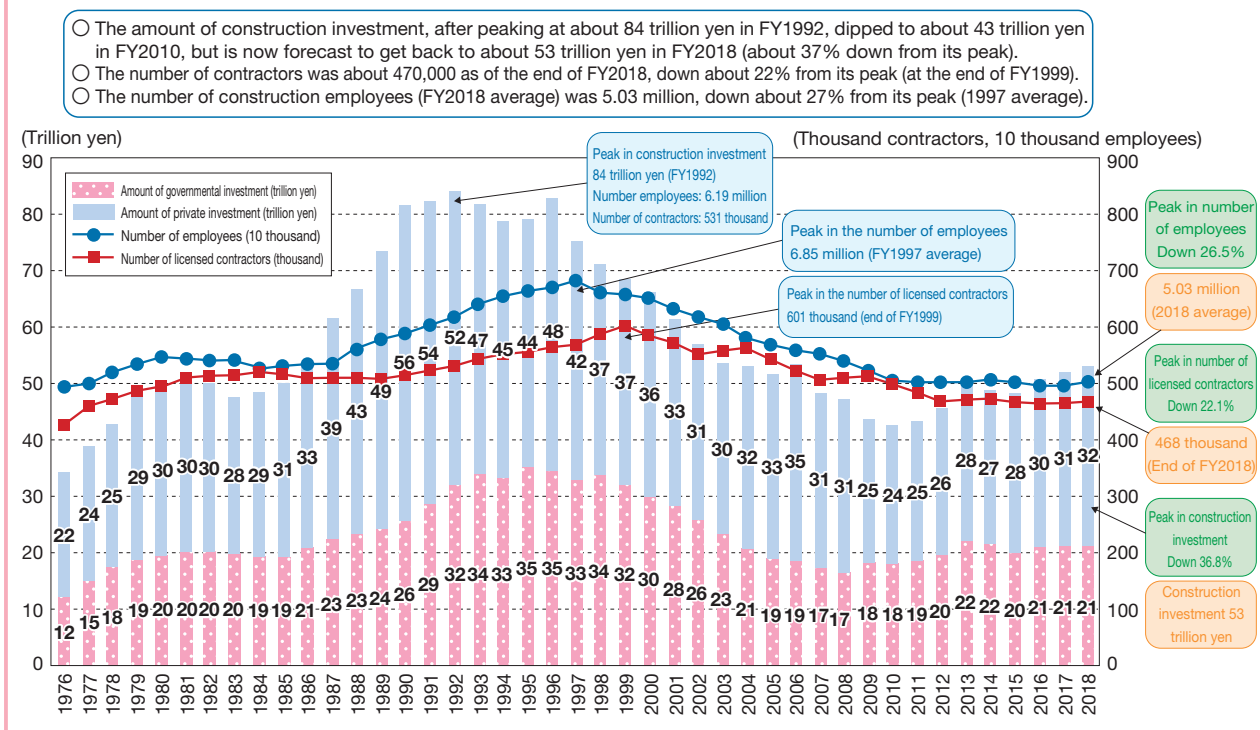
On the other hand, workers on site in the construction industry are aging, creating an issue for securing future workers. In July 2018, the government revised the Guidelines for Appropriate Setting of Construction Periods (formulated August 2017) to promote work style reforms in the construction industry based on changes to the circumstances surrounding the industry.

Also, to accelerate productivity gains associated with work style reforms in the construction industry, the Bill for the Partial Revision of the Construction Industry Act and the Act on Promoting Quality Assurance in Public Works were introduced into the 198th Ordinary Diet session.

Based on the Act on the Promotion of Safety and Health of Construction Workers, established in December 2016, and the Basic Plan developed in accordance with this Act, guidelines were provided for procedures to calculate safety and health expenses for producers and private operators, as a measure of supporting the calculation of safety and health measure costs and the follow-up of payments of safety and health expenses, extending to subcontractors.

Trends in the amount of construction investment and the numbers of licensed companies and workers are shown in Fig. II-6-3-15.

**Figure II-6-3-15** Trend in Construction Investment, Number of Licensed Contractors and Number of Employees




(Notes) 1 The amount of investment is the actual results up to FY2015, estimates for FY2016 and FY2017 and a forecast for FY2018.
2 Number of licensed contractors at the end of each fiscal year (end of March of the next year)
3 The number of employees is a yearly average. Supplementary estimates for the three quake-stricken prefectures (Iwate, Miyagi, Fukushima) in 2011 have been calculated by retrospectively correcting the estimated population based on the findings of the 2010 National Census.
Source) "Construction Investment Forecasts" and "Licensed Constructor Count Survey" by the MLIT and "Labor Force Survey" by the Ministry of Internal Affairs and Communications

### (2) Securing and Fostering Human Resources to Work for the Construction Industry

The construction industry is an industry made up of large numbers of people. While the number of construction industry employees in Japan has been holding steady in recent years, large-scale age-related resignations are expected in future, and in order to ensure that the construction industry continues in its role as a pillar of support for Japan's rural areas, it will be important to secure and foster workers, in particular young people, in addition to making efforts to reform work styles in the industry.

To this end, based on the Construction Industry Work Style Reform Acceleration Program formulated in March 2018, we are working to improve conditions in the industry by attempting to correct the problem of long working hours, in addition to advancing initiatives including guaranteeing appropriate wage levels, ensuring enrolment in social insurance, and creating a system to allow construction industry employees to develop their careers. In addition, taking into consideration the future decline in Japan's workforce, we are working to increase productivity via initiatives including the introduction of i-Construction to worksites, the improvement of multi-layer subcontracts and by promoting multi-skilled workers and the streamlining of site management such as in document creation etc.

To enable young people to get up to speed in the industry as quickly as possible, we are also proceeding with reform of the skills certification system, and, in order to ensure the smooth passing on of skills, enhancing education and training. In addition to this, we are promoting the further participation of female employees in the industry.

These initiatives are being advanced on the basis of public-private cooperation, and we are working to create an environment that encourages the seeking of employment in the construction industry and allows workers to devote themselves to their jobs with pride.

In addition, the project of receiving foreign construction workers is in place since April 1, 2015 as a time limited measure to handle increased construction demand due to one-off factors such as hosting of the 2020 Tokyo Olympic and Paralympic Games. Under this framework, 4,505 foreign construction workers entered Japan (as of January 31, 2019).

### (3) Establishing a Framework of Fair Competition

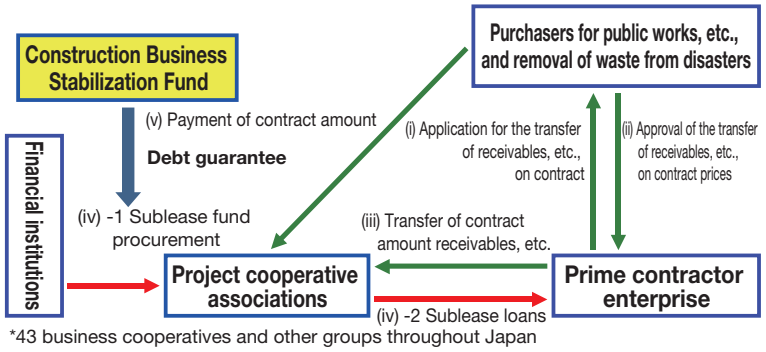
The construction industry must establish a framework of fair competition among contractors, including thorough legal compliance, to enable those of them who are superior in their technical strength, construction capability and management power to keep up with their growth. Accordingly, MLIT has conducted surveys including surveys of the status of subcontracting transactions and on-the-spot surveys, established the "Construction Business Transaction Normalization Center" as a liaison for consultation regarding issues such as problems related to contracts for construction work, and established Construction Business Normalization Promotion Month. In addition, we are working to ensure appropriate transactions between prime contractors and subcontractors in the construction industry by formulating and distributing a Handbook for Appropriate Transactions in the Construction Industry.

### (4) Measures Aimed at Supporting Construction Companies

#### (i) Regional construction business management-incentive finance program

The regional construction business management-incentive finance program allows prime contractors to acquire loans from money lending business operators (e.g., cooperative association) on security of the public works contract price credit obligations, according to the completed amount of works. Its purpose is to smooth their cash flow. This program aims to secure loan funding and reduce the borrowing rate and other costs by providing debt guarantee to sublease loans, which the money-lending operator borrows from financial institutions when extending loans.

Figure II-6-3-16 Regional Construction Business Management-Incentive Reinforcement Finance Program




Source) MLIT

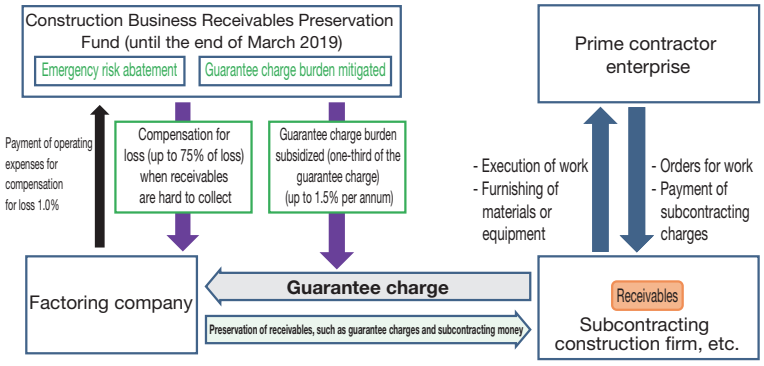
Effective since November 2008, this program will be carried forward through FY2019 and onwards.

### (ii) Subcontracting receivables preservation support program

The subcontracting receivables preservation project aims to prevent chain-reaction bankruptcies of subcontractors in association with failure of their primary contractor by reducing the burden of guarantee charge when the payment of such receivables is guaranteed by a factoring company[Note] and by indemnifying the factoring company for part of losses, it may suffer upon fulfillment of the guaranteed obligations.

This program has been implemented since March 2010 and will be carried on through FY2019.

Figure II-6-3-17 Subcontracting Receivables Preservation Support Program




Source) MLIT

### (iii) Promotion of multi-skilled construction workers in the regional construction industries

To improve the productivity of the SMEs that support local communities, we have implemented a model project to boost company efforts to develop multi-skilled workers by expanding their range of specialized skills through collaborations between engineers and companies, and have surveyed and investigated their current status and effectiveness and implemented measures to develop horizontal expertise through the promotion of multi-skilled workers at construction companies with seminars and handbooks etc.

## (5) Promoting Construction-related industry

Information about the total number of companies registered in the construction-related industry (such as surveying, construction consulting and geological surveying) is published each month and analyses of the financial conditions by sector based on that information are released at the end of the next fiscal year. In addition, the MLIT works to encourage sound development of the construction-related industry and make effective use of the registration system, as by holding explanatory sessions for students before attending society in collaboration with the associated bodies.

## (6) Present Status of Construction Machinery and Growth of Construction Production Technologies

The number of units of major construction machinery owned by organizations and people in Japan totaled approximately 940,000 in FY2015. Market share by industry for units of construction machinery purchased was about 49% for the builder's equipment leasing industry and around 27% for construction businesses.

As part of the efforts of i-Construction, we are promoting the spread of ICT construction and the active use of machine control/machine guidance technologies for highly accurate and efficient construction by the automatic control of construction machinery using 3D data. Given the current lack of ICT construction equipment to promote the spread of ICT construction, sound training and development for construction machinery and equipment rental operators with large shares of the construction industry is indispensable.

## (7) Settling Disputes Arising from the Execution of Construction Works

To promptly resolve disputes arising from the execution of construction work contracts, the Construction Works Dispute Review Panel implements dispute settlement procedures. In FY2017, the Panel received 34 applications (nine of arbitration, 19 for conciliation and six for mediation) at the central level and 96 applications (23 for arbitration, 53 for conciliation and 20 for mediation) at the prefectural level.

**Note** Finance business companies that guarantee or purchase and collect accounts receivable held by other parties. At present, 10 factoring companies, including bank companies, pre-payment guarantee companies and leasing companies are operating this type of business.

# Chapter 7 Building a Safe and Comfortable Society

## Section 1 Realizing a Universal Society

### 1 Realizing Accessibility through a Universal Design Concept

The "Act on Promotion of Smooth Transportation, etc. of Elderly Persons, Disabled Persons, etc." embodies the universal design concept of "freedom and convenience for anywhere and anyone", making it mandatory to comply with "Accessibility Standards" when newly establishing various facilities (passenger facilities, various vehicles, roads, off-street parking facilities, city parks, buildings, etc.), mandatory best effort for existing facilities as well as defining a development target for the end of FY2020 under the "Basic Policy on Accessibility" to promote accessibility.

Also, in accordance with the local accessibility plan created by municipalities, focused and integrated promotion of accessibility is carried out in priority development district; to increase "caring for accessibility", by deepening the national public's understanding and seek cooperation for the promotion of accessibility, "accessibility workshops" are hosted in which you learn to assist as well as virtually experience being elderly, disabled, etc.; these efforts serve to accelerate accessibility measures (sustained development in stages).

Taking the opportunity of changes in the environment surrounding the "Barrier-free Law" and the 2020 Tokyo Olympics and Paralympics, in May 2018, the Law for Partial Amendment of the Act on Promotion of Smooth Transportation, etc., of Elderly Persons, Disabled Persons, etc. (Act No. 32 of 2018. Hereinafter "Amended Barrier-free Law") was established by the 196th Diet in order to further promote accessibility nationwide, with the aim of realizing an inclusive society. Specifically, we intend to take measures such as: (1) establishment of a plan and system to promote integrated initiatives for structural and non-structural measures by public transport operators; (2) establishment of a policy and system to encourage smoother transportation, in order to strengthen initiatives in local communities aimed at accessible town planning; (3) expansion of the scope of application of the Barrier-free Law, and (4) encouragement and mandating of the provision of accessibility information on buildings, etc. In addition, the necessary governmental and ministerial ordinances, etc., have been promulgated to facilitate the enforcement of the Amended Barrier-free Law (Entered into effect on November 1, 2018. However, a portion of the provisions will enter into effect on April 1, 2019).

**Figure II-7-1-1 Current Accessibility of Public Transportation**

(as of March 31, 2018)

○Passenger Facilities (over 3,000 persons/day using on average)

| Percentage of facilities with "elimination of steps" | Total Facilities | "Elimination of steps" complete | Percentage of total number of facilities (as of the end of FY2017) | Target value (percentage) as of the end of FY2020 |
|---|---|---|---|---|
| Railway stations | 3,575 | 3,192 | 89.3% | 100% |
| Bus terminals | 47 | 44 | 93.6% | 100% |
| Passenger ship terminals | 15 | 15 | 100.0% | 100% |
| Airport passenger terminals | 37 | 33 | 89.2% | 100% |

(Note) Regarding the "elimination of steps" , it is calculated in accordance with conformity to Article 4 (which covers width of the travel path, ramps, elevators, escalators, etc.) of the "Standard for Smooth Transport, Etc., with Public Transportation" based on the Barrier-Free Law.

○Vehicles

| Percentage of "Vehicles compliant with smoothness of transport" | Total Number of Vehicles, etc. | Vehicles Compliant with Accessibility Standards for Public Transportation | Percentage of total number of vehicles | Target value (percentage) as of the end of FY 2020 |
|---|---|---|---|---|
| | As of the end of FY2017 | As of the end of FY2017 | As of the end of FY2017 | |
| Railway carriages | 52,527 | 37,420 | 71.2% | About 70% |
| Low-floor buses (excluding exemption-certified vehicles) | 46,132 | 26,002 | 56.4% | About 70% |
| Lift-equipped buses (excluding exemption-certified vehicles) | 14,192 | 834 | 5.9% | About 25% |
| Welfare taxis | – | 20,113 | – | About 28000 cars |
| Passenger ships | 660 | 289 | 43.8% | About 50% |
| Airplanes | 623 | 609 | 97.8% | About 90% |

(Note) "Compliance with smoothness of transport vehicles" is calculated based on each vehicle's compliance with the Accessibility Standards for Public Transportation.

Source) MLIT

### (1) Accessibility of Public Transportation

In accordance with the "Act on Promotion of Smooth Transportation, etc. of Elderly Persons, Disabled Persons, etc.", public transportation administrators are required to comply with "Accessibility Standards for Public Transportation" when carrying out new development of passenger facilities or large-scale improvements as well as introducing new vehicles and for existing facilities. Efforts must be made to comply with these standards and staff must be educated and trained as needed to strive for accessibility as part of the stipulated requirements for mandatory efforts. In addition, the Amended Barrier-free Law, which promotes the integrated performance of structural and non-structural measures by public transport operators, etc., establishes a system under which public transport operators, etc., that meet certain requirements must create an annual structural and non-structural measures plan incorporating facility maintenance, passenger support, the provision of information, education and training, and a promotion system. The plan is submitted to the Minister of Land, Infrastructure, Transport and Tourism, along with reporting and publication of information on the status of these efforts. In addition, assistance measures are available to support the accessibility of passenger ships as well as train stations and other passenger terminals, along with the implementation of non-step (low-floor) buses, lift-equipped buses, welfare taxis, and other initiatives. Furthermore, in regard to the standards for facilitating transport, etc., revisions were made in September 2018 to prescribe new standards for gangways, etc., used to embark and disembark aircraft. In addition, in conjunction with chartered buses and pleasure boats, etc., becoming subject to the application of the Barrier-free Law in April 2019, revisions were made to prescribe standards for these in March 2019.

### (2) Accessibility of Living and Housing Environments

#### (i) Accessibility of housing and architecture

In order for those such as the elderly and disabled to have secure, safe, and comfortable housing in communities, the conversion of housing to barrier-free housing is supported by measures such as reducing interest rates on the Japan Housing Finance Agency's (Incorporated Administrative Agency) Flat 35 S Loan for obtaining houses that meet a certain standard of barrier-free criteria; providing subsidies for barrier-free renovations; making new public housing and Urban Renaissance Agency rental housing constructed as part of the housing rehabilitation project barrier-free as a standard specification; and providing assistance and other options for the development of serviced housing for the elderly by private sector businesses and others.

In addition, for architectural structures used by the general public, including those such as the elderly and disabled, architecture that is greater than a certain scale is required to be accessible in accordance with the "Barrier-free Law." Specific approved buildings that meet certain requirements are eligible for support measures such as subsidy programs. For government facilities that are used by many unspecified users, development is promoted in accordance with the standards for encouraging smooth travel for buildings based on the "Barrier-free Law," thereby ensuring that all people, including the elderly and disabled, can use the facilities safely, comfortably and smoothly. For this, initiatives are being carried out to reflect the opinions of facility users such as the elderly and disabled in facility development.

**Figure II-7-1-2 Approval of Architecture for Specified Designated Buildings in Accordance with the "Barrier-free Law"**

| Fiscal year | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of certified plans (Fiscal year) | 11 | 120 | 229 | 320 | 382 | 366 | 332 | 232 | 280 | 367 | 386 | 348 | 331 | 289 | 255 | 184 | 208 | 130 | 196 | 174 | 208 | 187 | 162 | 183 |
| Number of certified plans (Total) | 11 | 131 | 360 | 680 | 1,062 | 1,428 | 1,760 | 1,992 | 2,272 | 2,639 | 3,025 | 3,373 | 3,704 | 3,993 | 4,248 | 4,432 | 4,640 | 4,770 | 4,966 | 5,140 | 5,348 | 5,535 | 5,697 | 5,880 |

Source) MLIT

#### (ii) Accessibility of walking spaces

In accordance with the Barrier-free Law, areas such as roads and station squares that are connected to facilities, such as stations, government facilities, and hospitals, must allow everyone, including the elderly and disabled, to pass through comfortably. This is achieved by promoting the barrier-free design of pedestrian spaces through measures that include the following: creating wide sidewalks, reducing unevenness, slopes, and grades, eliminating utility poles, and laying down guiding blocks for the visually impaired.

#### (iii) Accessibility of urban parks and other areas

For the development of urban parks, there are standards and subsidies under the "Barrier-free Law" for safe and comfortable usage, such as eliminating grade disparities at entrances, exits, and passages, as well as ensuring that facilities such as restrooms are usable by the elderly and disabled, among others.

## 2 Creating an Environment that Supports Child-rearing Under an Low Birthrate Society

### (1) Supporting the Balance of Work and Child-rearing

#### (i) Supporting the supply of housing suitable for child-rearing households

In order to secure housing and living environments suitable for child-rearing households, a relocation system that allows comparatively spacious housing owned by those such as the elderly to be provided as rental housing to those such as child-rearing households and for this the Japan Trans-housing Institute's (General Incorporated Association) owned home leasing program is being promoted. Also, support is provided through local government for the development and reduced rent of rental housing (high-quality regional rental housing) for child-rearing households as well as integrated development of public rental housing with child care support and other facilities.

#### (ii) Promotion of teleworking

Teleworking is a flexible work style that uses information and communication technology (ICT) to make effective use of time and place. It must be promoted, as it helps ensure employment continuity for workers engaged in raising children or caregiving, contributes to the realization of the dynamic engagement of all citizens through the participation in society of such people as women, seniors, and people with disabilities, and leads to the revitalization of regional cities through the creation of new places to work as well as to improvements in productivity of corporate activities and work-life-balance.

In addition, the "Declaration to Be the World's Most Advanced Digital Nation: Basic Plan for the Advancement of Public and Private Sector Data Utilization," decided by the Cabinet on June 15, 2018, as well as the "Plan for Dynamic Engagement of All Citizens," and the "Future Investment Strategy 2018," all promote teleworking. The "Action Plan for the Realization of Work Style Reform" also mentions its importance; momentum for the promotion of teleworking has increased more than ever before.

Relevant ministries and agencies, in cooperation with Tokyo Metropolis, business groups, companies, and others, designated July 24, on which the opening ceremony of the 2020 Tokyo Olympics is slated to take place, as Teleworking Day. In 2017, the first year of its celebration, 63,000 people in more than 950 organizations participated in a nationwide day of teleworking, and in 2018, the second year, the length and scale was expanded to "Teleworking Days 2018", and more than a total of 300,000 people in 1,682 organizations participated.

The MLIT has quantitatively ascertained the actual conditions associated with the teleworking style of work and the population of teleworkers.

### (2) Creating a Relaxed and Safe Environment for Children to Grow

To ensure the safety and comfort of children and other park users, various facility administrators are made aware of "Guidelines for Safety of Playground Equipment at Urban Parks (Edition 2)," "Pool Safety Standards Guidelines," and "Guidelines for Safety Inspections of Park Facilities," and social capital development general subsidy provide focused support to local governments for safety and comfort measures of park facilities.

### (3) Supporting Families with Children at Expressway Service Areas and Michi-no-eki Roadside Stations

The MLIT has formulated a policy to support families with children at expressway service areas and Michi-no-eki s. This includes installation of nursing rooms that are available 24 hours a day, and the securing of priority covered parking spaces at all expressway service areas and Michi-no-ekis that were developed by the government, all within around 3 years. In the future, the development of facilities to support families with children will be accelerated in partnership with the expressway companies and local governments.

## 3 Ageing Society Measures

### (1) Creating a Living Environment for the Elderly to Live Comfortably

The Silver Housing Project provides a package including the supply of public housing and other accessible facilities, life support advisors to counsel daily living needs, and emergency response services and as of FY2017 is implemented at 958 housing projects (25,010 housing units).

Also, in order to promote development of the "Housing and City for smart wellness" where various families with the elderly and small children can live and act actively, the promotion projects for the housing for smart wellness supports the development of housing with service for the elderly, the renovation of rental housing which is based on the new housing safety net system and is exclusively for individuals requiring special consideration in ensuring residence, welfare facilities etc. in housing developments etc. and pioneering living and town planning measures for the elderly.

### (2) Providing Transport Services That Meet the Needs of an Aging Society

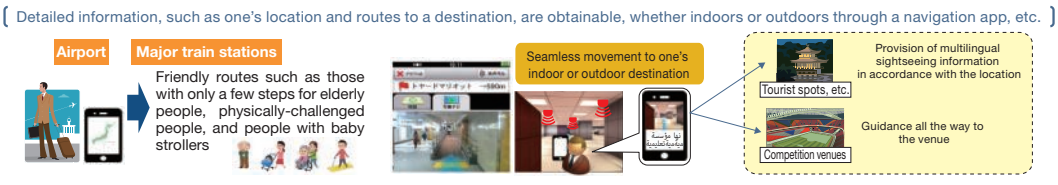
In order to respond to the demand for the transportation of disadvantaged such as the elderly and disabled to hospitals and other care facilities, the implementation of welfare taxis[Note] is being promoted, and as of the end of FY2017, 22,129 vehicles were in operation. In addition, the Investment Subsidy to Ensure the Procurement, Maintenance and Improvement Regional Public Transportation is being utilized to support the implementation of welfare taxis needed in regional areas and since FY2012, universal design taxis that are easy for the elderly and various people have been granted preferential measures regarding motor vehicle tonnage tax and vehicle excise tax if the vehicle meets standard specifications and is certified by the government. As of the end of FY2017, 3,134 organizations were providing fee-based passenger transport services to allow municipal governments and NPOs to provide fee-based transport services using private vehicles in cases in which the parties representing regional residents agree that services by bus or taxi companies are deemed difficult to provide and the private fee-based passenger transport services are required to ensure passenger transport that is necessary for local residents.

## 4 Promotion of the Dissemination of Pedestrian Mobility Support

We are promoting the dissemination of pedestrian mobility support services that utilize ICT to establish a society in which anyone, including international visitors, elderly and physically-challenged people, can participate in social activity freely and without stress both inside and outside buildings.

In light of the recommendations of the Study Committee for Promoting ICT-assisted Pedestrian Mobility Support (led by Ken Sakamura, Dean of the Faculty of Information Networking for Innovation and Design at Toyo University), we considered methods to continually maintain and update data needed for mobility, such as information on facility and route accessibility, with the assistance of a large number of individuals. In addition, in order to promote the dissemination of mobility support services, as a model case for the use of indoor/outdoor position information during a disaster, we conducted a demonstration test of a bird's eye view information sharing service, in which disaster prevention information is shared among stakeholders through the use of highly precise indoor digital maps developed over recent years in the area around Tokyo Station.

Figure II-7-1-3 Conception of Pedestrian Mobility Support Services




Source) MLIT

Note Taxi vehicles with lifts and other facilities so that those using wheelchairs or gurneys (stretchers) can board and disembark as is or taxi vehicles serviced by those with various qualifications, such as home care workers.

# Section 2 Natural Disaster Measures

Japan's national land is subject to severe conditions in such terms as climate, geography, and geology. Natural disasters such as earthquakes, tsunamis, floods, and sediment disasters occur almost yearly. The year 2018 saw a series of natural disasters in different parts of the country, including July 2018 heavy rain, the landing of Typhoon Jebi, and the 2018 Hokkaido Eastern Iburi earthquake. July 2018 heavy rain in particular amounted to record rainfall in many areas around the country, especially in western Japan, resulted in the widespread and simultaneous frequent occurrence of river flooding and debris flow, and caused enormous human and socio-economic damage. The importance of natural disaster measures is more urgent than ever before because there is concern over water- and sediment disasters that are occurring more frequently and seriously due to climate change as well as over the occurrence of giant earthquakes that are expected to strike, including Nankai Trough Mega Earthquake and Tokyo Inland Earthquake. To this end, disaster prevention and mitigation must be fundamentally bolstered, and structural and non-structural measures are being taken to protect lives and living standards.

## 1 Shifting to a Society with Higher Disaster Prevention Awareness

In light of the lessons of the many disasters that occurred recently, we are undertaking a general mobilization of structural measures with major impacts and non-structural measures from the perspective of residents, in a shift to society to raise disaster prevention awareness that all actors, including government, residents, and companies, are sharing knowledge and perspectives of disaster risks prepare for all kinds of disasters, including — flooding, earthquakes, and sediment disasters. Specifically, given the notion that major flooding exceeding the capacity of facilities engineering will inevitably occur, we are carrying out integrated structural and non-structural initiatives to restructure "society with higher flood prevention awareness," so that society as a whole prepares for flooding, in response to water disasters that are becoming more frequent and more serious. In particular, based on a report compiled by the Council for Social Infrastructure Development concerning the issues that were revealed during July 2018 heavy rain, revisions were made to the emergency action plan for rebuilding flood-conscious societies, and taking structural and non-structural initiatives by 2020, including initiatives for the three-year emergency countermeasures for disaster prevention and mitigation, and national resilience.

Given the concerns about the growing frequency and intensity of water disasters, sediment disasters, and droughts caused by climate change, we are making steady progress with facilities improvement and also working on measures against external forces that significantly exceed the capacity of facilities. In particular, with regard to measures to prevent catastrophic damage to society and the economy, the Kanto, Chubu, and Kinki Regional Development Bureaus published projected damage and countermeasure plans, including for areas outside flood zones, by August 2017. Building on these projections and plans, the MLIT is making an all-out effort to implement integrated structural and non-structural disaster prevention and disaster mitigation measures, in order to minimize damage to society and the economy.

In response to the projected Nankai Trough Mega Earthquake and Tokyo Inland Earthquake, which scientists think will happen in the future, we revised the measures plan in January 2019; it is important to engage in effective measures in accordance with the specific characteristics of the envisioned damage. Therefore, for the Nankai Trough Mega Earthquake, as it is anticipated that a huge tsunami would hit with little warning and extensive and significant damage would occur around coastal areas, we are promoting initiatives including developing evacuation routes and evacuation shelters, strengthening levees in zero meter areas against earthquakes, and providing prompt and accurate tsunami warnings. In addition, for the Tokyo Inland Earthquake, as it is envisioned that the collapse of buildings and fires will cause major damage in densely populated areas in particular, and due to measures being required for the Tokyo Olympic and Paralympic Games which are to be held a year from now, we are promoting measures including earthquake-proofing and fire-proofing houses and buildings, reducing infrastructure damage around event venues by taking earthquake-proofing measures for roads, ports, airports, and railways, etc., and removing electricity poles, as well as providing information and evacuation guidance in order to ensure the safety of tourists, including international visitors, through the enhancement of the Disaster Prevention Portal, which centralizes disaster prevention information.

Furthermore, we will expand and enhance the system and function of TEC-FORCE in order to provide smooth and prompt disaster support to the affected areas and disaster emergency measures immediately after the occurrence of a large-scale natural disaster.

In the future as well, we will take full advantage of the field expertise of the MLIT, and will use all of our abilities to work on disaster prevention and mitigation measures.

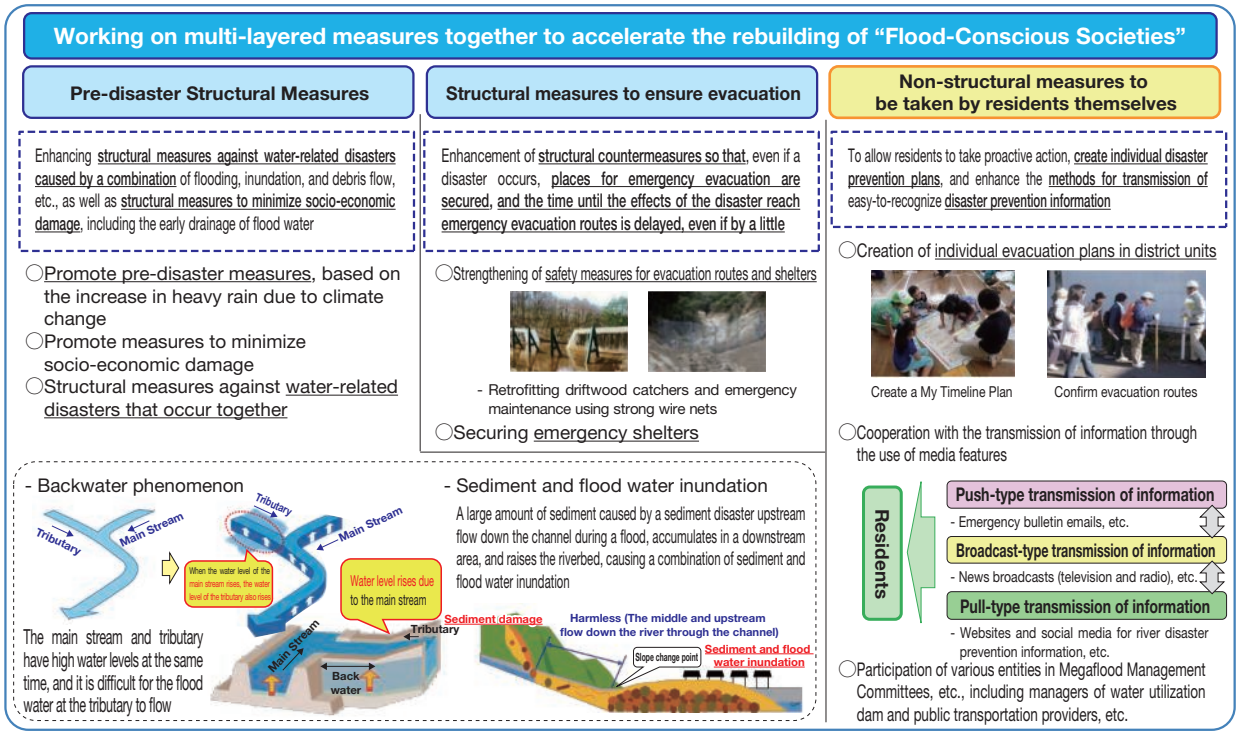
### (1) Accelerating the Rebuilding Flood-Conscious Societies

In order to shift awareness to the notion that "major flooding exceeding the capacity of facilities engineering will inevitably occur," in light of the fact that water disasters have been becoming more frequent and more serious in recent years, we established the Policy Vision on Rebuilding Flood-Conscious Societies in December 2015. We have set up councils composed of river administrators, local governments, and others to share goals for natural disaster reduction, and are carrying out structural and non-structural measures in an integrated, systematic manner for all rivers under ministerial jurisdiction and municipalities along the rivers.

In addition, based on the damage caused by the typhoon of August 2016, and in order to further accelerate initiatives at rivers across the country, including those under municipal and prefectural jurisdiction, we made a partial revision to the Flood Control Act, including the creation of a Megaflood Management Committees system, in June 2017, and furthermore, compiled an emergency action plan for rebuilding flood-conscious societies, and promoted the integrated and systematic taking of structural and non-structural measures.

Under these circumstances, based on the issues caused by July 2018 heavy rain and Typhoon Jebi, in December 2018 the Council for Social Infrastructure Development presented " Flood Risk Management for Wide-area and Long-lasting Rainfall", which is to serve as the basic policy for measures to "enhance the measures for the prevention and mitigation of damage across society, and to make integrated, multilayered preparations for disasters, through prior preparations and enhanced cooperation among a wide variety of stakeholders". In January 2019, we revised the emergency action plan for rebuilding flood-conscious societies based on this report. In terms of specific initiatives, the Megaflood Management Committees is promoting the participation and enhancement of cooperation among wide-ranging stakeholders including public transport administrators and the media. In the future, we will further develop, enhance, and accelerate initiatives for rebuilding flood-conscious societies.

Figure II-7-2-1 Policy Vision on Rebuilding Flood-Conscious Societies



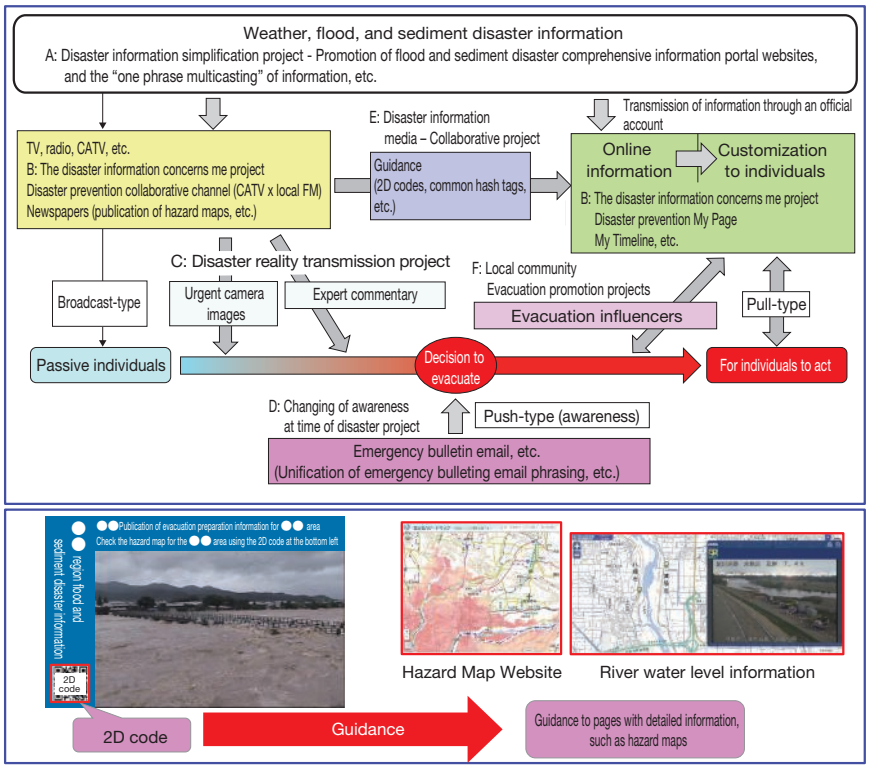

Source) MLIT

Figure II-7-2-2 "Flood and Sediment Disaster Hazard and Risk Information Sharing Project to Lead to Resident Action"

Developing countermeasures and cooperative measures that utilize the characteristics of the mass media and online media stakeholders who convey information, and the government, which publishes the information.
Promoting 33 measures to enhance information provision and sharing methods that will lead to action by residents.

**○ Organizations participating in the project**

<Mass Media>
Nippon Hoso Kyokai (NHK)
The Japan Commercial Broadcasters Association
Japan Cable and Telecommunications Association
Weather Caster Network
Tokyo FM Broadcasting Co., Ltd.
National Association of Local Newspapers
Vehicle Information and Communication System Center (VICS)
<Online Media>
Line Corporation
Twitter Japan K.K.
Google Japan LLC
Yahoo Japan Corporation
NTT Docomo Inc.
KDDI Corporation
SoftBank Corp.
<Government Agencies>
The Foundation for MultiMedia Communications (L Alerts)
<Municipal Bodies>
Mitsuke-shi, Niigata Prefecture
<Organizations Supporting Regional Disaster Prevention Activities>
Joso-shi Disaster Prevention Liaison Committee
<Government>
Ministry of Land, Infrastructure, Transport and Tourism, Water Management and Land Protection Bureau, Road Bureau




## Column

### Committee for Examining Methods for Conveying Disaster Prevention Weather Information

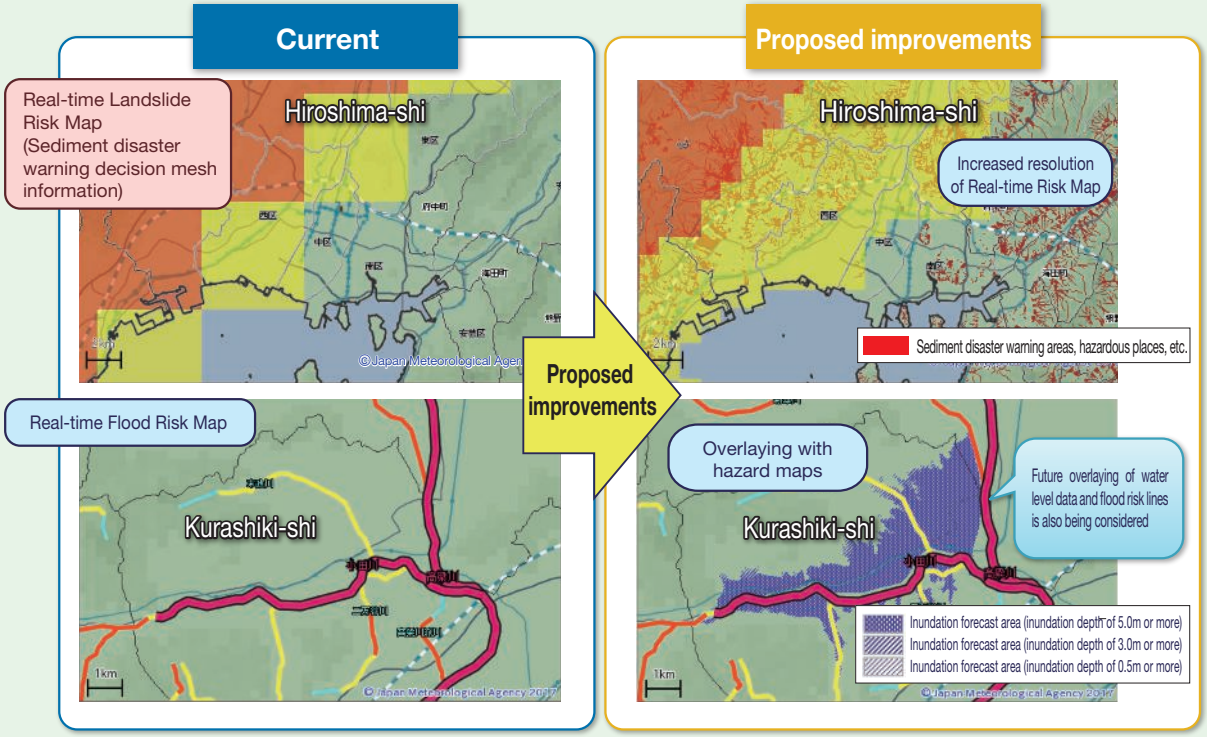
July 2018 heavy rain caused extensive and significant damage, including landslide and flood damage, in many parts of the country. At the time of this heavy rain disaster, although the Japan Meteorological Agency announced disaster prevention weather information, and local governments called for evacuations, this did not lead to evacuation by residents in all cases. The Japan Meteorological Agency organized a Committee for Examining Methods for Conveying Disaster Prevention Weather Information in the period from November 2018 to March 2019, and based on the damage caused by the heavy rain over recent years, including July 2018 heavy rain, arranged issues concerning the methods for conveying disaster prevention weather information to assist in disaster prevention activities, such as evacuations, and compiled the following improvement measures for the future.

Issue 1: The sense of crisis, etc., that the Japan Meteorological Agency (meteorological observatory) and river and erosion and sediment control authorities wanted to convey was not sufficiently felt by residents, etc.

→ Measures: Measures for the improvement of regional disaster prevention capacity, enhancement of the JETT (JMA Emergency Task Team) system, the implementation of joint reviews with relevant bodies, such as local governments, the establishment of a "Forecaster in Your Town" for the provision of detailed weather information, as well as the enhancement of press conferences and websites and improvement of the use of social media in cases of emergency.

Issue 2: The disaster prevention weather information was found to be difficult to use

→ Measures: Increasing the resolution of the "Real-time Risk Map" of landslide disasters, improving the usability of the individual webpages that need to be accessed in order to ascertain the level of danger of heavy rain and the danger in the area in which the individual lives, beginning operation of a notification service that properly conveys information in the event of the danger level rising, examining ways to make the "Real-time Risk Map", etc., more accurate, as well as initiatives to make those close by aware of these matters.




Issue 3: A significant volume of disaster prevention information was published in addition to the announcements of the Japan Meteorological Agency, and the relationship between these was difficult to understand

→ Measures: Initiatives to promote the provision of simple information that leads to evacuation action.

Issue 4: Residents, etc., did not sufficiently understand the meaning of the emergency warning

→ Measures: Initiatives to make people more aware of the positioning and role of emergency warning for heavy rain , mentioning the possibility of issuance, and reviewing the announcement standards and indicators toward the improvement of accuracy.

The Japan Meteorological Agency, in close coordination with relevant organizations, will promptly begin initiatives to improve the resolution of the "Real-time Risk Map" and the establishment of a notification service for applicants, which were planned as improvement measures by the examination committee, and in addition, will continue to enhance and strengthen initiatives for providing easy-to-understand disaster prevention weather information, in conformity with the alert level, that can be understood by members of the general public and that will lead to evacuation, as well as for the improvement of regional disaster prevention capacity through partnerships with weather disaster prevention advisers and regional disaster prevention leaders, etc.

### (2) Preventing and Mitigating Water Disasters

Large-scale water disasters caused by tropical cyclones or the like (for example, disasters caused by Typhoon Wipha Izu Oshima Island and other regions in Japan in 2013 and storm surge disasters caused by Hurricane Sandy in US in 2012) are occurring more frequently and seriously. With this situation in mind, the "Underground Mall, Subway, Etc. Working Group," "Disaster Action Plan Working Group" and "Catastrophic Damage Prevention Working Group" have been set up under the "Water Disaster Prevention and Mitigation Headquarters, MLIT" chaired by the Minister of Land, Infrastructure, Transport and Tourism in January, 2014, to study the measures to be taken when water disasters occur. The Underground Malls, Subways, Etc., Working Group has summarized responses to issues concerning underground settings and disseminated this summary to the relevant organizations. Accordingly, flood measures have been applied on a coordinated basis to underground malls, subways, and connected buildings in the three major metropolitan areas.

The Disaster Action Plan Working Group provides support to enable the heads of municipalities to issue evacuation instructions at appropriate times and has formulated timelines focused on the issuance of evacuation instructions for rivers under the direct jurisdiction of the national government, as well as timelines for bringing together many concerned parties, including local governments, railways, electricity power operators, telecommunications operators, and welfare facilities, in the downstream basin of the Arakawa River. Modeled on this approach, councils have been established for Ishikari River (Hokkaido), Kuma River (Kumamoto), and other blocks throughout the country and are conducting studies on timelines for bringing together many concerned parties. In August 2016, we established and announced the first version of a Policy on Formulating and Using Timelines (Disaster Action Plan) and disseminated it to municipalities and organizations concerned with disaster prevention. We are also preparing timelines for rivers managed by prefectural governments, focusing on flood forecast rivers and water level alert rivers.

In the Catastrophic Damage Prevention Working Group, the objective is to protect lives and preventing catastrophic damage being caused to society and the economy in the context of an ideal way of engaging in disaster prevention and mitigation for the new stage, as declared in January 2015. In response to this, in Tokyo, Nagoya, and Osaka, Regional Development Bureaus, in cooperation with companies and other entities, will proceed with the examination of issues that arise in the promotion of measures for the avoidance of socio-economic catastrophic damage, based on the envisioned damage extending across flooded areas, such as power outages and railway service interruption, as well as action plans.

In January 2019, we convened the Sixth MLIT Water Disaster Prevention and Mitigation Measures Headquarters, where initiatives were determined for the prevention and mitigation of disaster, and for national resilience, through focused efforts such as the promotion of the "three year emergency measures for disaster prevention and mitigation, and the strengthening of national resilience", based on the flood and landslide damage that was caused simultaneously, frequently, and broadly by July 2018 heavy rain, as well as disasters that had a serious impact on certain regions, such as the storm surge caused by Typhoon Jebi. The initiatives for flood disaster prevention and mitigation were set as (1) enhancing the measures for restoration and reconstruction in disaster-affected areas and urban disaster prevention measures, (2) promoting storm surge measures at ports, and (3) promoting the examination of large scale natural disaster countermeasures at major airports across Japan.

### (3) Responding to Climate Change

There are growing concerns about the intensification and frequent occurrence of water disasters (river water flooding, inland water flooding, storm surges), sediment disasters, and drought damage caused by climate change. In August 2015, the Infrastructure Development Council issued a report entitled "Approach to Climate Change Adaptations in the Field of Water-related Disasters: Becoming a Society that Strives to Reduce Natural Disasters by Sharing Disaster Risk Information and a Sense of Crisis."

To deal with intensified natural hazards, it is important as an adaptation measurement to continue to steadily promote improvements that have been ongoing to date for the construction of levees, flood control structures, and sewer systems to respond to natural hazards that could occur relatively frequently. Regarding natural hazards that exceed the capacity of facilities, it is necessary to endeavor to reduce risk by making improvements in facilities' operations, design and implementation procedures. For natural hazards that significantly exceed the capacity of facilities, it is necessary to promote measures with an emphasis on nonstructural measures aiming to protect human life to the greatest extent possible and to avoid catastrophic damage to the society and the economy, assuming worst-case scenarios.

Hereafter we will work on measures to adapt to the impacts of climate change based on the Climate Change Adaptation Plan (adopted by a Cabinet decision in November 2018) and the MLIT Climate Change Adaptation Plan (partially revised in November 2018).

### (4) Responding to Nankai Trough Mega Earthquake and Tokyo Inland Earthquake

If the Nankai Trough Mega Earthquake occurs, it is predicted that a wide Pacific-side area from the Kanto region to Kyushu will experience strong shaking with a seismic intensity of weak 6-7 and a huge tsunami will attack the wide Pacific-side coastal area within a short period of time. Deaths will reach a maximum of about 320,000 people, a critical situation including the interruption of transport infrastructure and paralysis of urban functions along the coast will be created, and the lives and economic activities of Japanese citizens are expected to suffer extremely serious effects all over Japan.

If the Tokyo Inland Earthquake occurs, it is expected to cause strong shaking with a seismic intensity of weak 6-7 along the entirety of the Tokyo Metropolitan area. In the Tokyo Metropolitan area, population, buildings, economic activities and others are concentrated extremely compared with other areas, and so it is expected that human, property, and economic damages become tremendous. In addition, in the Tokyo Metropolitan area, political, administrative, and economic functions of the capital are concentrated, and so it is expected that the Tokyo Inland Earthquake exerts impacts upon national economic activities and others as well as overseas countries.

In order to cope with such a national crisis, the Ministry of Land, Infrastructure, Transport and Tourism - which is in charge of the development and management of a lot of infrastructures and the protection of human lives and properties at sea and which has many field agencies all over Japan - established the Ministry of Land, Infrastructure, Transport and Tourism Nankai Trough Mega Earthquake and Tokyo Inland Earthquake Response Headquarters and a Response Plan Making Working Group in 2013, and formulated the Ministry of Land, Infrastructure, Transport and Tourism Nankai Trough Mega Earthquake Response Plan and Ministry of Land, Infrastructure, Transport and Tourism Tokyo Inland Earthquake Response Plan on April 1, 2014, in order to determine the reality-based responses to be taken by collective effort. Regarding Nankai Trough Mega Earthquake, more specific and practical Regional Response Plans were developed for each regional block along with the abovementioned plans. In January 2019, at the Eighth Nankai Trough Mega Earthquake and Tokyo Inland Earthquake Response Headquarters, we decided to promote three-year emergency measures for disaster prevention, mitigation, and the strengthening of national resilience, and to revise the Nankai Trough Mega Earthquake and Tokyo Inland Earthquake Action Plan, based on the frequency of the occurrence of disasters causing serious effects in the area, such as the 2016 Kumamoto Earthquake, as well as the Osaka Earthquake and Hokkaido Eastern Iburi Earthquake of 2018.

The initiatives determined for large-scale earthquake disaster prevention and mitigation include (i) support for the early restoration of demand in the tourism industry, (ii) the promotion of safety measures such as earthquake proofing and the use of concrete block walls for homes and buildings, and (iii) promotion of the enhanced function of disaster portals.

Figure II-7-2-3 Outline of revisions made to the MLIT Nankai Trough Megaquake Countermeasure Plan and MLIT Tokyo Inland Earthquake Countermeasure Plan

## Background

**The decision was made to revise the MLIT Nankai Trough Megaquake Countermeasure Plan and MLIT Tokyo Inland Earthquake Countermeasure Plan, which were formulated in April 2014, based on the following situations:**
**(1) Revisions based on responses to recent earthquakes** (2016 Kumamoto Earthquake, 2018 Hokkaido Eastern Iburi Earthquake, etc.)
**(2) Revisions based on the most recent socio-economic conditions** (2020 Tokyo Olympics, the amendments to the Road Act and Port Act, etc.)

## Main Revisions

### (1) Revisions based on responses to recent earthquakes

**(i) 2016 Kumamoto Earthquake**

- ○ Promotion of the construction of a system for the smooth transportation of relief supplies, including the Last Mile
- ○ Development of unmanned construction technology at disaster sites, etc.

Sorting by logistics experts at material collection areas

**(ii) 2018 Osaka Earthquake, Hokkaido Eastern Iburi Earthquake**

- ○ Initiatives toward earthquake proofing homes and buildings, as well as securing safety through the use of concrete block walls, etc.
- ○ Support for the early restoration of tourism demand
- ○ Initiatives for rescuing passengers from trains stopped between stations and measures against long-term blocking of railroad crossings
- ○ Strengthening of an information provision system to contribute to making decisions to act, such as by people for whom it is difficult to return home, including foreign passengers, etc.

Situation of damage to buildings and fences in past earthquakes

### (2) Revisions based on the most recent socio-economic conditions

**(i) 2020 Tokyo Olympic and Paralympic Games**

- ○ Provision of information and evacuation guidance in order to ensure the safety of travelers, including foreigners
- ○ Aircraft safety measures, etc.

The Japan National Tourism Organization publishes information on its global site and responds to telephone inquiries in multiple languages 24 hours a day

**(ii) Amendments to related laws (Road Act and Port Act, etc.)**

- ○ Designation of important logistics roads by the national government and establishment of a disaster recovery, etc., representation system
- ○ Implementation of port facility management at time of emergency disaster by national government, etc.

Elimination of road obstacles

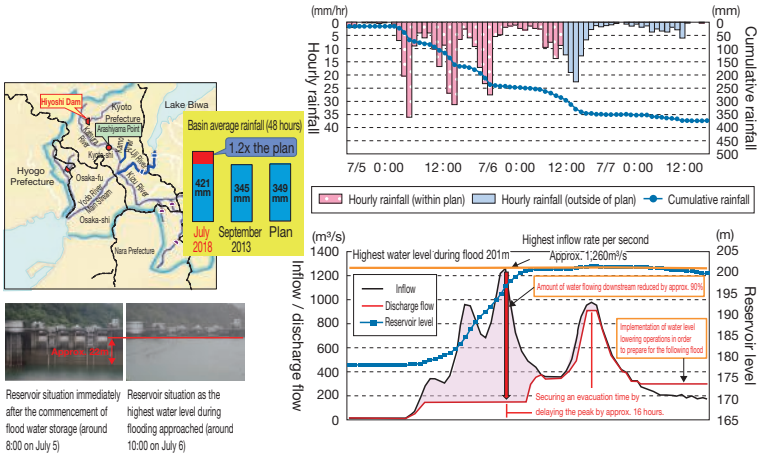
Source) MLIT

## 2 Shaping National Land that is Safe and Resilient to Disasters and Enhancing and Strengthening the Framework of Preparedness for Crisis Management

### (1) Flood Measures

Many of Japan's major cities are positioned on low-lying districts that are lower than the river level during flooding, making the latent danger of flood inundation quite high. Water control measures, such as those involving the expansion of the river channel to safely flush away floods, embankments, the development of discharge channels, dams to temporarily hold back floods, and retarding basin, have steadily improved the degree of water control safety. However, flooding occurred in various locations throughout the country in 2018, in addition to July 2018 heavy rain and Typhoon Jebi making landfall. In order to prevent and mitigate damage caused by flood disasters, which have occurred frequently and seriously in recent years, structural measures such as disaster prevention and preparedness and measures to prevent re-occurrence, as well as non-structural measures, such as strengthening the flood defense system and providing river information, are being promoted in a comprehensive manner, taking into account the influence of climate change.

Figure II-7-2-4 Flood Control of the Hiyoshi Dam at the Yodogawa Water System Katsura River (July 2018 heavy rain)




Source) MLIT

In incidents involving inundation and other forms of flooding that occurred in 2018, the value of flood-control projects implemented previously was demonstrated. For example, during July 2018 heavy rain, on the Katsura River, as a result of significant acceleration of repairs to the river in the approximately five-year period from 2014, including the excavation of river channels and sediment removal as emergency flood control measures, levee collapse was prevented, and flood damage was significantly reduced. In addition, at the Hiyoshi Dam located upstream, at the time the flood inflow to the dam was the highest, the flow released downstream from the dam was reduced by around 90%, delaying the flood flow peak by around 16 hours, which gave local residents, etc., the time needed to evacuate.

#### (i) Preventative water control measures implemented systematically

In light of the increasing frequency and intensity of flood damage associated with climate change, it is important to systematically promote disaster prevention and preparedness. Therefore, we are systematically promoting such measures as developing levees, excavating river channels, and building flood-retarding basins, discharge channels, and dams. In addition, in order to use the existing facilities effectively, we are working on dam improvement, including through such measures as raising the height to increase a dam's storage capacity and adding discharge equipment, as well as the improved operation of dams to reduce the amount of water used beforehand so that there is no overflow during a flood.

Additionally, in order to avoid enormous damage from levee collapses, we are developing high-standard levees in low-lying areas such as zero meter areas in the capital region and Kinki region, where population and assets are concentrated. The development of high-standard levees with wide, gentle slopes developed in unison with town planning will produce a variety of effects, including avoiding severe damage caused by levee breaches. They will function as evacuation sites for residents living on high ground during disasters, and will provide good living environments and urban spaces.

## Column

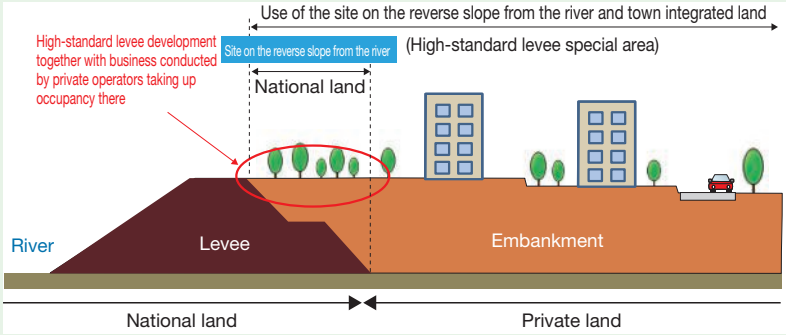
### New Initiatives for Efficient High-Standard Levee Promotion

A review committee was established in May 2017 in order to promote the efficient development of high-standard levees, and a "Recommendation" was compiled in December 2017 summarizing the measures for efficient high-standard levee promotion. Based on this Recommendation, an environment was developed that made it easier for private enterprises to participate in high-standard levee development, and a new tax incentive program was created for landowners.

Going forward, we will substantiate the measures for efficient high-standard levee promotion, and will steadily promote the development of high-standard levees.

[Promotion of Integrated Use of River Areas by Private Enterprises]

The development of high-standard levees will result in new flat land being created on the sloped side of the river behind the levees; the connection of towns and rivers through this will create a variety of potential uses. Although in the past only local government bodies, etc., have been permitted to use such sloped areas by the river, we will promote urban development through the use of such sloped river areas by private enterprises through the new appointment of private enterprises to exclusively use such areas and to perform high-standard levee development.




Example: Integrated use by Urban Renaissance Agency (UR)
(open space, increases floor-area ratio)

[Creation of New Tax Incentive Program for Landowners]

The mitigating effect on flood risk achieved through the development of high-standard levees will be demonstrated not only in the high-standard levee development area, but also in socio-economic activities, etc., within Japan by local residents, but the understanding and cooperation of many local residents within the development area will be vital for the development. Therefore, the establishment of special measures for the promotion of high-standard levee development projects will promote the smooth formation of agreements with local residents and will accelerate the development of high-standard levees.

(Content of Special Measures)

- Property taxes for residences constructed by the previous rights holder within high-standard levee development project areas will be reduced by 2/3 for the first five years after construction in the case of residences occupied by the previous rights holder, and by 1/3 in the case of residences not occupied by the previous rights holder and non-residential buildings.
- We have created special measures for a three-year period (from April 1, 2019 to March 31, 2022).

## Column

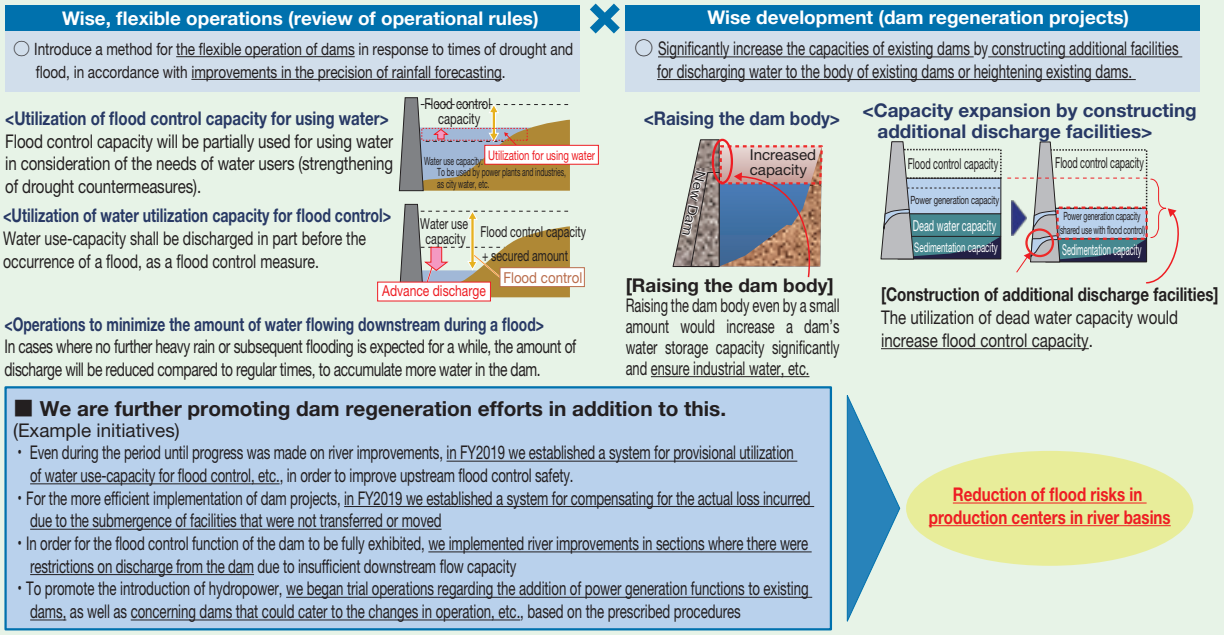
### Productivity Innovation Project: dam upgrading under operation

**– Early Upgrading of Water Utilization and Flood Control Capacities to Support Local Economies –**

Effective ways to quickly reduce the risk to corporations' production activities posed by the frequent droughts and floods seen in recent years are introducing new construction technologies and making the best possible use of the storage capacity of existing dams.

As one of the Productivity Innovation Projects, the MLIT is promoting dam regeneration, which makes effective use of existing dams in operation. Dam regeneration has various characteristics, such as the significant increase of dam storage capacity through the slight raising of levees, and produces an effect in a short period of time after completion without significant time or cost.

Beginning in FY2019, the MLIT will start the Kitakami River Upstream Dam Upgrading Project, the Fujiwara Naramata Reorganization Dam Upgrading Project, and the Iwase Dam Upgrading Project, and in addition, has created a system for the temporary use of dam service water capacity for flood control, etc. and a system for compensating for actual losses caused by the flooding of facilities, for which transfer or relocation was not conducted, for the improved efficiency of dam projects.




### (ii) Preventing the reoccurrence of flood disasters

In regions where the frequent occurrence of flood damage and inundation above floor level have caused loss of life and serious problems in people's daily lives, river channel excavation and levee construction, among other measures, are being implemented intensively over a short time span in order to improve the flow capacity of rivers, in an effort to prevent the recurrence of disasters.

### (iii) Flood control measures tailored to river basin characteristics

In order to cope with not only the increased discharge from flooding rivers in conjunction with the increase in the impermeable land area following the development of urban areas, but also to cope with the increased frequency and intensity of heavy rains in recent years, it is important to ensure the water retention and flood dissipation functions of the river basin. For this reason, rivers such as these require the promotion of river basin measures, and a variety of methods that take into consideration regional characteristics, to ensure safety and comfort.

### a. Comprehensive flood control measures

In order to cope with the increase in the impermeable land area following the development of areas around the basin, as well as the increased discharge from flooding rivers in conjunction with this and the increased frequency and intensity of heavy rains in recent years, it is important to carry out comprehensive flood control measures, in addition to river development, such as securing the water retention and flood dissipation functions of the river basin, directing land use in regions at high risk of disasters occurring, and establishing a precautionary evacuation framework. As part of these efforts, we are cooperating with the relevant local authorities to promote the suppression of rainwater drainage through the development of infiltration facilities for storage of rain water, as well as measures to reduce civilian damage.

In addition, to prevent the disruption of urban functions due to flooding as well as the flooding of underground malls in accordance with the Act on Countermeasures against Flood Damage of Specified Rivers Running Across Cities, river administrators, sewage system administrators, and local government are working together to promote river basin flood damage countermeasures such as developing rainwater harvesting and infiltration facilities as well as regulations to suppress the drainage of rainwater.

### b. Localized downpours measures

In recent years, due to inundation damage caused by phenomenon such as concentrated heavy rains in localized areas, to ensure that residents can live safely even during localized heavy rains exceeding planned levels, a plan created with the support of residents (groups), private sector companies, and others that stipulates a comprehensive approach implemented to reduce flood damages known as the "100 mm/h security plan" is registered and initiatives to promote mitigation measures against flood damages are being implemented in addition to the development of rivers and sewerage.

Figure II-7-2-5 Examples of Measures Based on a 100 mm/h Security Plan in Mito City, Ibaraki

**Flood damage reduction plan in the Sakuragawa River (Sawawatari River) basin [Mito City, Ibaraki]**

**Outline of basin**

- ○ The Sakuragawa River (Sawawatari River) basin has been the site of inundation damage due to localized heavy rains that have been occurring often in recent years.
- ○ In recent years, torrential rain in May 2012 caused 12 cases of inundation above the floor level, 2 cases of inundation below the floor level, and interruption of operation of the JR Joban Line in the river basin.
- ○ Number of events with an hourly rainfall of 50 mm or more in Ibaraki
  - 30 years from 1980 to 2009: average 1.9 times/year
  - From 2010 to 2015: average 4.7 times/year
  - The number of events with an hourly rainfall of 50 mm or more is increasing.
- ○ Rainfall event subject to the flood damage reduction plan
  Torrential rain in May 2012 with rainfall up to 56 mm/h

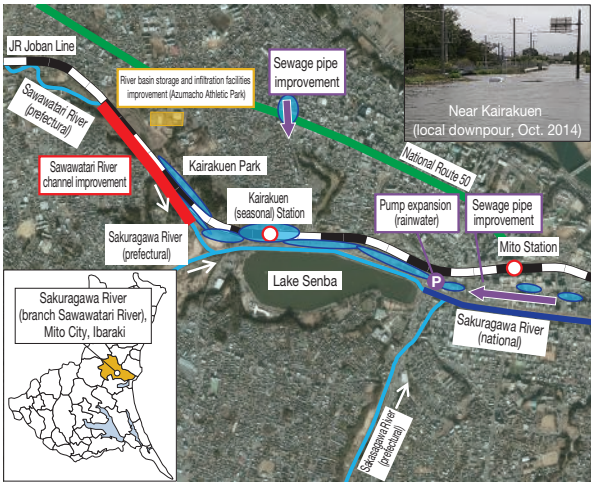
**Main causes of inundation damage**

As outside water caused inundation because rainwater that flowed suddenly into the river could not flow safely, inside water could not drain properly, resulting in expansion of inundation damage.

- ○ Increase in rainfall above drainage capacity
- ○ Delays in river improvement for safe flow of floodwater
- ○ Increase in outflow due to progress of urbanization and changes in land usage, etc.

→ **There is a need for relevant organizations in the basin to effectively combine and carry out anti-flood measures.**

Comprehensive anti-flood measures for the Sakuragawa River (Sawawatari River) basin have been studied by the Sakuragawa River (Sawawatari River) Basin Comprehensive Flood Control Measures Council, composed of Ibaraki Prefecture, Mito City, companies and others, and relevant organizations have implemented measures.




Sakuragawa River (Sawawatari River) Basin Comprehensive Flood Control Measures Council

| Organization | Department, etc. |
|---|---|
| MLIT | Hitachi River and National Highway Office |
| Ibaraki Prefecture | Civil Engineering Section Rivers Department, City Bureau Sewerage Department, Parks and Streets Division, Mito Civil Engineering Office |
| Mito City | Waterworks Division Sewerage Management Department, Construction Division Construction Planning Department, Rivers and Municipal Drainage Department |
| Companies, etc. | JR East Mito Branch Office, Ibaraki University |

**Overview of initiatives**

- ○ Rivers / sewer systems
  - Sawawatari River channel improvement
  - Sewage pipe improvement, rainwater pump increases
- ○ Basin measures
  - Storage and infiltration facilities improvement (Azumacho Athletic Park, etc.)
  - Promotion of installation of rainwater storage and infiltration facilities for residents and septic tank diversion facilities
- ○ Disseminating danger warnings / flood control activities
  - Providing disaster prevention information through Mito City's website, an e-mail newsletter, LINE, Twitter, emergency e-mails, Facebook, and FM radio, etc.
  - Dissemination of flood hazard maps
  - Installation of water gauges and publication of water level information

**Effect (goal) of initiatives**

Reduce inundation damage to houses and reduce interruption of operation of the JR Joban Line due to track flooding in event of rainfall of the same scale as the rainfall in May 2012.

Source) MLIT

c. Integrating flood control measures with land use

Land use combined with a circle levee[Note 1] and the regulation of land use, such as designation of disaster risk areas, is promoted with local governments when the measure is more efficient and effective than constructing levees from the viewpoint of recent damage from flooding and situation of land use.

d. Inland water measures

To prevent flooding through inner water inundation and strive for the steady development of cities, the improvement of facilities such as sewer pipes and drainage pump stations are being promoted. However, in recent years, the frequency of concentrated downpours that far exceed planned scales, the increased rainwater drainage due to the advancement of urbanization, the increased complexity of the urban landscape, including the concentration of population and wealth, as well as the increased use of underground spaces, etc., make the risk of damage due to inner water inundation in urban areas even greater. For this reason, measures such as integrated projects for the reduction of sewer flooding damages and integrated projects for inland water emergency measures are being utilized with the cooperation of relevant parties, including regional authorities and affected residents, to carry out structural measures such as proactively implement rainwater drainage reduction facilities; non-structural measures such as providing rainfall information, land use regulations, and creation of inland water hazard maps; and self-help initiatives such as the placement of water stops and sandbags as well as evacuation activities in combination for the promotion of integrated inundation measures.

### (iv) Strengthening the flood prevention framework

In collaboration with flood prevention administrative bodies, we have been implementing joint inspections of sections at high risk of flooding prior to the arrival of flood season, holding flood-prevention technical workshops and flood-prevention drills, endeavoring to disseminate flood-prevention technologies, holding flood-prevention activity activation research meetings, and promoting practical initiatives for the activation of flood-prevention activities, etc., to provide support for the strengthening of the flood prevention framework in order to minimize damage caused by flooding.

In addition, we are supporting initiatives tied to plans for securing evacuations and preventing inundation in underground malls (including those slated to be constructed and those that are under construction) situated in areas expected to become inundated, facilities for people with special needs, and large-scale factories, etc.

### (v) Announcing forecasts and warnings of flooding and providing river information

The Minister of Land, Infrastructure, Transport and Tourism or the Prefectural Governor designate rivers with large river basins that are at risk of causing great damage to the nation's economy or other great losses as flood forecast rivers and announce flood forecasts indicating the water level or flood volume jointly with the Director-General of the Japan Meteorological Agency. Also, aside from flood forecast rivers, important small and medium-sized rivers are designated as water level alert rivers, and during floods, when the hazardous water level (special caution water levels of flood), this information is also released. As of the end of September 2018, there were 448 forecast rivers and 1,619 water level alert rivers. Additionally, the Director-General of the Japan Meteorological Agency releases flood warnings when there is a risk of flooding due to the weather conditions.

The water level, precipitation amount, flood forecasts, flood prevention warnings and other river information is collected, processed, and edited in real-time and made available to river administrators, municipalities, residents, and others on the website "River Flood Information" [Note 2] to be utilized in issuing warnings and evacuation during flooding.

The push-based flood risk information service, which began in September 2016 in Joso City, Ibaraki and Ozu City, Ehime, which are local governments in the Kinu River and Hiji River basins, was expanded in May 2018 to 712 municipalities in 109 river systems that are flood forecast rivers managed by the national government.

In addition, the data broadcast function of digital terrestrial television is being used in cooperation with broadcasters for efforts to provide river water levels and precipitation amount.

XRAIN (eXtended RAdar Information Network), which can accurately monitor concentrated heavy rainfall and localized heavy rainfall with high-resolution and high-frequency in order to help facilitate appropriate river management and disaster prevention activities, is used in rainfall observation. Rainfall information is also made available on the Internet.

Note 1 Levees surrounding areas with residential properties, etc.
Note 2 River Flood Information website: http://www.river.go.jp [PC version], http://www.river.go.jp/s [smartphone], http://i.river.go.jp [mobile]

### (vi) Designation of expected inundation area by flooding

We are supporting the designation and announcement of expected inundation areas by flooding, in accordance with the largest expected rainfall conducted by prefectural governments, as well as the creation and publication of flood hazard road maps by local governments, through three-year emergency measures for disaster prevention and mitigation, and the strengthening of national resilience.

Expected inundation areas by flooding have been designated and publicly disclosed for approximately 97%[Note 1] of flood-forecast rivers and rivers for which water levels are publicly disclosed. Flood hazard maps have been produced for approximately 98%[Note 1] of municipalities included in areas that are expected to become inundated.

The MLIT provides support for tax subsidies for inundation prevention facilities obtained by the owner or managers of underground malls, etc., in probable inundation zones, in accordance with evacuation security and inundation prevention plans.

It also supports the creation of hazard maps by municipalities and voluntary flood defense initiatives carried out by underground malls, facilities for people with special needs, and large-scale factories via the disaster information dissemination office established within river-related offices across the nation as a contact point for businesses and others.

### (vii) Strategic maintenance and management of rivers

In order for river management facilities, etc., to demonstrate the required functions at the time of flooding, it is necessary to ascertain their status and to conduct the appropriate maintenance and management in accordance with changes. In a situation where the number of facilities subject to management, including levees, weirs, floodgates, and drainage pump stations, are increasing due to the promotion of river maintenance, and as these continue to age, the River Act clarifies that the manager of a river management facility or permitted structure should perform maintenance and repairs to keep such river management facilities and permitted structures in good working order.

Due to this situation, for river management facilities, etc., a transition to condition-based maintenance is being implemented in which conditions are ascertained through inspections so that measures are taken at appropriate times. Also, lifetime extension plans have been formulated for major river infrastructure administered by the nation so as to extend facility life cycles and allow for updating in a planned manner. In addition, necessary technological development for extending lifetime will be furthered and technical standards for middle to small rivers will be studies in cooperation with prefectures for appropriate maintenance and management. In addition, technical support is provided through permanent consultation services made available by regional development bureaus.

### (viii) Measures against illegally moored vessels in rivers

Illegally moored vessels in rivers can impede flood control (such as by impeding river construction work, blocking the downstream flow during flooding, and damaging river management facilities) and otherwise impede the management of rivers (such as by causing water pollution through the leakage of fuel and impeding river usage). For these reasons, river administrators are providing administrative guidance to the owners of unlawfully moored vessels on relocation to lawful mooring and storage facilities and, if necessary, they remove unlawfully moored vessels themselves.

In May 2013, the Plan for Promoting Comprehensive Measures for the Proper Management of Pleasure Boats and Improvements to Their Usage Environment was formulated. In June 2015, the results of a nationwide survey on the conditions surrounding pleasure boats that was conducted on a consolidated basis for three areas of water (ports and harbors, rivers, and fishing harbors) in order to verify the effects of measures implemented under this plan were publicly disclosed. In accordance with the 2013 amendments to the Order for the Enforcement of the River Act, river administrators are strengthening prosecution of those who abandon vessels inside river areas.

### (ix) Road submergence measures

In the light of the past experiences of torrential rainfalls that caused flood damages to underpasses, the MLIT is now proactively sharing information concerning submergence risk locations with road administrators, police agencies, fire departments, and other relevant authorities. The framework for information exchange and passage prohibition is established, and the development and installation of submergence alert systems and monitoring facilities, as well as the publication of submergence risk locations that are publicized on the website[Note 2], are promoted.

Note 1 As of the end of September 2018
Note 2 Road Disaster Prevention Information Web Map website: http://www.mlit.go.jp/road/bosai/doro_bosaijoho_webmap/index.html

## (2) Countermeasures Against Sediment Disasters

Japan has a steep geography and vulnerable geology over a wide area. In addition, Japan has a low number of plains and development of residential land has extended to hills and piedmont slopes along with the development of economy as well as the increase in population. As a result, there are estimated to be about 670,000 areas vulnerable to sediment disasters such as landslides, where many people are forced to live close together in areas that have the risk of sediment disasters. There have been 1,000 cases of sediment disaster caused by heavy rains and earthquakes annually on average in the past 10 years (from 2009 to 2018). In 2018, there were 3,459 cases, causing great damage and leaving 161 people dead or missing.

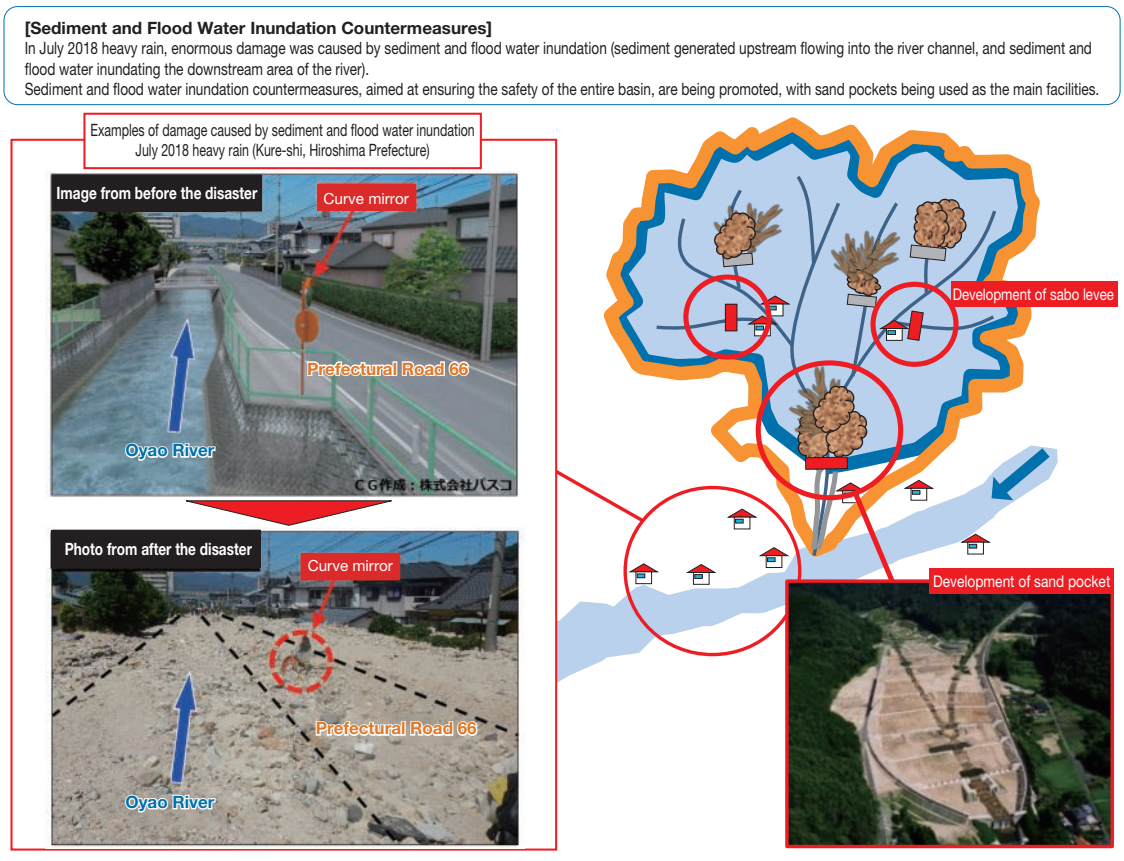
In order to prevent and mitigate the damages by sediment disasters, combination of non-structural and structural measures, such as construction of sediment disaster prevention facilities and improvement and enhancement of early warning and evacuation systems are being promoted, with an emphasis on disaster prevention and preparedness .

July 2018 heavy rain caused a large number of sediment disasters, particularly in Hiroshima Prefecture and Ehime Prefecture, that caused significant damage, leaving 119 people dead or missing. On the other hand, in Kumano-cho, Aki-gun, Hiroshima Prefecture, it was found that the developed sabo dam had captured the debris flow and driftwood, and had preserved the downstream area. In addition, sediment disaster prevention facilities in other locations that had been put in place also demonstrated their effect.

### (i) Fundamental countermeasures against sediment disasters

In recent years, heavy damage has been caused to urban areas and important community facilities such as roads and railways due to large-scale sediment discharge from heavy rain, etc. We are promoting the development of facilities to prevent sediment disasters in order to protect human life, property, and community facilities from large-scale sediment discharge caused by debris flow, sediment, and flooding, etc.

Figure II-7-2-6 Examples of Basic Sediment Disaster Countermeasures




Source) MLIT

### (ii) Emergency countermeasures against sediment disasters in sediment disaster-affected areas

In order to ensure safety and security, and to maintain and promote socio-economic vitality in the areas where sediment disasters caused loss of life and great damages to people's living, concentrated construction of sediment disaster prevention facilities for preventing recurrence of disasters is being promoted.

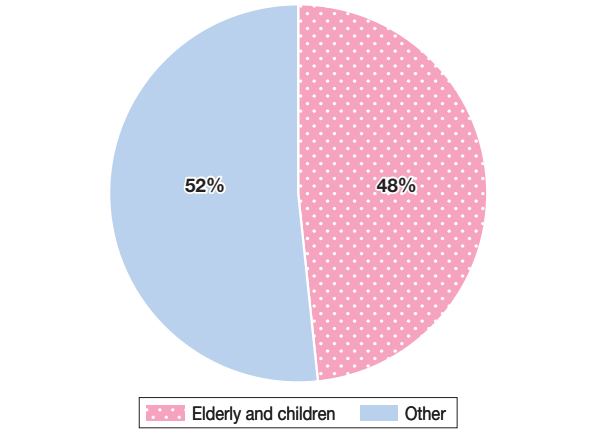
Figure II-7-2-7 Examples of the effect created by emergency sediment disaster countermeasures (The Akaya River basin in the Chikugo River system)


### (iii) Countermeasures against sediment disasters to protect those requiring support in evacuation

The elderly and children, who cannot evacuate by themselves, are liable to fall victim to sediment disasters. Among the dead and missing of sediment disasters, the percentage of elderly and children is high. So, in order to protect the social welfare facilities, and medical facilities, etc., used by the elderly and children, construction of sediment disaster prevention facilities such as Sabo dams is promoted in a focused manner.

In accordance with the Act for Promotion of Measures to Prevent Sediment Disasters in Sediment Disaster Risk Areas, etc., (Sediment Disaster Prevention Act), measures combining structural and non-structural elements are being promoted, such as by stipulating the names and addresses of facilities for persons requiring support in evacuation and the information transmission system in sediment disaster risk areas in municipal plans for the prevention of local disasters and by restricting certain development in sediment disaster special risk areas.

Figure II-7-2-8 Percentage of Elderly and Children among Sediment-related Disaster Dead and Missing (1999-2018)




Source) MLIT

Furthermore, managers, etc., of facilities for people requiring support as positioned in the municipal plans for the prevention of local disasters are obligated to create a plan to ensure evacuation and to conduct training based on this plan, and we are providing support to ensure smooth and rapid evacuation at facilities for those requiring support.

### (iv) Countermeasures against sediment disasters for urban areas near mountain base slopes

For urban areas near mountain base slopes, forestry bands are fostered as green belts on the mountain base slopes adjacent to urban areas to enhance sediment disaster safety and maintain and create urban environments and landscapes with abundant greenery.

### (v) Countermeasures against sediment disasters for slopes near roads

Slope disaster prevention measures are taken for the slopes with a risk of landslide near roads.

### (vi) Countermeasures against sediment disasters to promote regional disaster prevention

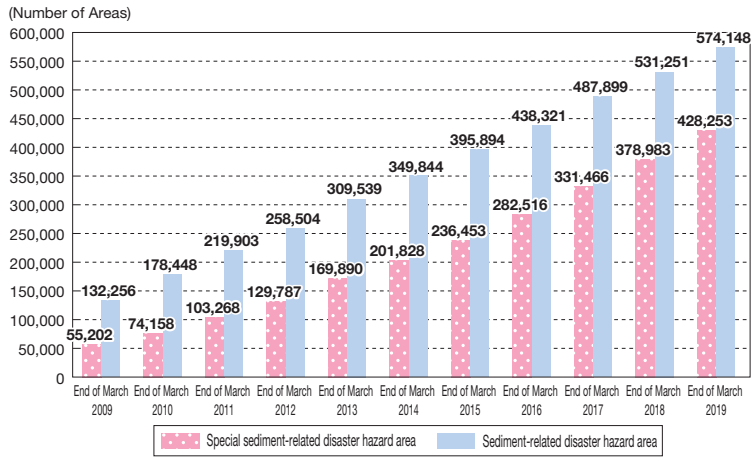
In hilly and mountainous areas at high risk of sediment disasters which has a large impact on community people, construction of sediment disaster prevention facilities for protecting people's lives, as well as maintaining the important facilities, such as evacuation shelters, evacuation routes, and town offices, that play an important role in regional disaster prevention is promoted for sustention and development of regional society. Also, we are providing support for initiatives to enhance and reinforce evacuation systems in sediment disaster alert areas

### (vii) Promoting countermeasures against sediment disasters based on the Sediment Disaster Prevention Act

#### a. Promoting sediment disaster prevention measures through designation of sediment disaster hazard areas

In accordance with the Sediment Disasters Prevention Act, in order to reveal areas of land where there is a risk of a sediment disaster occurring, areas where a sediment disaster could threaten the lives of residents, etc., or cause them bodily harm are designated as sediment disaster hazard areas while areas where a sediment disaster could damage architectural structures and threaten the lives of residents, etc., or cause them serious bodily harm are designated as special sediment disaster hazard areas. Furthermore, prior to area designation, the results of basic surveys are made public to inform residents, etc., of the danger of sediment disasters at an early stage.

Figure II-7-2-9 Designated Sediment-related Disaster Hazard Areas Nationwide (End of the March 31, 2019)




Source) MLIT

Non-structural countermeasures taken include the development of warning and evacuation systems through the specification of evacuation shelters and evacuation routes, etc., in municipal plans for the prevention of local disasters for sediment disaster hazard areas and the restriction of certain development activities and the placement of structural controls on buildings in special sediment disaster hazard areas. Also, we release guidelines and case studies for the development of warning and evacuation systems as well as the creation of hazard maps and encourage municipalities to take initiatives.

Additionally, sediment disaster warning information has been clearly denoted as information that contributes to decisions on evacuation advisories and efforts have been made to establish an information transmission system, including obligating prefectural governors to notify relevant municipal mayors of such information and to disseminate it to the general public.

#### b. Promoting the relocation of housing at risk

Houses near cliffs vulnerable to slope failures are prompted to relocate using the program for relocating at-risk housing located near cliffs. In FY2018, this program decreased risky houses by 37 and 23 new houses were built to replace risky houses.

### (viii) Countermeasures for large scale sediment disasters

In order to reduce the damages caused by deep-seated landslide, combination of structural and nonstructural measures are taken by, for example, development of sediment disaster prevention facilities as well as strengthening of the warning and evacuation system by use of deep-seated landslide risk evaluation maps.

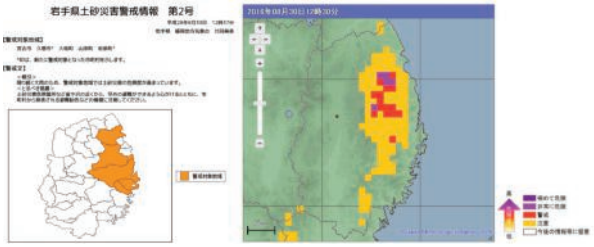
If there is a risk of a natural damming of a river (landslide dams) or debris flows following volcanic eruptions, Emergency Investigation are conducted in accordance with the “Sediment Disaster Prevention Act” to provide municipalities with information on the land areas vulnerable to sediment disasters as well as the timing of occurrence. In recent years, sediment disasters have occurred frequently due to localized rainfalls more concentrated and intensified and volcano getting more active. So, training for enhancing the ability to respond for implementation of Emergency Investigation and strengthening cooperation with relative organizations are promoted.

### (ix) Issuing a Sediment Disaster Alert

In case that the risk of sediment disasters (or landslides) increases due to heavy rainfall, Landslide Alert Information is jointly issued by prefectures and the Japan Meteorological Agency over the respective-municipalities. Issuance of the Landslide Alert Information is expected to lead issuance of evacuation orders announced by the municipalities and/or self-evacuation of residents. In addition, as a supplement to the Landslide Alert Information, we provide Real-time Landslide Risk Map that shows the level of risk of a sediment disaster occurring in more detail.

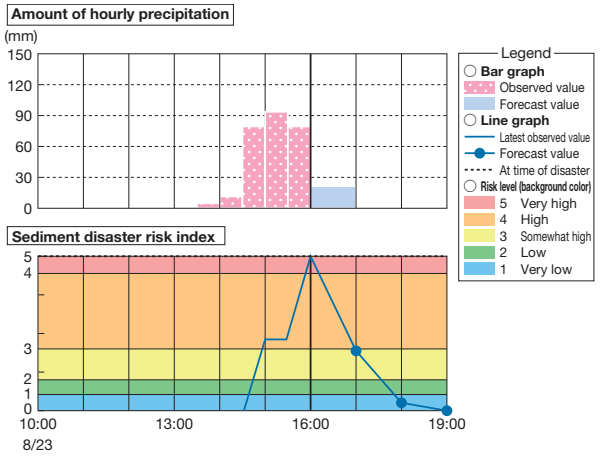
**Figure II-7-2-10** Landslide Alert Information and Real-time Landslide Risk Map

Landslide Alert Information and Real-time Landslide Risk Map



Source) Japan Meteorological Agency

Graph showing changes, etc., in sediment disaster risk




Source) Iwate Prefecture

## Column

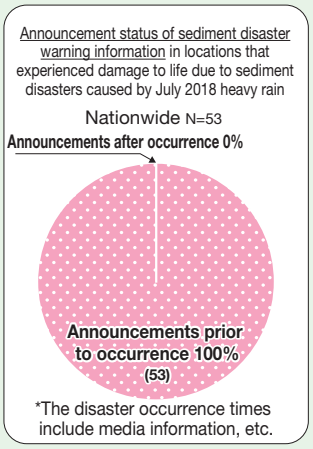
### Enhancing Warning and Evacuation Systems to Secure Effective Evacuations

In July 2018 heavy rain, over 2,500 cases of sediment disaster were recorded, mainly in Hiroshima Prefecture and Ehime Prefecture; these resulted in tremendous damage from debris flow and landslides, including 119 fatalities. In these disasters, there were a large number of casualties despite their designation as sediment disaster alert areas, and the issuance of recommendations to evacuate in response to sediment disaster alert information having generally been made.

Therefore, the MLIT established a Committee for Examining Sediment Disaster Measures to Secure Effective Evacuations in order to examine the damage from these sediment disasters, the initiatives taken in the past, and future measures.

The examination conducted by this committee showed that although past efforts had generally been in the right direction, there was a possibility of residents not evacuating due to an insufficient understanding of the disaster risk, and that measures such as arranging assistants in advance to provide support to the elderly in the case of a disaster, which were in place at the time of disaster in areas where there were no casualties thanks to evacuation, had not been expanded to other areas within the municipality. These among other results of the verification related to sediment disaster alert information, sediment disaster alert areas, and evacuation were arranged, and the following measures were compiled as needing to be implemented in order to secure effective evacuation.

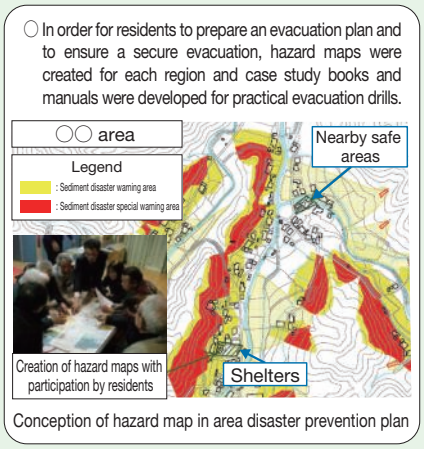
Announcement status of sediment disaster warning information in locations that experienced damage to life due to sediment disasters caused by July 2018 heavy rain




*The disaster occurrence times include media information, etc.

[Measures to be implemented in order to secure effective evacuations]

(i) Improvement of the accuracy of sediment disaster alert information, etc.
(ii) Improvement of the level of recognition of sediment disaster alert areas, etc.
(iii) Construction of a support system to improve disaster prevention capabilities in municipal areas
(iv) Construction of an alert and evacuation system based on local disaster prevention plans
(v) Development of sediment disaster prevention facilities in conjunction with local disaster prevention plans
(vi) Other measures based on the characteristics of the sediment disaster damage caused in July 2018 heavy rain



Conception of hazard map in area disaster prevention plan

Example of signboard installed to indicate sediment disaster warning area

We will promptly put the compiled measures into action, and will continue to promote the enhancement and strengthening of alert and evacuation systems in FY2019.

## (3) Volcanic Disaster Countermeasures

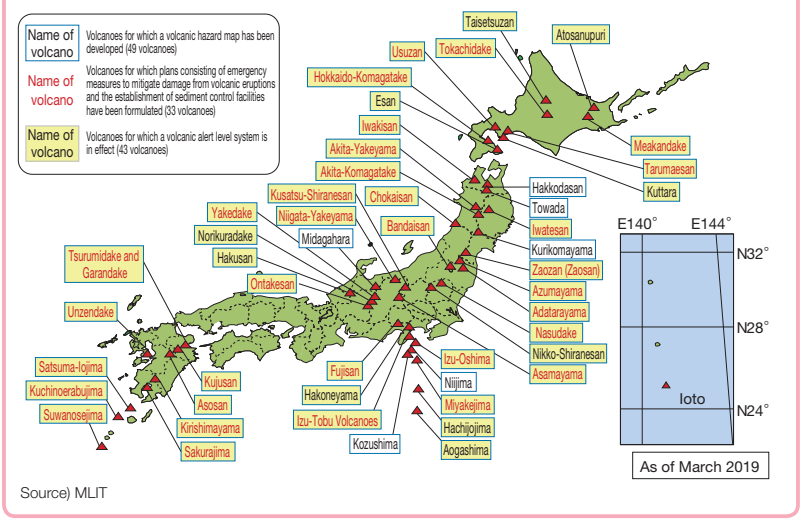
### (i) Countermeasures for sediment disasters following volcanic activity

In preparation for the volcanic mudflow caused by volcanic eruptions and the debris flow caused by rainfall, Sabo dams, training dikes, and so on for preventing or reducing damage are being constructed.

In addition, for facilities that are unable to properly maintain their functions due to continued and massive debris flow, removing sediment deposition and other measures are being carried out to keep effectiveness.

Sediment disasters following volcanic eruptions could lead to large-scale disasters. In addition, it is very difficult to predict the position or scale of an eruption, that causes serious damage, with good accuracy beforehand. For this reason, a Sabo plan for the emer-

Figure II-7-2-11 Development of volcanic hazard maps, formulation of volcanic eruption emergency disaster-mitigation measures and sediment control plans, and the state of the operations of eruption warning levels for fifty volcanoes that have been selected by the Coordinating Committee for the Prediction of Volcanic Eruptions as volcanoes requiring an upgraded system of monitoring and observations for the prevention of volcanic disasters



Source) MLIT

gency mitigation of the effects of a volcanic eruption is being formulated in order to mitigate damage through agile responses to volcanic conditions in combination with the development of facilities in advance; this plan targets forty-nine volcanoes that exhibit active volcanic activity and that are at risk of causing sediment disasters in the wake of an eruption. The amended Active Volcanoes Act came into force in December 2015 and prefectural governments, Regional Development Bureaus, and other Sabo departments, as members of the Volcanic Disaster Management Council, decided that they would study volcanic hazard maps from the standpoint of sediment disasters caused by eruptions. Thus, by developing volcanic Sabo hazard maps (volcanic hazard maps that relate to sediment disasters), support was provided for a series of studies on alerts and evacuation systems by the Volcanic Disaster Management Council.

In response to the eruption of Kirishimayama (Ebino Plateau [Ioyama]) in April 2018, observation of topographical changes was conducted using survey aircraft equipped with SAR equipment. Also, a survey of ash fall after the eruption was conducted by helicopter and on land, and information was provided to the relevant authorities. Furthermore, in response to the eruption on Kuchinoerabujima in January 2019, aerial photography and observation of topographical changes were conducted using survey aircraft equipped with SAR equipment. In addition, a survey of ash fall was conducted by helicopter after the eruption, new observation equipment was installed, and information was provided to the relevant authorities.

A volcanic eruption real-time hazard map system was developed, and began operation in advance at five volcanoes (Asamayama, Fujisan, Ontakesan, Kirishimayama, and Sakurajima); initiatives such as these have been promoted in order to support local authorities if an eruption occurs.

#### (ii) Measures against ash falling due to active volcanoes

Since the ash falling on roads due to volcanic eruption has a great social impact, such as traffic obstruction, a framework is being developed in order to remove ash quickly and appropriately from roads using street sweepers.

#### (iii) Japan Meteorological Agency initiatives

To prevent and mitigate volcanic eruption disasters, domestic volcanic activity is monitored and volcanic warnings are issued in a timely manner. Especially for the fifty volcanoes in need of more intensive monitoring/observation for volcanic disaster mitigation selected by the Coordinating Committee for Prediction of Volcanic Eruption observation facilities have been deployed and volcanic activity is being monitored around the clock (volcanoes subject to continuous observations).

Also, Volcanic Alert Levels are being applied and improved through coordination of evacuation planning at local Volcanic Disaster Mitigation Councils (applied to forty-three volcanoes as of the end of March 2019).

In accordance with recommendations (March 2015) issued at a working group of the Coordinating Committee for Prediction of Volcanic Eruptions held in response to the disaster caused by the eruption of Ontakesan in September 2014, the Japan Meteorological Agency (JMA) has upgraded and strengthened systems to observe and evaluate volcanic activity and provide disaster mitigation information. The agency is also continuing to strengthen volcanic activity observation, evaluation systems, and information provision through an ongoing close study and publication of volcanic alert level criteria, etc.

#### (iv) Japan Coast Guard initiatives

Aircraft observations are routinely conducted on submarine volcanoes and volcanic islands, and the information on eruptions or discolored water as a precursor phenomenon of eruptions is immediately provided to mariners. In addition, to serve as basic data for predicting eruption of submarine volcanoes and volcanic islands, comprehensive surveys are conducted to gather basic information such as seafloor topography, geological structure and so on. Continuous GNSS observations in the Izu Islands area are also conducted to monitor crustal movements.

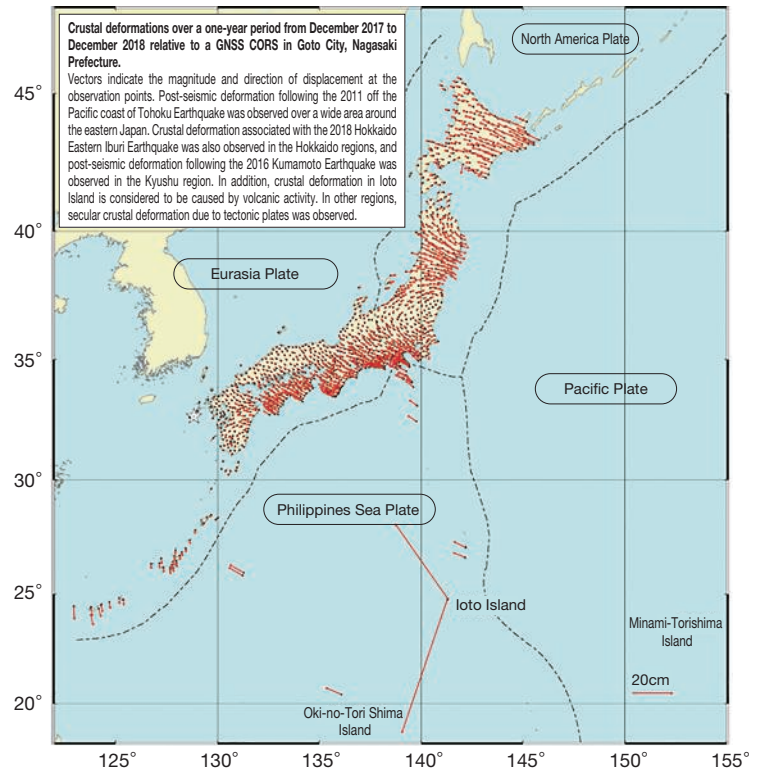
With respect to the Nishi-no-Shima volcano, which erupted in November 2013, a nautical chart was published in June 2017, and in addition, an airborne lidar bathymetry was conducted in July 4-7, 2018, in order to ensure the safety of navigation. The analysis of bathymetric data revealed that the area of the territorial sea and exclusive economic zone of Japan had likely expanded by approximately 4km$^2$ and approximately 46km$^2$, respectively, compared to water depths shown in the nautical chart. Monitoring of volcanic activity and change of volcanic island by aircraft will be continued in the future.

### (v) Geospatial Information Authority of Japan initiatives

#### a. Improved observation and monitoring of volcanic activities

At active domestic volcanoes, continuous three dimensional crustal deformations are monitored by GNSS Continuously Operating Reference Stations (GNSS CORSs, continuous GNSS[Note 1] observation network called GEONET), automatic distance and angle measurement devices, and Remote GNSS Monitoring System (REGMOS). In addition, the GNSS observation data conducted by other institutions are integrated into the analysis to monitor the crustal deformation around volcanoes in more detail. Ground surface deformation is being monitored using SAR interferometry[Note 2], using data from the Advanced Land Observing Satellite-2 " DAICHI-2".

Figure II-7-2-12 Movements of Japan Archipelago Captured by Continuous Observation with GNSS




Source) Geospatial Information Authority of Japan

#### b. Development of geospatial information about volcanoes

Volcanic Base Maps that show details, such as a volcano's distinctive geographical features, are being developed and updated.

#### c. Research on natural disasters following volcanic eruptions

Research and development is being conducted to improve precision of observation by use of GNSS and SAR interferometry as well as to reveal the mechanism of volcanic activities by analysis of the abovementioned observation data.

## (4) Storm Surge and Coastal Erosion Measures

### (i) Promoting storm surge and high wave measure

A record storm surge occurred at Osaka Bay in 2018 caused by Typhoon Jebi, but previous development and maintenance and management of coastal levees, etc., prevented flooding in urban areas, which reaffirmed the importance of disaster prevention and preparedness. To protect human lives and assets from disasters caused by frequently occurring storm surges and high waves, we promote structural measures, such as development of coastal levees, and non-structural measures, such as the designation of coastal areas for which water levels pertaining to storm surges are publicly disclosed and areas vulnerable to inundation, in accordance with the Flood Control Act. As of April 30, 2019, probable inundation maps due to storm surge were designated in Chiba Prefecture (Tokyo Bay), the Tokyo Metropolis (Tokyo Bay), Kanagawa Prefecture (Tokyo Bay), and Fukuoka Prefecture (Genkai Sea).

Also, since distribution and industrial functions are concentrated in ports, in order to protect these areas from damage caused by storm surges, we will forward storm surge countermeasures in which port administrators and relevant people in companies that operate in ports cooperate, based also on the damage caused by Typhoon Jebi in September 2018.

Note 1 Global Navigation Satellite System
Note 2 Technology to monitor ground deformation with satellite data

### (ii) Promoting coastal erosion measures

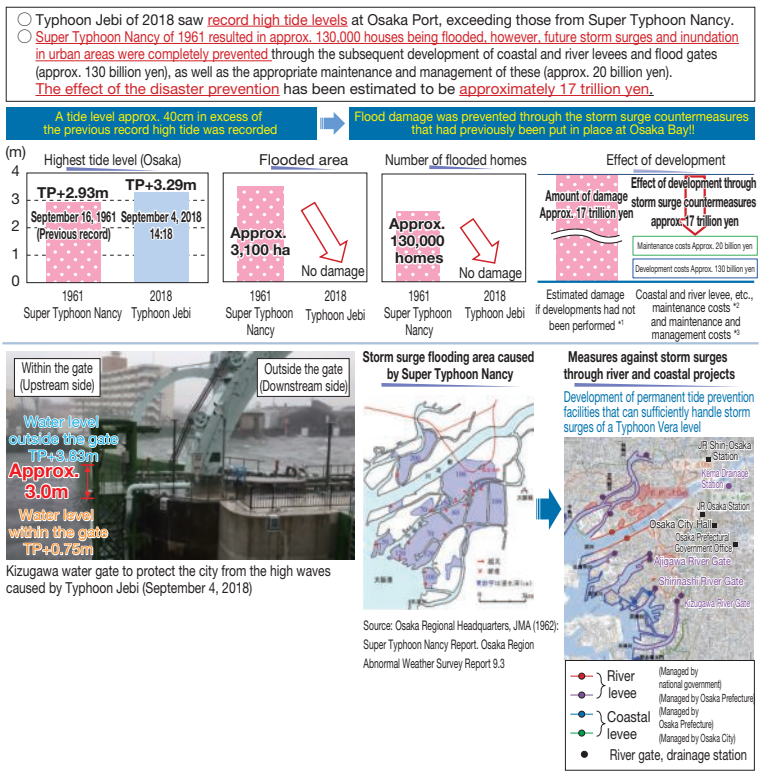
Since a variety of factors contribute to coastal erosion across the nation, the administrators of rivers, coasts, ports, and fishing ports are coordinating to implement erosion measures such as sand bypasses[Note 1] and sand recycling[Note 2].

### (iii) Providing disaster prevention information regarding storm surges

To enhance disaster prevention activities at municipalities, the Japan Meteorological Agency provides each municipality with storm surge warnings and advisories for individual municipalities.

Also, to assist victims and aid restoration efforts in regions that ground subsidence occurred following the 2011 Great East Japan Earthquake, an "Hourly Tide Level Calendar" consolidating astronomical tide level (forecast values for tide level) is published along with other information regarding storm surges.

**Figure II-7-2-13** Effect of the development of coastal levees for storm surges at Osaka Bay caused by Typhoon Jebi of 2018




Kizugawa water gate to protect the city from the high waves caused by Typhoon Jebi (September 4, 2018)

Source: Osaka Regional Headquarters, JMA (1962): Super Typhoon Nancy Report. Osaka Region Abnormal Weather Survey Report 9.3

## (5) Tsunami Countermeasures

### (i) Promoting tsunami countermeasures

In preparation for the large scale tsunami disasters caused by earthquakes, such as Nankai Trough Mega Earthquake, prevention measures through multiple defenses that combine structural and non-structural measures against the biggest tsunami based on the Act on Regional Development for Tsunami Disaster Prevention are being promoted through support extended to local governments for matters such as establishing tsunami inundation projections, creating risk maps, designating tsunami disaster warning areas, creating promotion plans, and drafting evacuation plans.

In addition, we established the consultation team which has consisted of departments in the Ministry of Land, Infrastructure, Transport and Tourism in order to support local authorities and promote their tsunami countermeasures.

In the tsunami countermeasures for coasts, we carry out structural measures such as constructing and earthquake-proofing seawalls with a tenacious structure that fulfills the function of reducing levee damage, consolidating floodgates and land locks, and enabling their automatic/remote operation. In addition, we are promoting non-structural measures such as establishing safe and reliable operation systems for floodgates and land locks. We have mandated the formulation of operating rules through the Management System Guidelines for Floodgates and Land Locks in Tsunami and Storm Surge Measures, which we revised in April 2016, we are attempting to create a management system that allows floodgates, etc., to be operated securely in the case of tsunami, with utmost priority being assigned to ensuring the safety of the site operators.

For tsunami countermeasures for ports and harbors, in order to maintain the harbor functions when a large-scale tsunami occurs, development of breakwater with a tenacious structure, creation of plans for elimination of obstacles in sea routes (reservation of sea routes in case of emergency), and other disaster prevention and mitigation measures are promoted. Also, we created the Hamaguchi Award, for individuals and/or organization that, have made significant scien-

Note 1 When the transport of sand is cut off by coastal structures, this construction method takes the sediment accumulated on the upper hand side to move and supply it to the lower hand side coast to restore sands.

Note 2 This construction method takes the sand accumulated on the coast along lower hand side of the flow and restores it to the upper hand side of the coast subject to erosion to restore sands.

tific or pragmatic contributions to the enhancement of coastal resilience against tsunami, storm surge and other coastal disasters, and have conducted activities to raise awareness related to tsunami disaster prevention.

Also, specified ports (87 ports) under the Act on Port Regulations have established Councils on Tsunami Measures for Ships to further improve tsunami countermeasures for ships at each of the ports with the cooperation of relevant organizations.

With respect to tsunami countermeasures applicable to roads, agreements have been concluded with local governments in tsunami-prone areas. To provide embankment as temporal evaluation locations, stairs and open spaces are developed for the evacuation purpose. Efforts to reinforce disaster prevention functions have also been made by developing a system of signs providing evacuation guidance and by providing user training to local residents.

Regarding tsunami countermeasures for airports, at airports likely to experience tsunami disasters, earthquake and tsunami evacuation plans and early restoration plans for protecting human life and securing transportation functions for emergency supplies and personnel promptly after the occurrence of a tsunami have been drafted; measures such as tsunami evacuation training in accordance with these plans, and the construction of a cooperative systems with the relevant organizations, etc., are being promoted.

Regarding tsunami countermeasures of railways, policies and concrete examples for ensuring the railway passenger safety when tsunami occurs were compiled based on the basic idea of evacuation from the largest class tsunami caused by the Nankai Trough Mega Earthquake etc. (speedy evacuation is the most effective and important measure, etc.), and the efforts of railway operators are prompted.

Additionally, the raising of river levees, liquefaction countermeasures, and preliminary preparations for post-earthquake town reconstruction are being advanced in areas at significant risk of flooding from a tsunami in order to prepare for the imminent arrival of a massive earthquake or tsunami.

## Column

### Preliminary Preparations for Post-disaster Town Reconstruction
### – Guidelines on Preliminary Preparations for Post-disaster Town Reconstruction –

In the Great East Japan Earthquake, a large-scale disaster, enormous damage was caused over extensive areas, and the municipalities affected by the disaster have had to devote a large amount of time and personnel to emergency measures and emergency restoration measures, such as rescues. From this experience, we identified the development of the basic data required for plan formulation prior to a disaster, securing personnel, and promoting preparation of a restoration system as key issues in order for municipalities to promptly obtain and properly proceed with post-disaster town reconstruction.

Given the awareness of the possible occurrence of a Tokyo Inland Earthquake and Nankai Trough Mega Earthquake, which would be large-scale disasters, it is more important than ever to understand the importance of preparing for reconstruction before something happens, in order for municipalities to engage in post-disaster town reconstruction afterward.

○ Formulation of the “Guidelines on Preliminary Preparations for Post-disaster Town Reconstruction”

The MLIT examined the preparatory measures that should be taken prior to a disaster in order for municipalities to engage in post-earthquake town reconstruction promptly and accurately, and formulated the “Guidelines on Preliminary Preparations for Post-earthquake Town Reconstruction” on July 24, 2018.

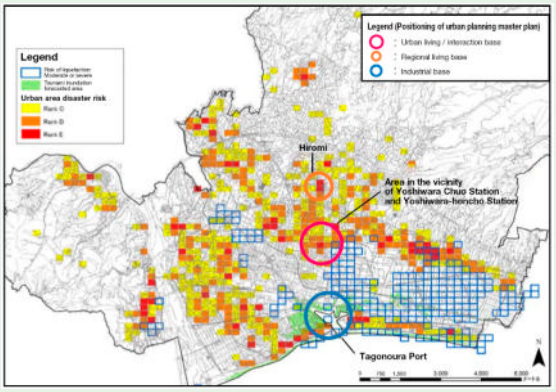
These guidelines prescribe the importance of five initiatives, namely prior examination of the reconstruction system, prior examination of reconstruction procedures, implementation of reconstruction training, prior development and analysis of fundamental data, and prior examination of reconstruction targets.

We anticipate that each local authority will proceed with preparatory efforts for reconstruction, including ongoing training of personnel who will be involved in reconstruction, in reference to these guidelines. “Guidelines on Preliminary Preparations for Post- disaster Town Reconstruction”

http://www.mlit.go.jp/toshi/toshi_tobou_fr_000036.html

○ Preliminary Preparations for Reconstruction in Fuji-shi, Shizuoka Prefecture

In Fuji-shi, Shizuoka Prefecture, preliminary preparations for reconstruction were established in the urban planning master plan, and in addition, a Fuji-shi Preliminary City Reconstruction Plan was formulated in March 2016. In this plan, the post-disaster city reconstruction targets and basic policies, etc., were presented in the Reconstruction Vision Edition. The initiatives for city reconstruction, such as the systems and procedures, were presented in the Reconstruction Process Edition, and the content and procedures, etc., for business to be conducted by government personnel in relation to city reconstruction were presented in the Action Manual Edition.




"From the Fuji-shi Previous City Reconstruction Plan (Reconstruction Vision)" (Overlay of future urban structure bases and damage characteristics in city plan master plans)

### (ii) Providing disaster prevention information regarding tsunamis

To prevent and mitigate disasters caused by tsunamis, the Japan Meteorological Agency (JMA) monitors seismic activities across the nation around the clock in order to make prompt and appropriate issuance for tsunami warnings/advisories and information. Based on the lessons learned from the tsunami disaster caused by the 2011 Great East Japan Earthquake, JMA made improvements to the tsunami warning system in March 2013. For example, the word "huge" for Major Tsunami Warnings was introduced as an expression of estimated tsunami height in the case of major earthquakes with magnitude 8 or more to emphasize that it is an emergency situation.

As of the end of March 2019, JMA monitors tsunamis with 214 Ocean-bottom tsunami meters, 18 GPS wave gauges, and 174 coastal tsunami gauges for issuance of tsunami information and update of tsunami warnings/advisories.

To facilitate tsunami countermeasures for vessels, the Japan Coast Guard was creating and publishing 171 tsunami information maps as of the end of March 2019, depicting behavior of tsunamis caused by the Nankai Trough Megathrust Earthquake or the Tokyo Inland Earthquake.

### (iii) Tsunami evacuation measures

Given concerns over tsunami damage occurring in the wake of Nankai Trough Mega Earthquake or any other massive earthquake that is expected to arrive sometime in the future, technical guidelines summarizing ways of properly allocating evacuation facilities based on the use of basic urban planning data were formulated and publicly disclosed in June 2013.

In ports, we are promoting to establish a tsunami evacuation plan and construct tsunami evacuation facilities by local governments or manager of port. Also, the Organization for Promoting Urban Development is assisting private enterprises develop distribution facilities that can be used for evacuation from tsunamis and other disasters. In 2016, our support was used to improve a distribution facility with an evacuation function in Yokkaichi Port — the first such instance in the country — creating expectations for a higher evacuation function of the port.

### (iv) Development of parks and greenery that effectively function to reduce tsunami damage

Taking the lessons learned from the Great East Japan Earthquake, "The Technical Guidelines for Development of Urban Parks Towards Reconstruction from the Great East Japan Earthquake" was put together in March 2012 for utilization by local government in evaluating town building for reconstruction in which parks and greenery is considered to have four functions, that of multi-layered defense; evacuation path and evacuation space; assisting restoration and reconstruction; and disaster prevention education, so the concept of planning and designing parks and greenery to realize disaster mitigation effects is presented.

#### (v) Tsunami countermeasures for government facilities

Government facilities act as the central facility for disaster emergency measure activities as well as temporary evacuation space and is something that contributes to the rescue of human lives, therefore securing necessary functions when tsunamis and other disasters occur is important.

In February 2013, the combination of structural and non-structural measures for tsunami countermeasures indicated by the "Basics of Ensuring the Function of Government Facilities in Preparation for Tsunamis, etc." prepared by the Council for Social Infrastructure will be used in coordination with the organizations that operate and maintain government facilities to promote integrated and effective tsunami countermeasures.

### (6) Earthquake Measures

#### (i) Improving the earthquake resistance and safety of housing and architecture

Based on the Act on Promotion of Seismic Retrofitting of Buildings, to achieve the goal of generally resolving housing with inadequate earthquake resistance by 2025, the publication of earthquake-resistance diagnosis results for buildings found to have insufficient earthquake-resistance has been made mandatory, and through this we have been aiming to promote increased earthquake resistance.

Regarding the earthquake-proofing of housing and buildings, support has been provided through the Social Capital Development Integrated Grant and other measures. In particular, the Comprehensive Support Menu, which is targeted at local authorities actively engaged in residential earthquake-resistance improvements, was created in FY2018, and is being promoted. In addition, since FY2013, for architectural structures requiring mandatory seismic diagnosis, intensive and emergency assistance is being implemented in addition to the usual support.

In regard to concrete block walls, etc., we have been disseminating safety inspection check points for owners, etc., since the 2018 Osaka Earthquake, and in addition, we have partially revised the Enforcement Order for the Act on Promotion of Seismic Retrofitting of Buildings, which has enabled mandating earthquake performance diagnoses on concrete block walls, etc., along evacuation route roadsides. Furthermore, we are promoting securing the safety of concrete block walls, etc., by providing support for the cost of earthquake diagnoses and the costs when removal, etc., is performed as a result of such diagnoses.

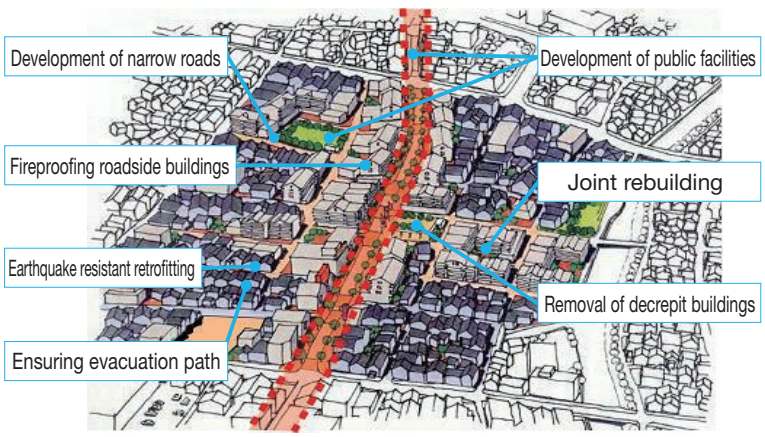
#### (ii) Promoting the earthquake resistance of housing land

In order to prevent damage caused to existing residential areas by landslides and ground liquefaction in the wake of a large earthquake, we are aiming to "visualize" the safety of residential land through the creation by the national government of basic maps, and in addition, we are providing support for conducting change-prediction surveys and prevention measures carried out by local governments in residential land earthquake-resistance promotion projects. Furthermore, in regard to the residential damage caused by landslides and ground liquefaction in the wake of the 2018 Hokkaido Eastern Iburi Earthquake, we are promoting taking measures under residential land earthquake-resistance promotion projects.

#### (iii) Implementing danger assessments for housing land in disaster-stricken areas

To prevent secondary disasters and ensure the safety of residents, frameworks are being developed in cooperation with the Disaster Stricken Housing Land Danger Assessment Liaison Council consisting of prefectures and designated cities to evaluate the degree of danger of housing land swiftly and accurately after disaster strikes.

Figure II-7-2-14 Development Illustration of Densely Built-Up Areas




Source) MLIT

#### (iv) Development to improve crowded areas

Development activity to rapidly improve crowded areas that are problem-

atic in terms of disaster prevention and the residential environment is a pressing matter to be generally resolved by ensuring a minimum level of safety for crowded urban areas that extremely dangerous in the event of an earthquake (4,450 hectares as of the end of FY2015) by FY2020 (densely built-up areas that are highly vulnerable in the event of an earthquake as of the end of FY2018: 3,149 hectares).

To realize this, fireproofing architectural structures along trunk roads to cut off fire paths and serve as evacuation paths in combination to form a skeletal disaster prevention axis (disaster prevention axis) and the development of disaster prevention parks to serve as evacuation areas, disaster prevention block improvement projects, and comprehensive urban residential projects will be used to eliminate decrepit architecture and joint rebuilding of fireproof architecture, expansion of narrow roads to improve evacuation and firefighting efforts.

#### (v) Securing open space

To improve disaster prevention functions and strive for safer and more comfortable town buildings, the development of disaster prevention parks is being promoted to serve as the center of restoration and reconstruction when earthquake disasters occur, center of disaster prevention as a relay hub for supplies, and as an evacuation area to protect the lives of evacuees form urban fires. A project for developing disaster-prevention parks and urban areas is being carried out to develop and upgrade disaster-prevention parks and urban areas in an integrated manner.

#### (vi) Promoting construction and improvement of government buildings as disaster prevention centers, etc.

It must be possible to secure the functions of government buildings as centers for disaster emergency response activities and to ensure the safety of people's lives. Accordingly, government buildings that do not meet the required seismic performance are being renovated for earthquake resistance, with the goal of making at least 95% of government buildings satisfy quake-resistance standards by FY2020. We are also promoting the construction and improvement of government buildings as disaster prevention centers, etc., in preparation for large-scale disasters, in cooperation with many parties concerned, including local governments.

#### (vii) Improving the earthquake resistance of public works facilities

For river works, earthquake resistance inspections are carried out and necessary measures are implemented so that levees, floodgates, and other river structures remain functional even under what is referred to as level 2 seismic movement.

For coastal works, earthquake resistance measures are promoted taking into account facility functions, degrees of importance of areas behind levees and other factors to prevent large-scale submergence of zero-meter areas due to damage to levees caused by earthquakes and to prevent the functions of levees and other protective facilities from being impaired before arrival of tsunamis when earthquakes such as Nankai Trough Mega Earthquake occurs.

For road works, to ensure smooth emergency and rescue activities, transportation of emergency supplies, and deployment of emergency transport essential to recovery efforts when earthquake disasters occur, we are conducting seismic strengthening of overpasses over emergency transport roads, bridges, including those supported by rocking columns, over these roads, and also removing utility poles by burying cables.

For port and harbor works, we are endeavoring to provide support for the enhanced quake resistance of privately owned port facilities as well in order to enhance the quake and tsunami resistance of port facilities and fortify industrial ports and harbors to encourage the formation of coastal disaster prevention bases that can serve as base for the transport of emergency supplies and deployment of support teams during a disaster, as we prepare for a Nankai Trough Mega Earthquake, a Tokyo Inland Earthquake, or any other large-scale earthquake.

For airport works, in addition to serving as the base of emergency transport when earthquakes and other disasters occur, seismic strengthening of government facilities to ensure necessary control functions and basic facilities that are absolutely essential is being implemented for airports considered important for maintaining air transport as well as the aviation network and ensuring the continuity of hinterland economic activity.

For railway works, in preparation for a Tokyo Inland Earthquake and Nankai Trough Mega Earthquake, we are promoting quakeproofing measures for major stations, elevated bridges, and other railway facilities, in order to maintain the railway network and ensure functioning as temporary shelters during earthquakes.

For sewage works, to ensure the functions required of sewers during earthquakes, disaster prevention, such as strengthening the earthquake and tsunami resistance of water pipeline infrastructure and water treatment facilities that connect

disaster prevention bases with treatment plants and disaster mitigation that aims to minimize damage in anticipation of disasters striking are being combined for the promotion of integrated earthquake measures.

#### (viii) Countermeasures against sediment disasters to large-scale earthquakes

In preparation for large-scale earthquakes such as Nankai Trough Mega Earthquake, implementation of effective sediment disaster countermeasures with combination of structural and non-structural measures are being promoted for the areas at risk of sediment disasters where important facilities and important transportation networks will be damaged and communities will be isolated by the landslides.

In the wake of a major earthquake, it will be important for us to collaborate with relevant organizations and entities, promptly ascertain disaster conditions, and properly carry out emergency measures. For this purpose, we are reinforcing ties to relevant organizations, carrying out practical training, and otherwise promoting the development of a crisis-management system.

#### (ix) Japan Meteorological Agency initiatives

To prevent and mitigate disasters caused by earthquakes, the Japan Meteorological Agency (JMA) monitors seismic activities in and around Japan, as well as crustal deformation in the Areas under Intensified Measures against Earthquake Disaster (Tokai Region), around the clock to provide Earthquake Early Warnings, Nankai Trough Earthquake and other earthquake information as promptly and accurately as possible.

With respect to Earthquake Early Warnings, improvements have been made to earthquake identification processing, etc., as countermeasures for overestimating seismic intensity when multiple earthquakes occur at the same time. In addition, in order to improve speed and forecast accuracy, preparations for the introduction of methods to make further use of ocean-bottom seismometers have been promoted.

With regard to long-period ground motion, information on the observation of long-period ground motion is provided on the JMA website. Furthermore, in anticipation of the practical use of forecast information, preparations for the promotion of use in society, such as conducting demonstration experiments, have been promoted.

#### (x) Japan Coast Guard initiatives

To investigate the physical processes of huge interplant earthquakes, seafloor geodetic observations are conducted at the Pacific Ocean, specifically along the Nankai Trough and the Japan Trench, where devastating earthquakes had repeatedly occurred and are assumed to occur in the future. The Japan Coast Guard is working to estimate the coupling on the plate boundary in the assumed source region. It also monitors terrestrial crustal movements in coastal areas and the Izu Islands with the continuous GNSS observation.

#### (xi) Geospatial Information Authority of Japan initiatives

##### a. Observing crustal movements and strengthening monitoring frameworks

Across the nation and earthquake disaster prevention measure regions, the monitoring of crustal movements is boosted by continuous GNSS observations at about 1,300 GNSS CORSs (GEONET) and leveling. Also, ground deformation is being monitored using interferometric SAR analysis with the “DAICHI-2” data.

##### b. Development of basic disaster prevention information

We are developing and updating location information of active faults as well as basic disaster prevention information related to the natural conditions of the land. This work is being conducted in the regions with the main active faults and in the regions where population and social infrastructure are concentrated.

##### c. Research on natural disasters resulting from earthquakes

From the results of geodetic observations, such as GNSS, SAR interferometry and geodetic leveling, the mechanism of earthquake occurrence is being elucidated and research is being conducted to improve observations and analysis. We are conducting research and development work and evaluations as concerns the rapid provision of information during disasters through analytical processes that combine basic geospatial information corresponding to Japanese territory and earthquake intensity. Additionally, for exchanging information on surveys, observations and research outcomes regarding

earthquake prediction between relevant government organizations and universities, as well as to conduct academic deliberations based on this, the Coordinating Committee for Earthquake Prediction is operated. Moreover and for research on crustal movements, the Coastal Movements Data Center is being operated in order to gather, archive, and provide tidal records observed by relevant government organizations.

#### (xii) Measures for stranded commuters

If a major earthquake were to strike a major metropolitan area, it is expected that urban functions would become paralyzed and that there would be more stranded commuters than when the Great East Japan Earthquake happened. Thus, in order to ensure the safety of people in areas where there is a concentration of people and urban functions, plans for promoting urban reconstruction and ensuring safety was established in 2012. In areas subject to Urban Renaissance Emergency Development Areas (fifty-five areas nationwide as of the end of March 2019), efforts are being undertaken to improve urban disaster preparedness through public-private partnerships by way of the production of plans for promoting urban reconstruction and ensuring safety, the conclusion of agreements concerning facilities for promoting urban reconstruction and ensuring safety, and the easing of various regulatory constraints. Comprehensive support for the production of plans for promoting urban reconstruction and ensuring safety and for both structural and non-structural elements based on such plans is being provided through projects for ensuring and promoting urban safety for which areas around key stations are also regarded as areas subject to aid. In addition, in order to secure beforehand the capacity to handle stranded commuters as an urban function, we are supporting the development of disaster prevention bases through a program for urgent promotion of reinforcement of disaster bases, with areas around major stations as those subject to a subsidy.

#### (xiii) Ensuring business-continuity functions in the event of a disaster

In areas serving as business hubs for large cities, in order to accumulate world-class business functions and residential functions, and to attract global investment and human resources, it is necessary to overcome the vulnerability to disasters that is a weakness of Japan's major cities.

Therefore, as a means to enhance the capacity to respond to disasters, for the construction of business continuity areas for which the stable supply of energy required for the continuation of business at the time of disaster has been secured, we are promoting the development of area-wide energy networks.

#### (xiv) Safety and security measures for the underground malls

Underground malls serve as important public spaces within the city, but there are concerns that evacuees will be disordered when a large-scale earthquake occurs along with the fact that facilities are aging, therefore, a guideline was created on safe evacuation measures for underground malls to promote disaster prevention measures for the safe evacuation of users and others.

### (7) Snow Damage Measures

#### (i) Securing winter road transportation (snow and cold weather works)

In accordance with the Act on Special Measures concerning Maintenance of Road Traffic in Specified Snow Coverage and Cold Districts, to secure stable road traffic during the winter season in snow coverage and cold districts, we are promoting projects for removing snow, preventing snow, and snow and frost damage on roads (snow and winter works). In addition, as means to strengthen snow removal systems, we have established the Information Communication Headquarters, have formulated timelines in partnership with the relevant road administrators, etc., have gained a prior understanding of the areas in which standstills are likely to occur, have secured and appropriately placed the necessary snow removal equipment, and have promoted the execution of contracts between the relevant organizations and private companies for application at times of disaster. In order to minimize the impact on the function of the overall road network in the case of unusual snowfall, etc., in particular, we will make emergency announcements in the case of heavy snow, will encourage drivers to stop driving or to take wide detours, etc., and in addition, will conduct intensive snow removal through road closures and will implement chain regulations.

Furthermore, we are promoting the timely and appropriate provision of information to road users, etc., through the use of road information provision equipment and Twitter, etc.

### (ii) Avalanche disaster measures in heavy snowfall regions

In Japan, 21,000 areas are prone to snow avalanche and the development of avalanche prevention facilities is being promoted to protect human lives from avalanche disasters in settlements.

## (8) Sophistication of Disaster Prevention Information

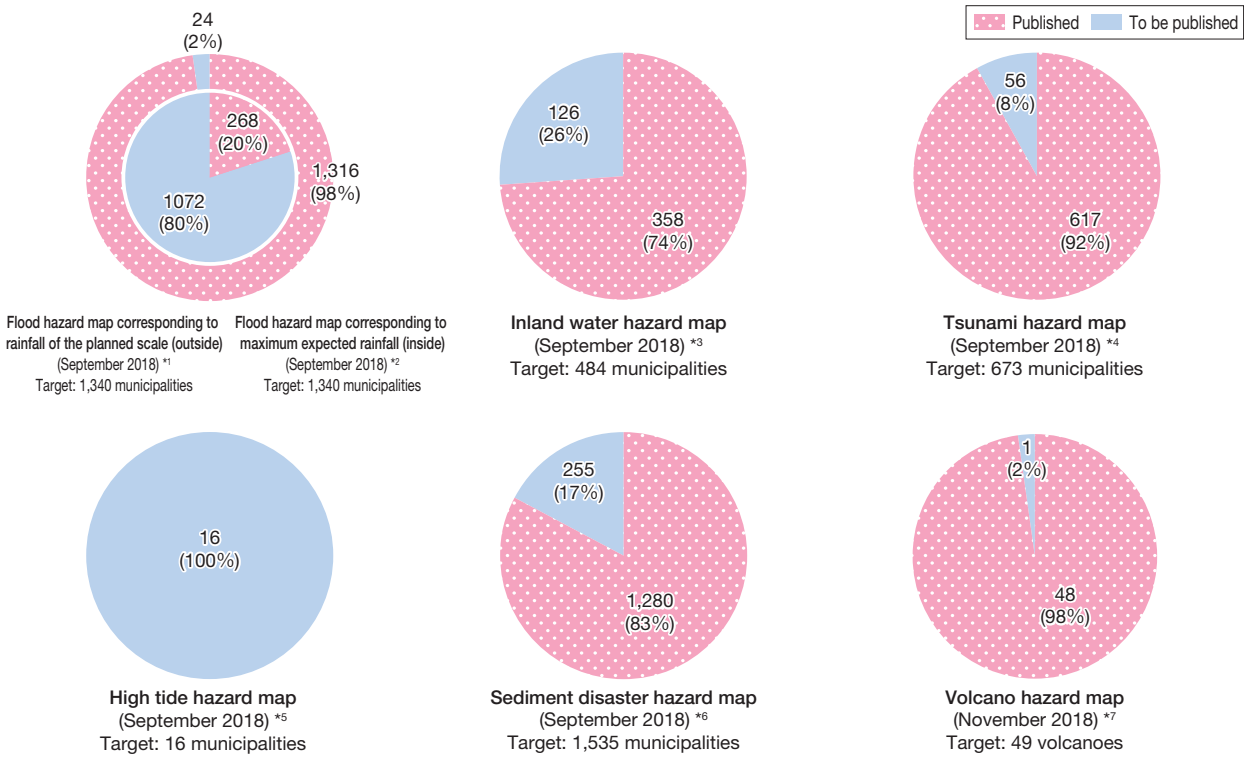
### (i) Aggregation of disaster prevention information

The "MLIT Disaster Prevent Information Center"[Note 1] enables citizens to easily obtain and utilize disaster prevention information by aggregating and providing information available such as rainfall as well as provide a comprehensive array of information on disaster responses and disaster prevention from a single source.

### (ii) Development of hazard maps

In order to enable residents to take appropriate evacuation actions when a disaster strikes, we are promoting the production of hazard maps by municipalities and their dissemination and use by residents, as well as opening an Internet portal site that allows users to browse hazard maps developed by municipalities across the country[Note 2].

**Figure II-7-2-15** Present Status of Hazard Map Development




*1 Of the municipalities that have been designated as expected flood inundation areas based on Article 14 of the Flood Control Act, municipalities that have published hazard maps pursuant to Article 15 Paragraph 3 of the Flood Control Act (includes special wards)
*2 Municipalities that have published a flood hazard map responding to the highest expected rainfall (includes special wards)
*3 Of the municipalities that require prompt formulation, such as those that have suffered significant flood damage in the past, municipalities that have completed publication
*4 Of the coastal municipalities and the inland municipalities included in the tsunami inundation forecasts based on Article 8 of the Tsunami Disaster Prevention Community Development Act, municipalities that have published a tsunami hazard map
*5 Due to the first designation of coastal areas with known water levels in FY2018, the total of municipalities that have been designated as storm surge inundation areas based on Article 14-3 of the Flood Control Act, and that have published a hazard map pursuant to Article 15 Paragraph 3 of the Flood Control Act
*6 Of the municipalities that have designated sediment disaster warning zones, municipalities that have published a hazard map pursuant to Article 8 Paragraph 3 of the Sediment Disasters Prevention Act (includes special wards)
*7 Of the volcanoes for which a volcano disaster prevention committee has been established based on Article 4 of the Active Volcano Act, volcanoes for which a hazard map with the prescribed matters for consultation has been published (Cabinet Office survey)
Source) MLIT

**Note 1** "MLIT Disaster Prevention Information Center" web site: http://www.mlit.go.jp/saigai/bosaijoho/
**Note 2** "MLIT Hazard Map Portal Site": http://disaportal.gsi.go.jp/

#### (iii) Improvement of disaster prevention weather information

In order to prevent and mitigate weather disasters, the Japan Meteorological Agency issues emergency warnings, warnings, advisories , and weather information, etc., and warnings and cautions in stages. The Agency also provides Real-time Risk Map , etc., for heavy rain and flood warnings, which can be used to forecast and check on a map where the risks are heightened in real time. Landslide Alert Information and flood forecasts for designated rivers are jointly issued by the MLIT, prefectural governments and the Agency.

In response to recommendations received in July 2015 from the Meteorological Subcommittee of the Council of Transport Policy, in May 2017 the Agency started providing Probability of warnings and, in July 2017, it started providing Real-time Risk Map for heavy rain and flood warnings.

In addition, based on July 2018 heavy rain, in order for the sense of danger to be properly conveyed to residents and society in the case of heavy rain being forecast, and to lead to disaster prevention activity such as evacuations, further improvement measures have been compiled in regard to the method for conveying disaster prevention weather information, in close cooperation with the river and erosion and sediment control agencies, etc. (refer to 7-8 Column: Committee for Examining Method for Conveying Disaster Prevention Weather Information).

### (9) Strengthening the Crisis Management System

Initial response systems have been established to respond to natural disasters, including forecasting natural phenomena that could lead to a disaster, rapid collecting of information, conducting inspections and emergency rehabilitation of facilities during disasters, rescue operations at sea, and supporting affected local governments. In order to increase disaster response capabilities, further expedite and enhance disaster responses, such as strengthening the system for collecting and sharing information during the initial response to a disaster by Integrated Disaster Information Mapping System (DiMAPS).

#### (i) Disaster response by TEC-FORCE (Technical Emergency Control Force)

In order to respond to the occurrence or likelihood of large-scale natural disasters, the TEC-FORCE was established in April FY2008 and is available for deployment to smoothly and rapidly implement technical support in carrying out various emergency disaster measures such as assessing the extent of the disaster, preventing expansion of damage, and rapid recovery of affected areas. In FY2018, TEC-FORCE dispatched members who rendered approximately 17,000 man-days of service to the municipalities that sustained damage as a result of numerous natural disasters, including the July heavy rain and the Hokkaido Eastern Iburi Earthquake. It provided support for the early recovery and restoration of disaster-hit areas, including promptly ascertaining and surveying the disaster situation, implementing measures to prevent secondary disasters, and aiding in emergency drainage and road reopening, etc.

##### (a) Dispatch for July 2018 heavy rain

TEC-FORCE rendered 11,673 man-days of service (from July 3 to September 21), and was involved in surveying the disaster situation and the disaster emergency response. In Mabi-cho, Kurashiki-shi, Okayama Prefecture, which incurred large-scale flood damage, TEC-FORCE deployed 23 drainage pump vehicles, and conducted around the clock emergency drainage in order to roughly eliminate approximately 1,200 ha of flooding in three days. In addition, TEC-FORCE supported the removal of the sediment, driftwood, and debris, etc., that had accumulated in urban areas, and on roads and rivers.

##### (b) Dispatch for the Hokkaido Eastern Iburi Earthquake

TEC-FORCE rendered 3,064 man-days of service (from September 6 to October 15), and was involved in surveying the disaster situation and the disaster emergency response. At the Azuma River, which was blocked by sediment inflow, TEC-FORCE dispatched remote operation backhoes from across the country, and conducted sediment removal around the clock to complete removal of the sediment in 10 days. In addition, TEC-FORCE was involved in city and town road reopening and emergency restoration work, etc., and quickly ensured that emergency vehicles, etc., were able to reach the disaster-affected areas.

### (ii) Strengthening business continuity systems

In order to implement disaster prevention services without delay in the case of a Tokyo Inland Earthquake, the Ministry of Land, Infrastructure, Transport and Tourism Business Continuity Plan (Fourth Edition) was compiled in May 2018. Furthermore, the operational continuity framework is being strengthened through such measures as annual emergency staff assembly drills based on the scenario of a Tokyo Inland Earthquake.

### (iii) Deploying information and telecommunication systems and machinery in preparation for disasters

To secure information communication systems in the case of a disaster, the MLIT headquarters, Regional Development Bureau, and related organizations are connected with a highly reliable information communication network consisting of microwave networks and optical fibers, in addition to satellite communication channels to strengthen the system for gathering information from the disaster site, are used to create a high mobility system. Also, in order to respond disasters rapidly, the development of helicopters, satellite communication vehicles, pump vehicles, lighting vehicles, and other disaster response machinery are being developed at Regional Development Bureaus across the nation, so that in the event of a large-scale disaster, the framework will be able to execute rapid development. During the disasters that occurred in FY2018, this disaster response machinery was dispatched to afflicted areas and helped with recovery operations.

### (iv) Implementing practical and wide-area disaster prevention drills

In order to increase capabilities the capability to cope with flood disasters in cooperation with construction-related organizations, etc., with which contracts for response at times of disaster have been executed, such as flood fighting teams, Regional Development Bureaus implement practical drills in Flood Fighting Drill, including conducting flood fighting operations according to the situation, information transmission, and emergency rehabilitation while considering the timeline in a large-scale flood disaster. In addition, the first large-scale training session conducted under the assumption of the announcement of "(Provisional) Information on a Nankai Trough Earthquake" was held, in which the MLIT, the Japan Meteorological Agency, various Regional Development Bureaus, and the Transportation and Housing Bureau, etc., participated. Training was also held on Disaster Prevention Day (September 1), and emergency disaster response headquarters operation training was conducted under the scenario of a Tokyo Inland Earthquake, while roadway reopening training, etc., was conducted at the Regional Development Bureaus under the premise of a Tokyo Inland Earthquake and Nankai Trough Megaquake. Such activities had the objective of improving the capacity to respond to a large-scale earthquake. Furthermore, on Tsunami Disaster Prevention Day and World Tsunami Day (November 5), related organizations, local residents, and foreign exchange students, etc., participated in comprehensive drills for a large-scale tsunami disaster, which included evacuation training, emergency drainage training by TEC-FORCE, and roadway reopening training, etc., conducted with the goal of improving the capacity to respond to tsunamis. In addition, announcements were sent around the world about Japan's disaster prevention knowledge and technology.

### (v) Disaster responses by the Japan Coast Guard

At the Japan Coast Guard, taking advantage of mobility even in cases where disaster does not extend to the sea, rescues including patrol vessels, aircraft, and special rescue teams are carried out around the clock, and after the occurrence of a disaster, human rescue and coastal area disaster situation surveys, etc., are conducted immediately. In addition, support is provided for collecting information and assisting disaster victims by dispatching coast guard officers to affected municipal governments, etc.

In July 2018 heavy rain, searches were conducted for victims and missing people; patients and physicians were transported; floating marine debris was collected; information was provided through navigation warnings; cargo was transported to isolated areas and areas without water; and support was provided to restart the water supply.

In Typhoon Jebi, there were numer-

Figure II-7-2-16 Situation of disaster response by Japan Coast Guard

Transportation of people needing rescue by aircraft

Support for water supply by patrol vessel

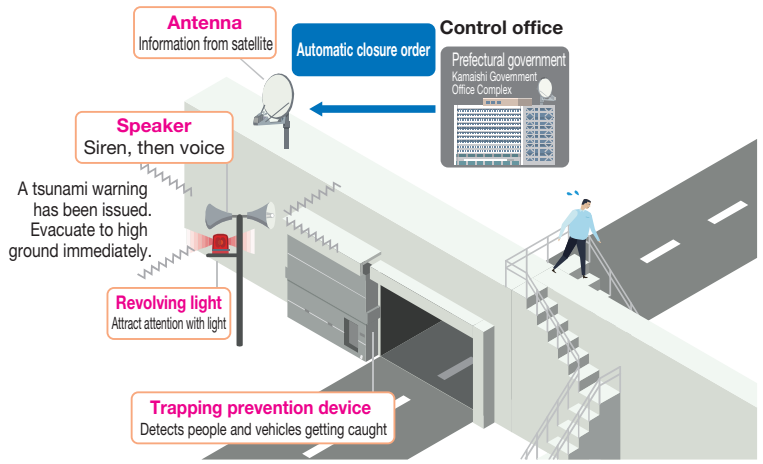
ous maritime disasters, including a ship colliding with the Kansai International Airport Communication Bridge, a container floating away at Hanshin Port, and numerous old vehicles catching fire, etc.; assistance was provided through such acts as airlifts from marine accident vessels, collecting spilled containers and by as providing information through navigation warnings, as well as fire extinguishing activities.

Following the Hokkaido Eastern Iburi Earthquake, in addition to surveying the damage situation and searching for victims and missing people, physicians and other necessary personnel were transported at the request of the Japanese Red Cross Society; Technical Emergency Control Force (MLIT) (TEC-FORCE) personnel were transported, and support for power supply for cell phones, etc., using patrol vessels was conducted.

### (10) Management of Existing Stock with ICT (Information and Communications Technology)

An optical fiber network is being used to enable the management of public facilities and the sophistication of crisis management by taking advantage of ICT (Information and Communications Technology). Specifically, measures are being promoted for safe road use, such as by providing disaster information through the Internet. Also, in addition to remote control of floodgates and the remote monitoring of river flow conditions and volcanic regions, sewage treatment plants and pump stations are connected with optical fibers for remote monitoring and control as well to make management more sophisticated.

Figure II-7-2-17 Conception of Automatic Closure System for Floodgates and Land Locks, etc. (Iwate Prefecture)




Source) Iwate Prefecture

In addition, in order to safely, quickly, and reliably close floodgates and land locks in response to a disaster caused by a tsunami, we provide support through subsidies for disaster preparedness and safety by enabling automation and remote control of floodgates and land locks through the use of satellite communications, etc.

### (11) Disaster Recovery of Public Works Facilities

Damage caused to public civil-engineering facilities under the jurisdiction of the MLIT (including rivers, Sabo structures, roads, coastal areas, sewage systems, parks, and ports) in 2018 is reported to have totaled approximately 736.4 billion yen (at 28,687 sites) due to the frequent occurrence of disasters nationwide, including the earthquake with the epicenter in Northern Osaka in June, the heavy rain associated with the seasonal rain front, which centered around July 2018 heavy rain (Western Japan Heavy Rain), Typhoon Cimaron of August, Typhoon Jebi of September, the 2018 Hokkaido Eastern Iburi Earthquake, and Typhoon Trami of October.

In response to the damage caused by these natural disasters, technical advice, including recovery policies and construction methods, as well as other forms of support for affected local governments were provided. These included dispatching TEC-FORCE to local areas immediately after each area was hit by a disaster to eliminate obstacles from roads at an early stage, thereby allowing for prompt assistance and rescue, assisting with lifeline restoration, and conducting damage surveys.

Previously, in order to help local governments dealing with especially heavy damage recover quickly, we would consult with the relevant organizations for each disaster individually about improving the efficiency of various disaster assessments (such as raising the maximum amount for paper-based assessments, raising the limit on money immediately available for disaster recovery, and simplification of design documentation) and about implementing those measures in order to accelerate disaster recovery. In addition, in order to prepare for quicker recovery and reconstruction of afflicted regions following the large-scale disasters that are anticipated to occur in the future, we predetermined how to streamline disaster assessments and, in 2017, we put into effect a policy that will start the streamlining immediately after the govern-

ment decides that it anticipates designating an event as a major disaster; this was first applied by the MLIT for July 2018 heavy rain (Western Japan Heavy Rain), and was also applied at the time of the 2018 Hokkaido Eastern Iburi Earthquake.

Furthermore, in July 2018 heavy rain, in partnership with the Ministry of the Environment, we introduced a scheme for the bulk removal of debris and sediment deposited on residential land, and through this and other close coordination with related organizations, we sped up the removal of sediment, etc., being performed by municipalities. In addition, we provided support for prompt assistance and rescue activities and lifeline restoration by promptly clearing roads, and conducted traffic management in partnership with relevant organizations, including improving emergency intersections and establishing dedicated bus lanes, to secure school and work commutes and logistics functions.

Additionally, emergency funds for disaster countermeasures were allocated to 51 areas that were damaged by natural disasters, including torrential rain associated with the Heavy Rain Event of July 2018 and Typhoon Jebi, and other such weather events, in order to carry out disaster prevention measures to ensure the safety and security of residents.

With respect to roads damaged in the 2016 Kumamoto Earthquake, restoration of National Route 57 is advancing with the north side restoration route and, through national government agency in accordance with the Road Act and the Act on Large-scale Disaster Restoration, restoration work is continuing on Aso Ohashi Bridge on National Route 325, Kumamoto- Takamori Prefectural Road, and Tochinoki-Tateno Village Road.

### (12) Promoting non-structural Measures Including Information and Public Relations for Safety and Comfort

To ensure safety and comfort, non-structural measures were promoted in addition to structural measures for natural disasters and the status of progress was subject to annual inspections in accordance with the "MLIT General Framework of Non-structural Measures Promotion for Safety and Comfort", however, the Great East Japan Earthquake brought to light the need for congruent and integrated evaluations of structural and non-structural aspects and currently deliberations are in progress following the re-evaluation of the Social Capital Improvement Priority Plan/MLIT Disaster Prevention Operation Plan.

## 3 Secure Transportation Systems Resistant to Disasters

### (1) Ensuring Redundancy and Substitutability

Rails, ports, airports, and other facilities are being made disaster resistant and an emergency transport framework for rescue, restoration activities, business continuity is being established to ensure redundancy and substitutability efforts are being made to secure the safety of users.

The road network is necessary to overcome weakness in terms of disasters, such as a community's susceptibility to becoming isolated by a disaster, and we will carry out improvements systematically.

**Column**

### Effects of Expansion of Expressways to Four Lanes

1. Damage Situation on Expressways

In the July 2018 heavy rain, there was record rainfall in major areas of the Kyushu, Chugoku, Shikoku, Kinki, and Tokai regions. Twenty-four expressways were damaged, and roads closed due to the disaster equaled approximately 700 km. At Sanyo Expressway, which is the aorta for the east and west, a large volume of sediment and driftwood flowed from outside of the road area and blocked the road in multiple locations between the Hongo IC and Hiroshima East IC in Hiroshima Prefecture. In addition, at the Kochi Expressway, huge damage was caused by the upstream bridge superstructure being swept away due to landslides from slopes along the road between the Shingu IC and Otoyo IC.



2. Effects of Expansion of Expressways to Four Lanes

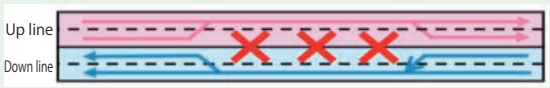
The expressways needed to be reopened as quickly as possible and smooth traffic needed to be secured in order to rescue people during the disaster and to transport relief supplies to the affected areas.

At Sanyo Expressway (between Kochi IC and Hiroshima IC), which had been rendered impassable by sediment and driftwood flowing onto the main roadway, by prioritizing the opening of one lane of the two lanes, it became possible to use the road to transport cargo to convenience stores, etc., three days after the disaster, and to open the road to general vehicles after seven days.

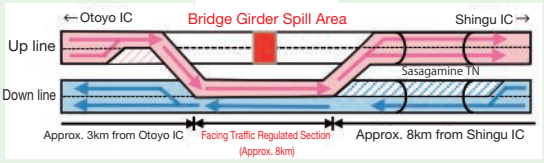
In addition, in regard to the Kochi Expressway, where the upstream bridge superstructure had been swept away, since it had been a four-lane road, it was possible to secure traffic function within one week after it was closed by reversing the traffic direction of the undamaged outbound lanes.

In this manner, during the damage caused by the heavy rain, we were able to secure quick emergency recovery, and to secure the transport function promptly, thanks to the expressway having had four lanes.

Priority clearing of one lane on one side of Sanyo Expressway


Two-way traffic using Kochi Expressway down line


## (2) Road Disaster Prevention Measures

To support the emergency lifesaving and restoration assistance activities in the event of large-scale disasters, development of missing links for securing substitutability, disaster measures (measures for slopes, embankments, etc.), earthquake disaster measures (seismic reinforcement, etc.), and snow/cold region measures (development of anti-snow facilities) are being promoted. Additionally, supplementing traffic facilities with disaster prevention functions (turning Michi-no-Eki, service and parking areas into disaster prevention bases, as well as developing emergency lines of communication and fire escapes) were promoted. Disaster alliances with private sector businesses to implement swift road openings are concluded, and a council for road administrators to create a framework that keeps roads open was established. In addition, based on the Disaster Countermeasure Basic Act amended in November 2014, development of the system and equipment that allow road administrators to smoothly move vehicles for swift removal of road obstacles is being promoted.

Also, in addition to motorcycle squads, cameras, and UAV (unmanned aerial vehicles), big data such as ETC 2.0 probe information and private probe information are used, and information is shared and provided to the related organizations in the form of a "passable map".

Additionally, in order to support rapid emergency lifesaving activities and transportation of emergency relief goods during disasters, based on the amendment of the Road Act in March 2018, a substitute road system for disaster recovery and the reopening of roads was introduced by the Government for Logistically-Important Roads and their alternative / complementing roads.

Meanwhile, for regions that sustained devastating damage from the tsunami caused by the Great East Japan Earthquake, road development is being carried out as part of urban area development prioritized in the recovery plan and the development of access roads to expressway interchanges is being promoted. Additionally, as one measure to reduce tsunami damage, sea level indicator sheets are being added to road signposts to promote the provision of sea level information to road users.

### (3) Accelerating Removal of Utility Poles

Pursuant to the Removal of Utility Poles Promotion Plan (decided by the MLIT Minister in April 2018) and the Three Year Emergency Measures for Disaster Prevention, Mitigation, and the Strengthening of National Resilience (determined by the Cabinet Office in December 2018), we are promoting the removal of unnecessary utility poles in order to prevent the expansion of damage at the time of a disaster on emergency transport roads, etc. In addition, we are implementing measures prohibiting the new installation of utility poles near emergency transport roads, as well as special measures on property tax.

### (4) Disaster Prevention Measures for Various Transportation Modes

For railways, in an effort to ensure safe and stable railway transport that is resilient to disasters, subsidies are provided to partially cover the costs of disaster prevention projects carried out by passenger rail companies, including rockfall and avalanche measures as well as countermeasures conducted by the Japan Railway Construction, Transport and Technology Agency (Incorporated Administrative Agency) against deformation that has occurred in pilot and service tunnels of the Seikan Tunnel, which has been open for 30 years.

In addition, in order to ensure the safety of iron tracks from sediment damage, etc., we are taking the action necessary to secure railway transport that is safe and resistant in the face of disaster, such as by conducting inspections on tunnels, snow covers, rock covers, and other disaster prevention facilities, etc., maintaining snow removal systems, and conducting the appropriate monitoring, etc., of lines if there is a concern of hindrance being caused to the passage of trains in the case of disaster.

Furthermore, as there have been many major disasters that have a serious impact on the region in recent years, we have conducted emergency inspections of key infrastructure under the instruction of the Prime Minister, and on the railways have put together (i) river bridge runoff and slope measures, (ii) measures to prevent sediment flowing in from slopes, (iii) measures to prevent flooding at underground stations and at power supply facilities, etc., and (iv) measures to respond to the destruction and damage of viaducts, as well as bridge collapses and girder gaps, caused by earthquakes. Based on this, the Three-Year Emergency Measures for Disaster Prevention, Mitigation, and the Strengthening of National Resilience will be implemented over a concentrated three-year period from FY2018 to FY2020. In addition, to help pay for these measures, it has been decided to add heavy rain measures to the railway facility general safety measure project cost grant, and to provide support for part of the costs required for these measures.

In regard to support for the restoration of damaged railways, the Railway Track Development Act was revised by legislative law in June 2018, and has relaxed some items, such as by making both unprofitable and profitable railway companies eligible for subsidies as long as certain requirements are met. Based on this revised law, support was provided for the restoration costs of the JR Tadami Line, which was damaged by the heavy rain in Niigata and Fukushima during July 2011.

In addition, following the earthquake that had an epicenter in northern Osaka Prefecture, we promoted initiatives for the early rescue of passengers on trains stopped between stations. Furthermore, in regard to the planned outage measures, etc., taken by railway operators in preparation for the arrival of the typhoon, we held a Railway Planned Outage Verification Meeting to improve information sharing by the parties concerned and to verify methods for future planned outages, and issued an interim report.

For ports, in light of the lessons of the Kumamoto Earthquake, a system was established in June 2017 for the national government to administer port facilities based on a request from the port authority during an extraordinary disaster. A large quantity of driftwood and other debris was deposited during July 2018 heavy rain, and due to shipping routes and harbors having been obstructed, etc., by this debris, under this system, and at the request of Kure City, which is the port manager, the national government took control of some of the port facilities at the Kure Port, and promptly collected the drifting materials, etc. Efforts are being made to strengthen disaster preparedness by conducting disaster prevention drills, etc., based on this system and ports' BCPs in cooperation with parties concerned.

For airports, we are examining measures for securing the air network even in the case of a large-scale natural disaster, based on the damage that was caused at airports by Typhoon Jebi of 2018 and the 2018 Hokkaido Eastern Iburi Earthquake, and are promoting non-structural measures such as reconstruction of airport BCPs and structural measures such as flood prevention measures, with the objective of the maintenance and restoration of air transport function, including access traffic.

## Column

### Initiatives for the restoration of railways in light of the increased frequency and severity of disasters

In recent years, a succession of natural disasters across the country has caused enormous damage to the railway network, and as of January 2019, 11 lines had been closed by 6 operators.

At the MLIT, in cases where prompt recovery is difficult through the use of only one's own resources, we are promoting prompt recovery by assisting with the recovery costs, based on the Railway Track Development Act. In addition, we have provided individual support in accordance with the scale of the disaster and the management situation, such as in the case of the Sanriku Railway, which was damaged during the Great East Japan Earthquake. However, moving forward, we will create a new support system in order to provide strong support for the restoration of railways severely damaged by disasters, such as in the case of the Great East Japan Earthquake and the Kumamoto Earthquake.

In this system, for routes that meet certain conditions concerning the scale of the disaster and changes to business structure in order to make the business sustainable after restoration, in the event of a railway company in a difficult management situation suffering an extraordinary and severe disaster, the national and local governments will bear half of the costs each. (Under the current system, generally speaking the national government bears a quarter of the costs, the local government bears a quarter of the costs, and the railway company bears half of the costs.)

Furthermore, the Railway Track Development Act was amended in June 2018, and allowed for assistance to be provided for non-profitable lines at profitable companies that have encountered large damage from a disaster or other particularly extensive disaster damage, in addition to non-profitable lines at non-profitable companies, and a system was added where the support rate is boosted if certain requirements are met.

Furthermore, in relation to restoration construction work, with the goal of speeding up the restoration of railway facilities damaged in July 2018 heavy rain to just one day, a Liaison Committee for Railway Restoration, comprising the various parties concerned, was established, and the resumption of service of disaster-affected railroads ahead of schedule was achieved through partnerships and coordination with the related road and river, etc., businesses.

○ For the prompt restoration in one day of railway facilities damaged during July 2018 heavy rain, a Liaison Committee for Railway Restoration, comprising related parties, was established, and cooperation with business related to roads and rivers, etc., enabled coordination with the damaged railway restoration work schedule.

**Liaison Committee for Railway Restoration**

○ Members
MLIT-related departments (Minister's Secretariat, Water and Disaster Management Bureau Road Bureau, Railway Bureau), railway operators

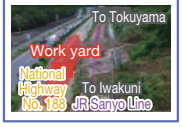
○ Cases of early restoration

**JR Sanyo Line (Between Mihara and Shiraichi) Resumed operation: Mid-November → September 30**

The parallel Prefectural Road No. 33 and the Numata River site were provided as a construction work yard, etc., for railway restoration work.


**JR Sanyo Line (Between Yanai and Kudamatsu) Resumed operation: End of September → September 9**

Of the four lanes of the parallel National Highway No. 188, two lanes were provided as a yard for railway restoration construction work.




**JR Kure Line (Between Kure and Saka) Resumed operation: Mid-November → September 9**

The sediment on the railroad was collected and removed by NEXCO West Japan. The Route 31 site was provided as a temporary sediment storage area.


Source) MLIT

### (5) Building a Smooth Support Materials Transportation System

If a broad, large-scale disaster occurs, such as a Tokyo Inland Earthquake or Nankai Trough Megaquake, and disruption is caused to the logistics system, it is expected there would be an enormous and wide-ranging impact on the lives of the people and economic activities.

In addition, in order to maintain the lives of the people affected by disaster, it is important to deliver the necessary relief supplies promptly and reliably; we have analyzed issues and causes with a focus on the Last Mile, based on issues that were revealed in the 2016 Kumamoto Earthquake, etc., such as the confusion surrounding Last Mile transportation, have examined measures to take for those issues, and have formulated and spread awareness of the "Last Mile Relief Supply Transportation and Base Opening and Operation Handbook" for local municipal organizations.

## Section 3 Ensuring the Safety of Architecture

### (1) Securing Trust for the Production and Supply System for Housing and Buildings

After the amended Building Standards Law went into effect in 2007, the building confirmation process became backlogged, leading to a large decrease in the number of building confirmations; therefore, in light of this, the operation of building confirmation procedures was improved on two occasions in 2010 and 2011 to speed up the building confirmation review and simplify the application documentation among other improvements.

The Minister of Land, Infrastructure, Transport and Tourism inquired the Panel on Infrastructure Development about the ideal for future standards policies in August 2012, and review was proceeded on the items that were requested most for review by priority at the Building Standards Sub commission established at the Building Subcommittee of the same Panel in September of the same year. Of this, regarding the scheme for promoting the seismic resistance of housing and buildings, the first findings were compiled in February 2013 and based on this the revised Law for Partial Amendments to the Act for Promotion of Renovation for Earthquake-Resistant Structures of Buildings was enacted in November 2013.

Also, regarding the ideal standards regarding wood structures and ideal efficient and practically implementable confirmation and inspection regulations the second report was compiled in February 2013. Accordingly, the Act to Partially Amend the Building Standards Act came into force in June 2015.

As measures pertaining to Kenchikushi (architects and building engineers), in order to secure the stability and sustainability of Kenchikushi responsible for improving the quality of buildings as well as safety and security in the future, we have worked on initiatives for the enforcement of the Act to Partially Amend the Kenchikushi Law, which was promulgated in December 2018.

Additionally, when defects are discovered in new houses the defect warranty will be reliably fulfilled so that consumers can purchase housing with peace of mind and in accordance with the Act on Assurance of Performance of Specified Housing Defect Warranty (Housing Defect Warranty Performance Act), requiring construction companies and real estate transaction agents to secure funds (house defect warranty security deposit or a valid housing defect warranty liability insurance contract), the insurance underwriting system of housing defect warranty liability insurance entities will continue to be improved and initiatives to raise awareness among consumers and other measures to publicize the system are being carried out.

Furthermore, in FY2018, experts in the Research Committee for Newly Developing a Housing Defect Warranty Performance System in Anticipation of 10 Years from the Implementation of the System, which serves as a venue for the ongoing verification for the future review of the system, followed up on previous issues and exchanged opinions concerning future reviews.

### (2) Ensuring the Safety of Elevators and Amusement Facilities

While surveys to elucidate the causes of accidents involving elevators, escalators, and amusement facilities and the training of staff members at local governments and regional development bureaus in terms of safety and accident measures continue to be carried out, initiatives for ensuring safety have been advanced by making active use of guidelines for the appropriate maintenance and management of elevators and escalators and spreading awareness of the need to install Unintended Car Movement Protection devices in existing elevators.

# Section 4 Strengthening Safety Measures in the Transport Sector

Ensuring safety is a central and fundamental issue in the transport sector and once an accident occurs, not only can it cause significant damage, it can also an enormous impact on society so various measures are being undertaken to prevent accidents from occurring.

## 1 Building and Improving the Safety Management System in the Transportation Business

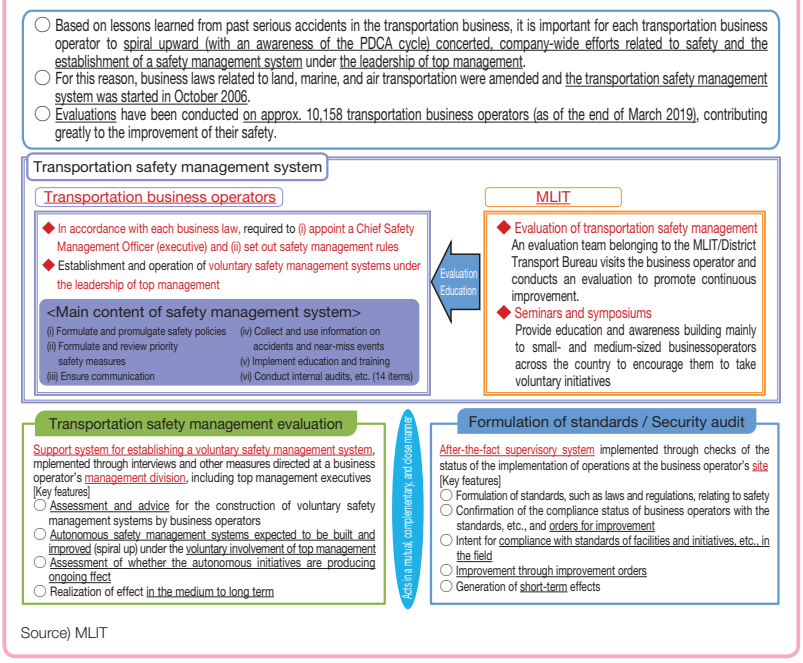
The Transportation Safety Management System was introduced in October 2006 based on the lessons of JR Fukuchiyama line derailment accident and other accidents. The system requires transportation business operators to a Chief Safety Management Officer and to establish safety management rules. It encourages the establishment of a safety management system encompassing the whole company under the leadership of top management and is used by MLIT to conduct transportation safety management evaluations (verification of the status of a transportation operator's initiatives and provision of needed advice).

In FY2018, 1,028 parties (65 railway parties, 780 automobile parties, 163 shipping parties, and 20 airline parties) were subject to a transport safety management evaluation.

In FY2018, a transportation safety management seminar hosted for transportation operators by the national government in order to deepen understanding of this system was attended by 3,057 persons. In FY2018, 10,489 persons attended seminars as part of an accredited seminar program established in July 2013 for the purpose of further disseminating and shedding light on this system for small to medium-sized business operators (a program through which transportation safety management seminars organized by private-sector organizations are accredited by the MLIT).

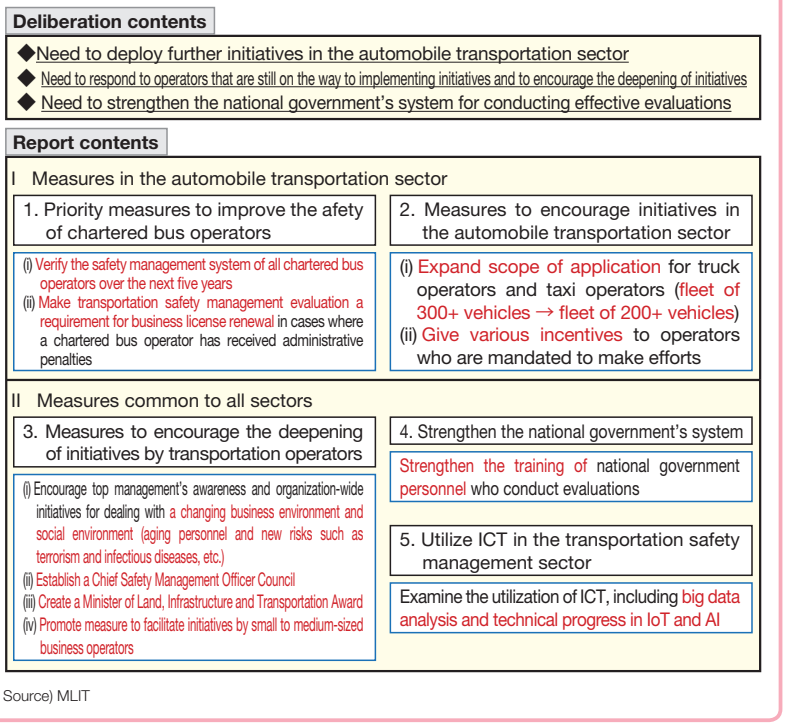
October 2016 marked 10 years since the Transport Safety Management System began. While certain results have appeared, there are still a number of issues, including the need to deploy further initia-

**Figure II-7-4-1 Outline of the Transportation Safety Management System**




Source) MLIT

**Figure II-7-4-2 How the Transportation Safety Management System Should be in the Future (Transport Council Report (July 2017))**




Source) MLIT

tives in the automobile transportation sector, the need to respond to operators that are still on the way to implementing initiatives and to encourage the deepening of initiatives, and the need to strengthen the national government's system for conducting effective evaluations. Accordingly, the Transport Council deliberated these issues and we obtained its report in July 2017. In light of the report, we will check the safety management system of all chartered bus companies by FY2021, and in FY2018 we conducted assessments on 741 out of the 2,707 companies yet to be checked. In addition, we created the Safety Control Forum (Safety Managers Meeting) in October 2017 in order to deepen the exchanges between transportation company safety managers and safety control departments, and are aiming to build a venue for horizontal cooperation. Furthermore, we established the Minister of Land, Infrastructure and Transportation Award in May 2017 with the objective of supporting initiatives for the construction, establishment, and ongoing review and improvement of a safety culture at transport companies, and will award commendations in October each year to companies that have excelled in initiatives related to transportation safety management.

We will continue to make efforts to strengthen and expand initiatives for transportation safety management systems.

## 2 Railway Transportation Safety Measures

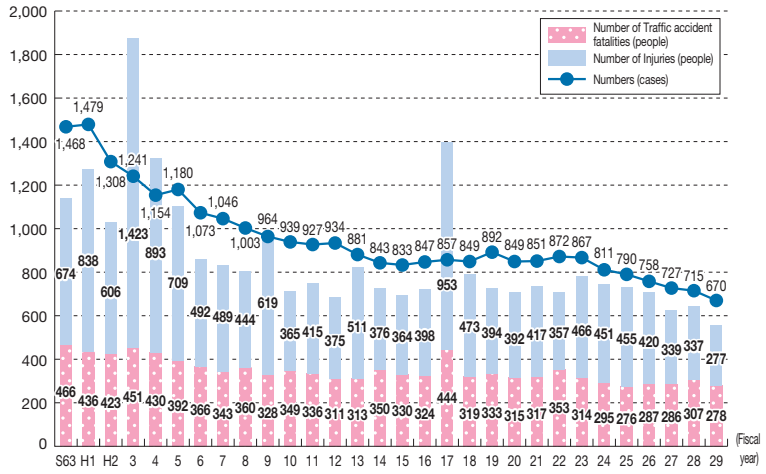
Driving accident numbers for railway traffic show a declining trend over the long term[Note 1] due to factors such as the promotion of driving assistance facilities including automatic train stop systems (ATS) and rail crossing measures, but since many people may be killed or injured if a train collides or derails, the promotion of further safety measures must continue.

### (1) Improving Railway Safety

In the light of past accidents, measures, like creation of necessary standards, will be implemented, and direction will be given to railway operators to ensure implementation, as well as, confirm the status of implementation for safety audits, and give feedback on audit results for further implementation of measures to improve the safety of railways.

In addition to performing systematic safety audits for railway operators, we will endeavor to improve the such audits by making them more strategically timed and effective, and will add extraordinary safety audits in the case of a major accident or similar such issue, etc.

Figure II-7-4-3 Transition in Number of Causalities and Number of Driving Accidents in Railways




Source) MLIT

### (2) Promotion of Railway Crossing Measures

Unopened grade crossings[Note 2] primarily in urban areas are a factor behind crossing accidents and chronic traffic congestion and measures to promptly address this problem are needed. For this reason, the road administrators and railway operators work together to prevent railroad crossing accidents, by developing crossing facilities, such as flyovers, structure improvement, and pedestrian bridges, and through the maintenance of railroad crossing safety equipment, such as railway crossing barriers, based on the Improving the Railway Crossings Act and the 10th traffic basic traffic safety plan.

In FY2018, in accordance with the revised Act on the Promotion of Railway Crossings, 176 new locations were designated as crossings to be improved, which with the 824 crossings designated in the period up to FY2017, brought the

Note 1 The number of casualties increased in the years which driving accident caused severe human damage, such as 2005 in which JR-West Fukuchiyama line derailment accident occurred.

Note 2 Note Railway crossings that are closed for more than 40 minutes/hour, during the hours when the train frequency is high.

total to 1,000 crossings. Regional Railroad Crossing Improvement Councils were gradually held regarding the designated crossings, and road administrators and railway operators made efforts to advance crossing measures based on the local circumstances.

In the future, in addition to countermeasures, such as the construction of crossing facilities including flyovers and structural improvements, as well as the construction of railroad crossing safety equipment, crossing countermeasures will be further promoted based on studies by the Regional Railroad Crossing Improvement Council, which cooperates with community stakeholders. This will include a general mobilization of measures in both structural and non-structural terms, including immediate measures involving the use of colored pavement and measures affecting areas surrounding crossings, such as the development of parking spaces.

### (3) Promoting the Development of Platform Doors

To improve the safety of the visually impaired and other rail station users, the installation of platform doors to prevent falling from the platform is being promoted (installed at 725 stations as of the end of FY2017). In accordance with the Basic Policy on Promoting the Facilitation of Mobility (March 2011), Basic Plan on Transport Policy (February 2015), and Priority Plan for Social Infrastructure Development (September 2015), we have been implementing structural measures, such as by promoting the development of platform doors and tactile paving with boundary lines and the development of technologies for new types of platform doors to address the problem that arises when train doors do not line up properly with the platform, as well as non-structural measures, such as encouraging users to reach out to and help guide visually-impaired riders to where they are supposed to go.

An investigative commission for improving the safety of station platforms met on August 26, 2016, and studied comprehensive safety measures related to the prevention of falls, in terms of structural and non-structural measures. It released an interim summary in December 2016. It was decided that, as a structural measure, platform doors are to be installed by 2020 as a general rule at stations serving 100,000 people or more, and where construction conditions are met, such as fixed locations for train doors and adequate space on the platform. Where the development conditions are not met, we have studied ways to meet them, such as installing new types of platform doors and making fixed door locations by updating train cars. Where new types of platform doors are to be installed, we have decided to construct them or start construction within about five years. Regarding stations that serve fewer than 100,000 people, we have decided to carry out priority development at the same level as stations serving 100,000 people or more, if such development is deemed necessary after taking the station's condition into consideration. Through such initiatives, we will work to achieve the development goals of approximately 800 stations by FY2020, set out in the Basic Plan on Transport Policy, as far in advance as possible.

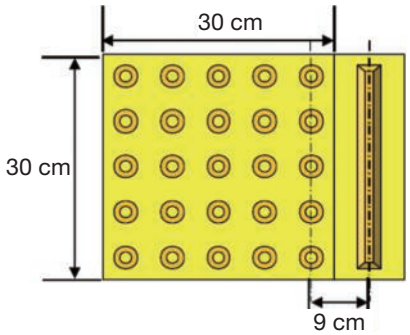
Also, in the interim summary, it was decided to construct tactile paving with boundary lines by FY2018 at stations that serve 10,000 people or more. In addition, the main non-structural measures indicated in the summary include station employees offering to guide visually impaired riders at stations without platform doors, enhancing the service provided by station employees, including calling out clearly to visually impaired riders, encouraging other riders to reach out to and help guide visually impaired riders, promoting understanding of the "barrier-free heart" mindset, and cooperating with the training of guide dogs in stations, among other measures.

Furthermore, at the eighth meeting of the investigative commission, held in December 2018, as a venue for interim summaries, the status of railway operators' initiatives to improve platform safety were summarized and shared, and in addition, efforts were made to promote further initiatives by the relevant parties, including railway operators, through the horizontal spread of successful cases at municipal governments and railway operators.

Figure II-7-4-4 Platform doors

Source) MLIT

Figure II-7-4-5 Tactile Paving with Boundary Lines




- 25 tactile bumps (5 × 5)
- Line bump (boundary line) indicating the side of the platform close to the track

Source) MLIT

### (4) Studying Measures Related to Railway Transportation Trouble

We established an Investigative Commission to Examine Measures Related to Railway Transportation Problems in order to examine measures to prevent the recurrence of transportation disturbances and mitigate their effects, in light of railway transportation problems that have occurred in recent years, such as a crack in a Shinkansen bogie, transportation disturbances caused by overhead wire damage, and a standstill for an extended time due to snow damage. It will also examine and study the structural causes that are thought to be behind the problems, such as the declining birthrate and aging personnel. The commission compiled the necessary measures in July 2018.

## 3 Safety Measures for Maritime Traffic

In the sea areas surrounding Japan, around 2,000 vessels are involved in marine accidents every year. Once a marine accident occurs, not only are precious lives and property lost, but Japan's economic activities and marine environment may be adversely affected in a major way, requiring the promotion of further safety measures.

### (1) Improving Ship Safety and Ensuring Ship Navigation Safety

#### (i) Improving ship safety

In order to ensure ship safety globally, international regulations and standards have been developed by the International Maritime Organization (IMO), and Japan has been participating actively in discussions at the IMO.

Based on proposals from Japan and other countries, the IMO started to consider international rules related to maritime autonomous surface ships that use the latest ICT technology, in order to increase maritime safety through the prevention of human error, etc.

Also, it has been pointed out that fire accidents on passenger ferries have been occurring frequently in recent years. The IMO is therefore studying fire safety measures for passenger ferries. Japan has contributed to the discussion by suggesting to the IMO measures based on cases of fires in Japan.

Port State Control (PSC)[Note 1] has been implemented to ensure that foreign ships entering ports in Japan comply with such international regulations and standards, and to eliminate substandard ships[Note 2] .

As an initiative focused on ship safety measures in Japan, a the guidelines including effective firefighting strategies, the features of fire-fighting equipment, and training methods to enhance preparations for ro-ro passenger ship operators to engage in firefighting was compiled and publicly released in response to a fire of a ferry occured off the coast of Tomakomai, Hokkaido, in July 2015. We continued to provide guidance to ro-ro passenger ship operators nationwide in FY2018.

Also, in light of the fact that a revision to a relevant ordinance made wearing lifejackets mandatory for all passengers

Note 1 Supervising of foreign vessels by port state
Note 2 Vessels not conforming to standards of international convention

as a general rule from February 1, 2018, as a safety measure for small craft, we held briefings on the regulations and distributed leaflets at various events in an effort to spread awareness of the rule, in cooperation with relevant ministries, agencies, and organizations.

### (ii) Ensuring ship navigation safety

In accordance with the Seaman and Small Craft Operator Act, which complies with the STCW Convention[Note 1], the qualifications for seafarers are defined, as are the qualifications and compliance matters for small craft operators, to ensure ship navigation safety from human factors. Also, in order to reduce the number of small boat accidents, which account for around 70 percent of all maritime accidents, we publicized compliance matters and conducted re-education courses for violators. In accordance with the Pilotage Act, qualifications for people who can perform pilotage are defined for the safety of vessel traffic. In light of the second report by an investigative commission related to the securing and training pilots, which was established to secure a stable supply of pilots, we partially revised an ordinance in January 2018, establishing a new system of partial passing of exam requirements as part of efforts to encourage people to apply to be pilots.

Investigation and inquiry, in accordance with the Act on Marine Accident Inquiry, are conducted for a marine technician, a small craft operator, or a pilot, etc., who cause marine accidents intentionally or negligently in the course of duties and in 2018, there were 303 determinations, and a total of 410 marine technicians, small craft operators, and pilots, etc., were subjected to disciplinary actions, including suspensions of business operation (one to two months) or admonitions to prevent the occurrence of marine accidents.

Since 2003, the Japan Coast Guard has organized the direction and specific measures for vessel traffic safety measures to work on over a period of roughly five years into a Traffic Vision. In April 2018, it formulated its Fourth Traffic Vision and is carrying out various measures to ensure maritime safety over a wider area.

Since human factors such as inadequate vigilance and inappropriate maneuvering account for approximately 70% of ship accidents, in order to prevent accidents caused by such carelessness, the Japan Coast Guard, in cooperation with relevant organizations and private associations carries out accident prevention measures according to the type of vessel and operation season, in light of the results of its daily analysis of maritime accidents that have occurred.

Also, the Coast Guard provides information, such as "Maritime Information and Communication System (MICS)[Note 2]," to the broader public in order to prevent marine accidents due to insufficient information.

In order to quickly and smoothly get vessels to safe sea areas when a tsunami or other emergency disaster occurs and, during non-emergency periods, in order to ease congestion and ensure the safe and efficient operations of vessels, the Coast Guard coordinated the Tokyo Wan Vessel Traffic Service Center with port traffic control offices in the ports of Chiba, Yokohama, Kawasaki, and Tokyo and established a new Vessel Traffic Service Center in Yokohama to carry out these operations in an integrated manner. The new center began operations in January 2018. In addition, at the entry to Tokyo Bay, where ship traffic is congested, in order to streamline ship traffic, routes have been designated by the Commissioner of the Japan Coast Guard pursuant to the Maritime Traffic Safety Act since March 1, 2019, and safety measures using virtual AIS route markings have begun.

With respect to nautical charts, we are endeavoring to upgrade electronic navigational charts, which have gained in importance thanks to the dissemination of the Electronic Chart Display and Information System (ECDIS). Additionally, we have published English-only nautical charts for foreign seafarers as part of measures to prevent marine accidents. In FY2018, in conjunction with the designation of new routes at Tokyo Bay pursuant to Article 25 Paragraph 2 of the Maritime Traffic Safety Act, these amendments were reflected in the relevant charts for Tokyo Bay.

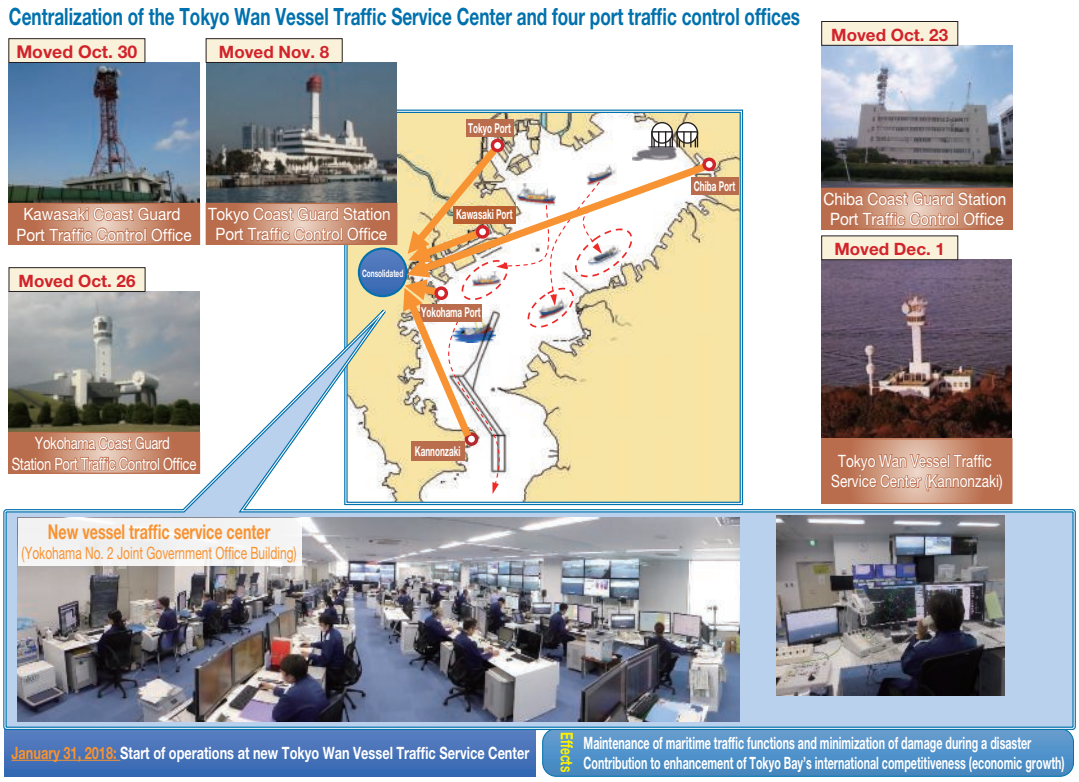
Regarding the navigational warnings and notices to mariners, visual information that constitutes valid information displayed on a map has been provided over the Internet, and accessibility by smartphone was launched on November 5, 2018. Furthermore, in addition to the navigational warnings and notices to mariners, an MDA Situational Indication

**Note 1** The International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, 1978. This international convention stipulates the training and certification of mariners for the purpose of improving the safety of human lives and assets at sea, and also promotes the protection of the marine environment.

**Note 2** A service that provides information such as local weather and hydrographic conditions, including wind direction, wind speed, and wave heights, as observed at lighthouses and other stations nationwide, as well as the status of offshore construction, and live images from cameras giving a picture of sea conditions via the Internet and through distribution via email of emergency information released by the Japan Coast Guard

Linkages (Umishiru), which provides a variety of information, including weather and ocean conditions and ship traffic, was launched in April.

Figure II-7-4-6 Establishment of Centralized Maritime Traffic Control in Tokyo Bay




Source) MLIT

In addition, to improve the safety and navigation efficiency of ships in narrow waterways, tidal current information for Kurushima Strait is provided on the Internet through entire region simulation.

For Aids to Navigation, development is performed effectively and efficiently in accordance with the vessel traffic environment as well as needs and in FY2018, improvements and renovation was carried out in 471 locations.

The Marine Accident Analysis Center established under the National Maritime Research Institute (National Research and Development Corporation) conducts highly specialized analysis of accidents as well as rapid analysis and transmission of information when major marine accidents occur, and contributes to consider measures to prevent its recurrence.

Ensuring the safety of ship navigation in the Straits of Malacca and Singapore, highly important maritime transportation routes through which eighty percent of crude oil imported to Japan passes, is important. Cooperation for the financing of the Aids to Navigation Fund[Note 1] is being provided under the cooperative mechanism[Note 2] with the involvement of littoral states and users. In addition, Japan is providing technical cooperation through the dispatch of experts, by maritime stakeholders, in order to conduct hydrographic surveys on the straits, a move that was approved as a Japan-ASEAN Integration Fund (JAIF) project, by Japan and three littoral states (Indonesia, Malaysia, and Singapore). Japan will continue this cooperation for the safety of navigation and the protection of the environment in the straits through public-private partnerships, together with our good relationships with the littoral states.

Note 1 A fund established to cover costs incurred to replace or repair lighthouses and other facilities used for aiding navigation installed in the Straits of Malacca and Singapore.

Note 2 A mechanism that substantiates, for the first time in international history, the cooperation of littoral states and states using these straits in accordance with Article 43 of the United Nations Convention on the Law of the Sea. This mechanism comprises three elements: the Cooperation Forum, the Project Coordination Committee, and the Navigation Aids Facilities Fund.

## Column

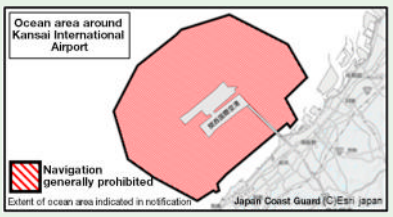
### Initiatives to prevent recurrence based on the collision of a tanker with the Kansai International Airport Communication Bridge

On September 4, 2018, Typhoon Jebi landed in the Kansai region with extraordinarily strong force. A tanker, which had been anchored in the vicinity of Kansai International Airport in order to avoid the stormy weather, ran adrift and collided with the airport's communication bridge. This caused hindrance to the safety of ship traffic and cut off access to the airport, resulting in a huge impact on the flow of people and on logistics.

In the past, in regard to anchoring in the vicinity of the airport during stormy weather, the Japan Coast Guard had instructed sailors to remain at least three nautical miles (approximately 5.6 km) from the shore of Kankujima. In addition, prior to the collision with the airport communication bridge, the Osaka Bay Maritime Transportation Center, etc., had provided regular ongoing guidance to multiple vessels, including the tanker, to be careful of drifting by maritime telephone. After the accident, two crew members who had remained on the tanker were airlifted to safety, a further 11 crew members were rescued through the assistance of a private tugboat, and in addition, an investigation into the cause and a review of measures to prevent a recurrence was started immediately.

A Study Group of Experts for the Prevention of Recurrence of Accidents Caused by Running Adrift in Stormy Weather, Etc. was established in October of that year, and the examination of measures to prevent recurrence alongside experts began. An interim report was compiled at the end of December 2018, and based on the statement that "in regard to drifting, etc., during stormy weather in the ocean area in the vicinity of Kansai International Airport, measures should be taken to prevent recurrence pursuant to laws and regulations", the application of laws and regulations in the ocean area in the vicinity of the airport began on January 31, 2019. In addition, in response to the statement in the report of March 19, 2019 that "in consideration of the environment, etc., surrounding the ocean areas, the Japan Coast Guard should proceed with the examination of the measures to prevent recurrence that are needed for the ocean area, together with maritime-related parties and related local government organizations, etc.", measures to prevent a recurrence at ocean areas outside of the vicinity of Kansai International Airport were also examined.

Furthermore, the Japan Coast Guard implemented the "Results of the Emergency Inspection on Key Infrastructure and Response Measures" (Ministerial Meeting Report on the Emergency Inspection of Key Infrastructure on November 27, 2018), and in the future, based on the results of this, we will implement measures to prevent the occurrence of major accidents due to drifting[Note], etc., for ocean areas that require an enhanced ocean area monitoring system.




**Note** When an external force applied to a vessel, such as the wind, is larger than the power of the anchor holding the vessel in place, the anchor slides along the ocean floor.

### (2) Promotion of Safety Measures for the persons on board

About 37% of cases reported about the dead or missing persons on board are due to fall accidents into the sea. In order to survive after the fall, first thing to do is to float, and then promptly request a rescue. In addition, the passenger mortality due to falling into the sea from small boats (fishing boats or pleasure boats), is six times higher in the persons on board who do not wear a life jacket than those who do. Life jackets therefore can be seen to contribute greatly to saving persons on board from falls into the sea. In addition, switching on a cellphone GPS function at the time of reporting allows the location of the call to be quickly ascertained by the emergency report positioning system, thereby reducing the time required for the rescue. That is why the Japan Coast Guard takes various opportunities to spread and raise awareness about ensuring self-rescue means based on three principles: wear a life jacket at all times, ensure appropriate contact means such as a portable telephone packed in a waterproof package, and effective use of the 1-1-8 emergency telephone hotline to the Japan Coast Guard.

### (3) Strengthening the Rescue System

In order to engage in prompt and precise rescue activities, the Japan Coast Guard operates the 1-1-8 emergency telephone hotline and endeavors to rapidly ascertain information on the occurrence of accidents, such as by receiving information on marine accidents at any time, day or night, through the Global Maritime Distress and Safety System (GMDSS). Also, along with improving the rescue technology and capabilities of those such as special rescue teams, mobile rescue technicians, and divers, an emergency staff system was created in which a special rescue team members and mobile rescue technicians, who have undergone the same training as that of emergency responders at the fire department, is designated as emergency rescue staff. They are then able to provide emergency treatment within the same range as emergency responders at the fire department and are able to appropriately assist paramedics. The objective of this is to enhance and strengthen the medical control framework and the rescue and emergency treatment system by enhancing the function of patrol vessels and aircraft in regard to the quality of emergency care provided by paramedics from medical and management perspectives, and to further enhance the emergency rescue system for those who become ill while at sea. Furthermore, cooperation among the relevant agencies, local government organizations, and private rescue organizations, is being enhanced and strengthened.

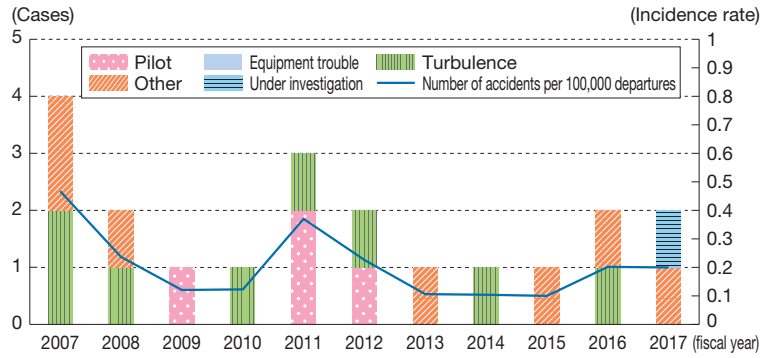
## 4 Air Traffic Safety Measures

### (1) Strengthening Aviation Safety Measures

#### (i) State Safety Program (SSP)

Since April 2014, the Civil Aviation Bureau has been implementing the State Safety Program (SSP), which sets forth targets for civil aviation safety and measures to be taken for their attainment, in accordance with Annex 19 of the Convention on International Civil Aviation. In FY2015, the Civil Aviation Bureau, formulated a "Medium-term orientation for the administration of aviation safety," which outlines the orientation of safety targets for the next five years. In FY2016, a direction for further safety measures related to small aircraft was added in light of the frequent occurrence of accidents involving private small aircraft in recent years.

Figure II-7-4-7 Number and Frequency of Accidents on Domestic Airlines




Source) MLIT

The Voluntary Information Contributory to Enhancement of the Safety (VOICES) program has been operated since July 2014 in order to collect more information relating to aviation safety that is not subject to mandatory reporting and harness such information for the improvement of safety.

While dissemination activities have been yielding results and the number of reports issued in 2018 increased by about

50 percent over the preceding year, attempts will be made to further use the system through continued work to highlight the importance of safety information. Efforts will also be made to improve safety by making use of obtained recommendations.

### (ii) Air transport safety measures

While passenger deaths aboard specific Japanese air carriers[Note] have not occurred since 1986, efforts are being made to reinforce the safety management system adopted by airlines and preventive safety measures are being promoted to appropriately deal with safety-related issues. As well, preliminary reviews upon the launch or expansion of a domestic airline and strict (including unannounced) and systematic on-site audits are properly conducted. Also, in accordance with the increased entrance of foreign airlines, monitoring of foreign airlines entering Japan was strengthened using site inspections and other measures.

In September 2017, cases of objects falling from aircraft continued. In light of this, in November 2017, we set up a Meeting for the Promotion of Comprehensive Measures Related to the Prevention of Falling Objects, Etc., comprising experts and working-level personnel, and formulated the Comprehensive Package for Falling Object Prevention Measures in March 2018. The Falling Object Prevention Measures Standards were formulated in September 2018 based on this package, and the implementation of measures was made mandatory not only for Japanese airlines, but also for foreign airlines entering Japan. Since November 2017, in cases where parts are missing from aircraft taking off or landing at airports with many international routes, we have demanded reports from all airlines, etc., including foreign airlines. Utmost efforts will continue to be made to completely eliminate the occurrence of falling objects through the steady and strong implementation of the measures included in the Comprehensive Package for Falling Object Prevention Measures, in cooperation with all parties concerned.

In response to the continued occurrence of inappropriate alcohol consumption at airlines since the end of October 2018, guidance was provided to airlines on thorough compliance with laws and regulations, etc., and in addition, in November 2018, the Committee for Examination of Alcohol Consumption Standards for Airline Staff was held, an event at which standards for alcohol consumption, etc., were formulated. We will continue to guide and supervise airlines to ensure that these measures are implemented appropriately.

### (iii) Certification of domestic jetliners

With the development of Japan's first domestic jetliner (MRJ), the MLIT, as the national government of design and manufacturing, established and expanded a certification organization to implement certification of compliance with safety and environmental standards more appropriately and smoothly and is carrying out reviews with close coordination with the aviation authorities of the United States and Europe. Flight tests and ground tests are currently being conducted in the United States, and flight testing by civil aviation bureau flight test pilots began in March 2019. In addition, looking ahead to after the launch of the MRJ, the Draft Law on Partial Amendment to the Civil Aeronautics Act and the Act for Establishment of the Japan Transport Safety Board, which incorporates taking measures for securing safety through the cooperation of the national government and aircraft manufacturers, was submitted to the Diet in March 2019.

We will continue to perform appropriate and smooth safety reviews, anticipating delivery of the first MRJ, scheduled for mid-2020, and in addition, will work on developing a system for fully ensuring the safety of aircraft.

### (iv) Safety measures applicable to unmanned aircraft

An amendment to the Civil Aeronautics Act (Act No. 231 of 1952), which prescribed basic rules for the airspace to be flown in and flight methods, etc., entered into effect in December 2015, and in FY2018, permits and approvals were issued in 28,855 cases. Furthermore, in accordance with the 2018 Roadmap for the Aerial Industrial Revolution —Developing Technology and Improving the Overall Environment for Safe Utilization of sUAS—, which was compiled by the Public-Private Council for UAS Promotion and Regulation, comprising relevant government ministries, manufacturers, and users under the Committee for Examining Flights of Unmanned Aircraft Beyond Visual Line of Sight and above Third Parties, Etc., requirements were compiled for allowing flights beyond visual line of sight on remote islands and in mountain areas, without the deployment of assistants, the review procedures for permits and approvals based on the

**Note** Domestic air carriers that operate air transport businesses that use aircraft with 100 or more passenger seats or with a maximum takeoff weight of more than 50,000 kilograms.

Civil Aeronautics Act were revised in September 2018, and approval was given for flights beyond visual line of sight and without assistants for the delivery of packages in October 2018.

#### (v) Safety measures for small aircraft

We have conventionally implemented various measures regarding small aircraft, including establishment of a system of periodic skills reviews for pilots. Nevertheless, there have been numerous accidents in recent years, including one in which a plane crashed into a house in Chofu City, Tokyo, in July 2015. In response, the MLIT held safety courses at major airports nationwide, developed new courses for small aircraft mechanics, encouraged enrollment in aviation insurance for private aircraft, created and distributed safety information leaflets based on recommendations from the Japan Transport Safety Board, and took additional measures, such as checking the understanding of pilots, and distributing a regular safety information email newsletter for small aircraft pilots. Additionally, in April 2018, in order to further improve the skills and knowledge of small aircraft pilots, and to spread safety awareness, we created video training materials, posted these on the Japan Civil Aviation Bureau website, and furthermore, promoted initiatives such as promotion of the use of these at safety seminars. Also, we began demonstration experiments for flight data monitoring equipment (FDM) in order to verify the use of such devices in accident investigations, training, and skills tests, etc. Going forward, we will continue to further promote comprehensive safety measures for small aircraft while taking into account the opinions of experts and relevant organizations through the Small Aircraft Safety Improvement Committee, which has been meeting regularly since December 2016. For sky leisure enthusiasts who enjoy pursuits such as ultralights, paragliding, skydiving, gliders, and hot air balloons, we implement safety measures, such as enhancing safety training and providing information on aviation safety through relevant organizations.

### (2) Developing Air Traffic Systems for Aviation Safety

In order to ensure safe operation and on-time performance of aircraft, and to support the smooth implementation of traffic control functions, we are continuing to develop a new air traffic control data system that merges the existing systems.

In FY2018, we introduced new systems at Tokyo International Airport, Fukuoka Airport, and the Kobe Area Control Center.

## 5 Finding the Causes of Aircraft, Railway, and Marine Accidents/Incidents, and Preventing Recurrence

During FY2018, accidents subject to investigations by the Japan Transport Safety Board consisted of 26 aircraft accidents and serious incidents, 14 railway accidents and serious incidents, and 914 marine accidents and incidents, and those investigations looked into finding causes and preventing recurrence.

Thirty-seven investigation reports were published regarding aircraft accidents, etc., for which investigations was completed in FY 2018, including the publication of an investigation report in August 2018 concerning the small aircraft that crashed in the Tateyama Mountain Range in June 2017, resulting in the death of four passengers.

Investigation reports for 12 railway accidents, etc., were published, including the publication in January 2019 of the investigation report for the train derailment accident at Nankai Electric Railway, which occurred in conjunction with the sinking and tilting of the bridge pier in Osaka in October 2017. An opinion was also presented to the MLIT.

Investigation reports for 864 marine accidents, etc., were also released, including the publication in April

Figure II-7-4-8 J-MARISIS (mobile version)

Top page http://jtsb.mlit.go.jp/hazardmap/mobile/index.html


Example of display of accident information

Source) MLIT

2019 of the investigation report for the oil tanker anchored at Senshu Port in Osaka that ran adrift and collided with the Kansai International Airport Communication Bridge in September 2018. Furthermore, we published "Measures to Prevent Accident Caused by Drifting During Exceptionally Strong Typhoons", which analyzed the questionnaire responses and movements of ships that were anchored at Osaka Bay and Tokyo Bay at the time of the approaching and passing typhoons in September and October 2018, and that were not involved in accidents.

The Japan Transport Safety Board has released the Japan-Marine Accident Risk and Safety Information System (J-MARISIS) that, by displaying digital maps on the Internet, can be used to search for marine waters where multiple marine accidents and incidents have occurred, and the results of those investigations. Additionally, it provides locational information on places where accidents have occurred in data form, for use in the safe navigation of ships.

## 6 Support for Victims and Families of Public Transport Accidents

In order to support the victims and their families in public transport accidents, the Public Transportation Disaster Victims Assistance Office was established in April 2012. The Assistance Office relays requests from accident victims to public transportation business operators concerned and introduces appropriate organizations to accident victims depending on the content of the requests.

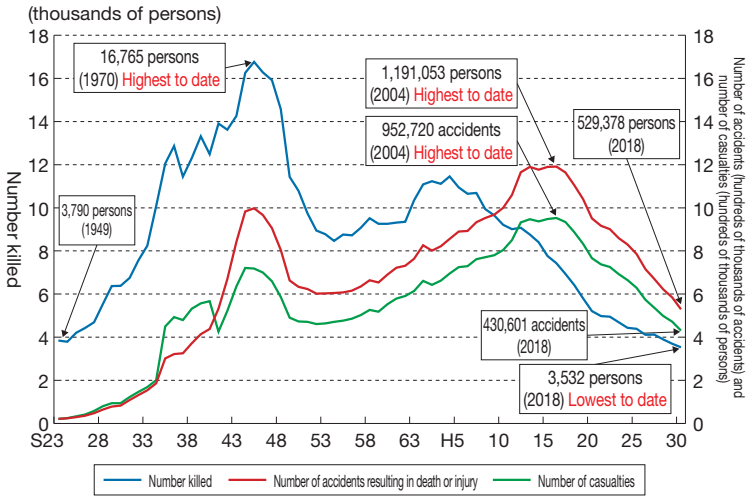
In FY2018, when a public transport accident occurred, the Assistance Office made the consultation service well known to victims, as well as responded to consultation from victims. When no public transport accidents needed to be dealt with, the Assistance Office was involved in numerous other activities, such as by providing education and training to staff members who provide support, building networks with relevant outside organizations, holding support forums for the victims of public transport accidents, and urging public transport operators to formulate plans for the provision of support to victims.

In response to the ski bus accident in Karuizawa, which occurred in January 2016, the MLIT continues to take action, including holding meetings to exchange opinions with an association for the bereaved.

## 7 Safety Measures for Road Traffic

The number of traffic accident fatalities decreased in 2018 to 3,532 (a decrease of 162 compared to the previous year) compared to the peak of 16,765 in 1970, and was even lower than the number in 2017, which was the lowest since statistics started to be kept in 1948. However, elderly drivers caused many traffic accidents, and approximately half of them occurred while walking or riding a bicycle. With half of these incidents taking place within 500 meters of each victim's home, the situation remains grim. For this reason, efforts will be made to further reduce traffic accidents and various measures will be implemented in coordination with the National Police Agency and others.

Figure II-7-4-9 Changes in the Number of Traffic Accidents and Number of Casualties




Source) Prepared by the MLIT using materials provided by the National Police Agency

## (1) Road Safety Measures

### (i) Promoting road safety measures using big data for arterial roads and residential streets

By promoting the functional differentiation of roads, we are working to divert automobile traffic to expressways which are safer than other types of roads. Through measures applicable to accident-prone "black spots" and "zero-traffic accident plans" (tactics for the priority elimination of accidents at black spots) carried out in collaboration with prefectural public safety commissions, we are effectively and efficiently promoting accident measures in order to further improve the safety of arterial roads, which account for approximately sixty percent of traffic accident fatalities.

With respect to residential streets, where the number of fatal accidents is not on a stable downward trend compared to arterial roads, big data such as ETC 2.0 will be used to identify in advance key points such as places where people speed and brake suddenly, in order to secure safe walking spaces by restricting the through-traffic and forcing a reduction in vehicular speeds. Comprehensive measures to inhibit traffic accidents are being advanced in collaboration with prefectural public safety commissions, through such measures as decreasing the width of vehicular roads and widening roadside strips in combination with zonal speed limits, engaging in sidewalk development projects, and carrying out effective measures such as the installation of speed bumps and curb extensions.

The number of fatal traffic accidents involving bicycles and pedestrians has decreased by no more than 10% over the past 10 years, so we are promoting a configuration that separates pedestrians from bicyclists, who as a basic rule should travel on roadways.

### (ii) Promoting Safety Measures for School Commute Routes

For school-commuting roads, in the wake of a series of accidents in April 2012, involving groups of children commuting to schools, a "school route emergency joint inspection program" was implemented and included coordination among schools, boards of education, police, and other stakeholders. Intensive support was directed toward the measures based on the results above.

In addition, Japan has instituted a "school-commuting roads safety program" in each municipality to ensure the sustained safety of school-commuting roads, and has implemented regular joint inspections and improved and enhanced other measures as well.

### (iii) Initiatives to improve the safety, reliability, and user friendliness of expressways

We will systematically carry out initiatives to improve the safety, reliability, and user friendliness of expressways, from the user's perspective, by using new technologies, with a view toward effective and efficient utilization of the expressway network.

Specifically, in order to efficiently resolve such issues as driving performance and safety in provisional two-lane sections, based on emergency inspections of key infrastructure, we will turn areas with a high risk of sediment disaster, etc., as well as other areas that are problematic from the perspective of ensuring speed reduction, accident prevention, and redundancy, into four lane roads in a planned manner. Of these, for both expressway and roads parallel to them, which are areas with a high risk of sediment disasters, etc., we will begin to convert the provisional two-lane sections into four-lane sections through the use of the Fiscal Investment and Loan Program, in consideration of previous traffic regulations, previous damage to main highway roads, and traffic accidents. In addition, with the exception of locations where projects to convert to four lanes are underway, we will install wire ropes over the next five years or so in areas made from cut earth and mounded earth.

In addition, in response to the problem of cars driving in the wrong way on expressways, we are implementing physical and visual deterrence measures at locations such as interchanges and junctions, including the installation of rubber poles and large arrow road direction signs. Also, in order to further promote these measures, we have verified new technology for dealing with wrong-way driving, which was requested by the expressway companies from private companies and then selected, and began the field deployment of such technologies.

These specific measures related to safety and security will be compiled into a medium-term improvement policy as the tentatively named Safety and Security Plan and will be promoted systematically and steadily.

Additionally, leveraging the current low-interest rate situation, we will use fiscal investment and loan programs to ensure the safety and security of expressways by accelerating the reinforcement of bridges against earthquakes.

### (2) Systematic Road Facilities Management to Provide Safe and Secure Road Services

Nationwide, there are approximately 730,000 road bridges and approximately 10,000 road tunnels. But bridges and tunnels, which were intensively developed during Japan's period of high economic growth, will face aging all together in the future.

Based on these circumstances, from 2014, close-up visual inspection has been conducted once every five years on all bridges and tunnels in Japan, in accordance with uniform standards established by the national government.

Based on the results of the inspections conducted up to FY2018, and toward the implementation of the second round of inspections from FY2019, we reviewed the regular inspection guidelines, including streamlining the inspection method through the use of new technology and focusing on areas in accordance with damage and structural characteristics.

In addition, we are providing various kinds of support for local governments with many facilities to be managed. This support includes sharing technical information related to maintenance through the use of road maintenance councils that have been set up in all prefectures, the placement of lump sum ordering for inspection operations at the local level, the implementation of direct assessments and repairs by national government personnel on behalf of local governments, and support through subsidy systems for large-scale repair and upgrading jobs. Also, as further financial support offered from FY2018, we relaxed the eligibility requirements for prefectural and designated city projects for the subsidy systems for large-scale repair and upgrading jobs, and also expanded the eligibility of local financial measures (projects for the appropriate management of public facilities, etc. (lifetime extension projects)) to projects being conducted independently by local government.

Furthermore, in order to deal with the aging expressways, we are systematically carrying out large-scale upgrades and repair projects, and with the objective of the systematic maintenance and repair of overpass bridges, upon prior consultation with railway operators, etc., we have prescribed methods for the maintenance and repair of overpass bridges, and are working on initiatives to prevent third-party damage and to ensure the safety of the railroads.

Additionally, in order to prevent impediments to road structures and traffic as a result of damage to property that occupies a road, pursuant to the amendment to the Road Act of March 2018, the maintenance and management obligations of people with property that occupies a road was clarified; initiatives for the appropriate maintenance and management of property by such people are now being implemented, and furthermore, in order to prevent overloading, which can have significant effect on aging roads, initiatives are being conducted, including the introduction of a mechanism in which a portion of responsibility is also imposed on shippers.

### (3) Measures in Response to the Ski Bus Accident in Karuizawa

In light of the ski bus accident in Karuizawa that occurred in January 2016, we are implementing the "Thorough Measures to Achieve Safe and Secure Chartered Bus Operations," which consist of 85 items compiled in June 2016, in order to prevent such a tragic accident from ever occurring again. The exploratory committee is following up on these measures.

### (4) Steady Implementation of the "Expressway and Chartered Bus Safety and Security Recovery Plan"

In response to the Kan-Etsu-Do Expressway tour bus accident that occurred in April 2012, the "Expressway and Chartered Bus Safety and Security Recovery Plan" was formulated in April 2013 to shift and unify expressway tour buses into the new share-ride expressway bus and already established standards for driver replacement shifts and for the remaining measures, these have been definitely implemented in the two years between 2013 and 2014. The MLIT continues to ensure the effectiveness of each measure of this plan such as implementation of street audit and understanding of bus operators that must be continuously monitored, and promotes measures to improve the safety and regain trust of bus operations.

### (5) Promoting Safety Measures According to a Safety Plan for Commercial Vehicles

In June 2017, we formulated the 2020 Comprehensive Safety Plan for Commercial Vehicles as a new plan to replace the 2009 Comprehensive Safety Plan for Commercial Vehicles that was established in 2009. The plan sets out new accident reduction targets of 235 or fewer deaths caused by commercial vehicle accidents and 23,100 or fewer accidents by 2020. We are advancing various measures toward achievement of those targets.

#### (i) Accident-prevention measures based on accident patterns by industrial sector and key factors

In order to promote transportation safety, we are evaluating accident-prevention initiatives based on characteristic accident patterns for each industrial sector — trucks, buses, and taxis — and are conducting follow-ups, including revisions of initiatives where necessary, so as to reduce accidents even further.

#### (ii) Establishing a framework for safety through the management of transportation safety

In order to promote initiatives for establishing and improving safety management systems in the automobile transportation sector through the transportation safety management program, the scope of application of the program for truck operators and taxi operators was expanded from operators with a fleet of 300 or more vehicles to operators with a fleet of 200 or more vehicles (a ministerial ordinance partially revising the relevant regulations went into effect on April 1, 2018). We have also decided to check the safety management systems of all chartered bus operators by FY2021. In 2018, evaluations of transportation safety management, where by the national government verifies the status of implementation of initiatives related to these systems, were conducted on 780 automobile transportation operators.

#### (iii) Ensuring compliance on the part of motor carrier businesses

In order to thoroughly ensure that motor carrier businesses comply with relevant laws and ordinances and practice appropriate operations management, business operators who flagrantly violate the law and those who have caused a major accident will be subject to thorough audits, while business operators who are suspected of violations will be subject to high-priority audits.

Also, in November 2016, we began operating a comprehensive safety information system for commercial vehicles with functions to identify and analyze business operators deemed to be at high risk of causing an accident.

Furthermore, in accordance with thorough measures for chartered buses compiled in response to the ski bus accident that occurred in Karuizawa, in December 2016 we introduced a system to correct legal violations promptly and have implemented measures to tighten administrative penalties to force business operators who are repeat violators to withdraw from the market. Since August 2017, we have also been conducting undercover investigations in which private sector investigators board actually operating chartered buses as a general user and investigate compliance with the law, such as the securing of rest time.

In addition, in order to strengthen the deterrence against long working hours, in July 2018 we increased the severity of government disciplinary action for violations related to excess driving hours.

#### (iv) Eliminating drunk driving

In order to eliminate driving by business drivers while under the influence of alcohol, stimulants or dangerous drugs, thorough checks are conducted using alcohol analyzers during roll calls and guidance is being provided to business operators and operating managers whenever the opportunity arises through the use of workshops, nationwide transportation safety campaigns, general transportation safety checks conducted during the year-end and New Year's period, and other such initiatives in order to thoroughly ensure that drivers are guided and supervised on a daily basis regarding correct knowledge of drugs and the prohibition on their use.

Figure II-7-4-10 Accident Investigation Report

**Overview of an investigation report for an accident involving a commercial vehicle**
–Fall of a large chartered bus–
(National Route 18 (Usui Bypass) in Karuizawa Town, Kitasaku County, Nagano Prefecture)

**Overview of accident**

- At around 1:52 on January 15, 2016, a chartered bus carrying 39 passengers fell about 4 meters off a cliff on National Route 18 Usui Bypass in Karuizawa Town, Kitasaku County, Nagano Prefecture.
- A total of 15 people (13 chartered bus passengers, the driver, and the relief driver) were killed, 22 passengers were severely injured, and four passengers received minor injuries in the accident.
- The accident occurred approximately 1 km down a sudden succession of downhill stretches after the long uphill section of the Usui Bypass comes to an end at Iriyama Pass. The chartered bus strayed into the oncoming lanes while going around a left-hand curve on a single-lane downgrade, smashing through a guardrail on the right-hand side of the road and falling approximately 4 meter while rolling over.

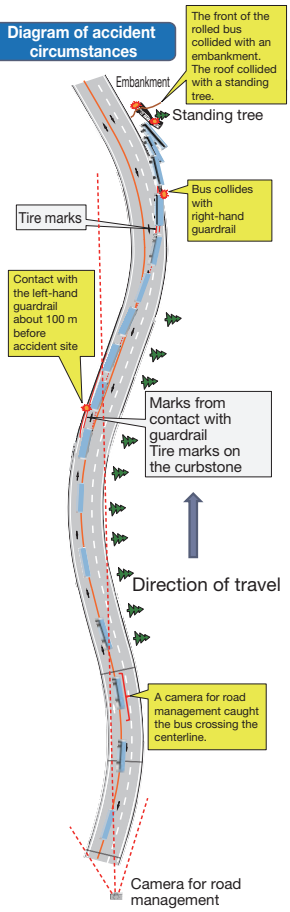
**Aerial photograph of accident scene**

(Provided by Nagano Police)

**Causes**

☆It is presumed that the accident occurred because the chartered bus could not make the curve as a result of traveling, at approximately 95 km/h, through a sharp downgrade left-hand curve in excess of the regulatory speed.
☆The road to the accident site is a series of downhill curves after crossing Iriyama Pass. It is thought that the driver of the chartered bus continued to drive while focusing on steering without braking sufficiently where engine braking, etc., should have been used to drive at a safe speed. It is thought that the direct cause of the accident was the loss of control of the vehicle as the vehicle's speed increased as a result of driving in such a way that would not be expected from a normal driver.
☆The driver had just been hired 16 days before the accident, and the business operator had not made the driver have a health checkup or aptitude test. Moreover, the driver had a blank period of at least five years when he did not drive large buses, and it is conceivable that he did not have sufficient experience or skill to drive a large bus on a mountain road. It is thought that the fact that the business operator allowed such a driver to drive the bus without providing adequate guidance and education and without checking his driving skills was a factor that led to the accident.
☆The operation manager produced and used inadequate operation instructions without investigating the route. A roll call was not conducted before starting work, and selection of the route and rest stops was left up to the driver.
☆The business operator entered the business at a time when demand for tour buses had grown greatly with the increase in inbound tourism. It is thought that a circumstance leading to the accident was the fact that the operator managed the business with little regard to safety, with the securing and training of drivers having not kept up with the rapid expansion in the scale of operations.

**Diagram of accident circumstances**




**Recurrence prevention measures**

(Chartered bus operators)
☆When selecting drivers, make sure that they have enough ability, after providing guidance and supervision according to the operational conditions
☆Make sure that drivers have health checkups and aptitude tests, as mandated by law, and provide labor management according to each driver's condition of health and appropriate guidance and supervision according to driving characteristics
☆Educate drivers on methods of safe driving according to the vehicle structure and route, and sufficiently check and evaluate drivers' driving skills through escort training
☆Operation managers are to always perform roll calls with drivers, give them written operation instructions that clearly state such matters as the route and departure/arrival times, and make sure to provide instructions needed for safe operation.
☆Drivers are to make sure to encourage passengers to wear a seatbelt, even when sleeping at night.

(MLIT)
☆Enhance and strengthen the audit system, and verify that business operators have made appropriate corrections regarding legal violations identified in audits
☆Introduce a business license renewal system for chartered buses and make sure operators maintain a safety management system
☆Establish a system of onsite guidance, using private-sector institutions, to complement audits, and check the status of safety management at all chartered bus operators at a frequency of about once a year

Source) MLIT

### (v) Promoting safety measures based on the use of IT and new technologies

We are providing support for the deployment of equipment that will contribute to the advancement of operation management such as digital operation recorder and for advanced initiatives such as preventing overwork driving, from the point of view to support the efforts made to prevent the traffic accidents caused by the automotive transportation operators. Also, to prevent accidents caused by health or driving while incapacitated by fatigue, we are accumulating such information as driving characteristics and physical condition management as big data, and have started using it to study accident prevention operation models, such as the possibility of establishing routes suited to the physical condition of the driver.

#### (vi) Measures based on the recommendations of the Committee Investigating Accidents Involving Commercial Vehicles

The Committee Investigating Accidents Involving Commercial Vehicles conducts more advanced, complex investigative analyses of accident factors for major accidents involving commercial vehicles that have a large impact on society. As of March 2019, it has publicly released 33 reports on cases concerning incidents subject to special important investigations, such as the accident in which a chartered bus fell off the road in Karuizawa Town, Kitasaku County, Nagano Prefecture on January 15, 2016.

#### (vii) Promoting measures to prevent accidents caused by rapid physical changes affecting drivers

The Council for Discussing Measures to Deal with Health-Attributable Accidents Involving Commercial Vehicles was established in September 2015 to promote screenings as a more effective tool contributing to the early detection of sleep-disorder breathing, cerebrovascular diseases, heart disease, and other key diseases, as recommended in the Manual on Health Management for Drivers of Commercial Vehicles, which was revised in April 2014. Also, in order to encourage operators to have their drivers have brain checkups, etc., we established guidelines on cerebrovascular disease countermeasures for automobile transportation operators in February 2018.

#### (viii) Safety measures for the land transportation of international maritime containers

In order to enhance the safety of the land transportation of international maritime containers, Guidelines for the Safe Land Transportation of International Maritime Containers were compiled on June 2013. We are working to disseminate these guidelines and ensure the effectiveness of them in collaboration with the stakeholders through stakeholders meetings and training sessions by related industries in rural areas.

### (6) Comprehensive Safety Measures for Automobiles

#### (i) Considering vehicle safety measures for the future

In light of a report in June 2016 by the Automobile Task Force of the Road Transport Subcommittee under the Transport Policy Council, we are working to promote safety measures for children and seniors, safety measures for pedestrians and bicyclists, countermeasures against serious accidents involving large cars, and vehicle safety measures focused on handling new technologies such as automatic driving. Also, as a measure to prevent accidents involving elderly drivers, we carried out a study, in the UN, with the aim of establishing international standards regarding advanced emergency breaking systems based on an interim report compiled in a Vice Ministers' Council among relevant ministries and agencies in March 2017. Before the standards were established, we worked at promoting public awareness and encouraging the adoption of "Safety Support Cars (Support Car S)", such as by establishing a national government-run performance certification system.

#### (ii) Expanding, enhancing, and strengthening safety standards

Through the adoption in Japan of international standards established in the UNECE World Forum for Harmonization of Vehicle Regulations (WP29) to improve the safety of automobiles, we expanded and strengthened security standards, such as expanding the seats for which it is mandatory to have an unfastened seatbelt warning system. We also examined measures to ensure the safety of cars that drive on public roads, such as improving visibility by other traffic and installing seatbelts.

#### (iii) Promoting the development, commercialization, and popularization of advanced safety vehicles (ASV)

We promoted the full-scale spread of commercially viable ASV technology, such as advanced emergency braking systems, through cooperation among government, industry and academia. Also, under the sixth-term ASV promotion plan, which began in FY2016, we worked at studying technical requirements for successor models of handling systems in cases of driver abnormality, such as pulling over on the shoulder of the road.

### (iv) Providing safety information through automobile assessment

In order to promote the development of safer automobiles, and enable consumers to choose safe automobiles and child restraint systems, the results of the assessment of automobile safety were published. Assessment of acceleration suppression devices in cases of mistaken pedal operation began in FY2018.

### (v) Efforts toward realization of automatic driving

Discussions examining standards for automatic driving, etc., as co-chair or vice-chair of various working groups, were spearheaded at WP29. The WP29 has steadily promoted the formulation of international standards for automatic steering wheels, which is the main technology for automatic driving, including the launching of standards for lane changes in October 2018, as well as beginning examinations toward the formulation of standards for maintaining lanes, etc., when automatic driving is in operation. Furthermore, within Japan as well, examinations were conducted based on the general rules for system development and maintenance for automatic driving systems formulated in April 2018. Based on the Transport Policy Council report on the systems required for securing the comprehensive safety of automatic driving, etc., from design and manufacture to actual use, the Draft Bill to Partially Amend the Road Transport Vehicle Act," compiled in January 2019, was decided by the Cabinet and submitted to the Diet; other measures required for the development of systems are also being conducted.

### (vi) The vehicle type designation system

In response to inappropriate handling, by several automakers, on completion inspection for the type of designated vehicles, based on the interim report of the Task Force to Secure the Appropriate Performance of Completion Inspections, compiled in March 2018, a partial amendment was made to the ministerial ordinance based on the Road Transport Vehicle Act in October 2018; rules related to the selection of personnel for completion inspections, which had only been prescribed in notices in the past, were now prescribed by ministerial ordinance, and provisions were established on measures to prevent the rewriting of completion inspection records, as well as a recommendation system for securing appropriate operation of the type designation system. In addition, the Draft Bill to Partially Amend the Road Transport Vehicle Act was submitted to the Diet in March 2019, with the objective of establishing orders for corrective action against automakers that had been inappropriately handling the completion inspections.

### (vii) Swift and steady implementation of automobile recalls and informing users and others

In order to carry out vehicle recalls promptly and reliably, information is collected from vehicle manufacturers and users. In addition, checks are conducted and guidance is provided when audits are performed with respect to recall operations carried out by vehicle manufacturers. Technical verifications are conducted by the National Traffic Safety and Environment Laboratory of the National Agency for Automobile and Land Transport Technology on vehicles that are questionable in terms of conformity with safety or environmental regulations. To encourage recall repairs, we stepped up the dissemination of information to users through websites and social media. Furthermore, in order to reinforce the collection of information on automobile defects, dissemination activities in connection with the hotline concerning information on automobile defects (www.mlit.go.jp/RJ/) are being proactively undertaken.

In addition, the information collected by the MLIT including malfunctions, accidents, and fires are made public and information is provided to users regarding matters that require the attention of users or details necessary for the appropriate usage or maintenance and management or to take appropriate measures when malfunctions occur. In particular, we used press releases and other means to call on users to be aware that "advanced emergency braking systems are not all completely reliable".

Also, in FY2018 there were 408 recall notifications for vehicles, covering 8.22 million vehicles, and 1 for child restraint systems, which covered 5,022 units.

### (viii) Sophistication of vehicle inspections

In order to prevent illegal secondary modifications[Note] and the early detection of vehicular malfunctions related to automobile recalls, information technology is being utilized to make vehicle inspections more sophisticated.

**Note** Acts such as undergoing new inspections in a state where parts, etc., have been removed, and the re-installation of such parts after the completion of the inspection.

### (7) Victim Support

#### (i) Protecting victims with the automobile liability security system

The automobile liability security system, implements various victim relief measures such as insurance payments of Compulsory Automobile Liability Insurance, governmental indemnity services (relief for victims of hit-and-run and uninsured car accidents), and payments for nursing care fees and administration of nursing care centers for those with severe residual disabilities based on the principle of the mutual support of the car society and is fulfilling a big role in protecting victims of traffic accidents.

#### (ii) Promoting traffic accident consultation activities

In order to promote the activities of traffic accident consultation offices set up by local governments, we are supporting consultation activities in communities, such as by increasing the handling capabilities of counselors through training and the publication of practical manuals, and by holding meetings for liaison and coordination and the sharing of information, as well as by publicizing the availability of consultation activities through websites. In this way, we are helping to improve the welfare of traffic accident victims.

### (8) Safety Measures for Mechanized Car Parking

In May 2017, JIS standards were established for standards related to the safety of mechanical parking equipment in order to improve quality based on international mechanical safety thinking and to create standards that are applicable to many kinds of mechanical parking equipment.

Also, in December 2017, the City Facilities Working Group of the Town Planning Fundamental Issues Subcommittee in the Infrastructure Development Council compiled a report on the specific direction for measures aimed at ensuring the safety of mechanical parking equipment in the future, and in July 2018, the Policy on the Appropriate Maintenance and Management of Mechanized Car Parking was formulated with the objective promoting Securing Safety After Installation Through Inspections, etc., based on this report.

## Section 5 Crisis Management and Security Measures

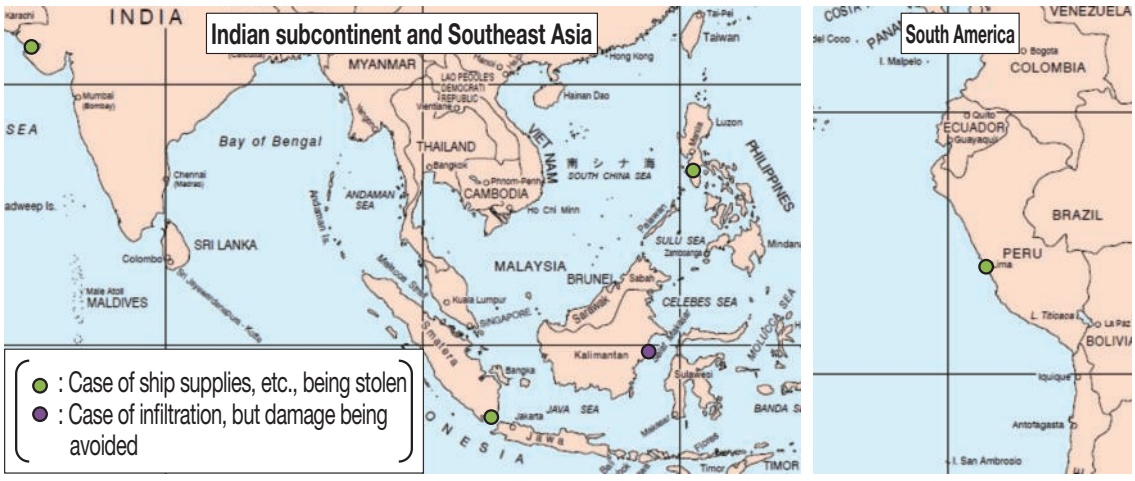
## 1 Promoting Crime and Terrorism Counter-measures

### (1) Coordinating with Other Countries for Crisis Management and Security Measures

#### (i) International initiatives for security

In addition to participating in meetings and projects in the field of transport security at international conferences and organizations such as Group of Seven (G7), International Maritime Organization (IMO), International Civil Aviation

Figure II-7-5-1 State of the Occurrence of Piracy and Armed Robbery Against Japanese-related Ships as Reported to the MLIT (2018)




Source) MLIT

Organization (ICAO), and Asia-Pacific Economic Cooperation (APEC), this knowledge is applied to domestic security measures while promoting initiatives for international cooperation and harmony.

The "Guidelines on Maritime Cybersecurity" were formulated at the IMO in 2017 based on the joint proposals of Japan, the United States, and other countries, and these are being widely used across the world as guidelines for security measures in the maritime sector.

The "International Working Group on Land Transport Security (IWGLTS)" established in 2006 currently has a participation of over 16 nations and is expected to further evolve as a framework for bilateral dialogue with the United States of America and European Union on land transport security and it will be utilized to improve domestic security and international contributions.

### (ii) Anti-piracy measures

According to the International Maritime Bureau (IMB), there were 201 instances of piracy and armed robbery in 2018. Broken down by region, the sea area around Somalia accounted for 3 instances, Africa (the Gulf of Guinea) accounted for 82 instances, and the sea area around Southeast Asia accounted for 60 instances.

While the number of heinous cases of piracy increased rapidly in the sea area around Somalia beginning in 2008, such cases have declined to low levels in recent years thanks to anti-piracy efforts by the navies of different countries, the implementation of self-defense measures based on best-management practices (BMP)[Note] on the part of merchant ships, and the initiatives of the international community, such as in terms of the presence of armed security on board merchant ships. Nevertheless, incidents of vessels being pursued and fired upon by suspicious small vessels still occur, and circumstances in terms of the navigation of merchant ships remain unpredictable.

Under this situation, a Japan Maritime Self-Defense Force destroyer is conducting escorts of merchant ships in the Gulf of Aden as well as surveillance patrols by the P-3C patrol aircraft based on the Law on Punishment of and Measures Against Acts of Piracy. The MLIT provides a contact point for escort requests from shipping companies and others and selects vessels to be escorted. The MLIT also steadily applies the Act on Special Measures Concerning the Guarding of Japanese Ships in Pirate-infested Waters (in force since November 30, 2013), which allows security guards employed by commercial security companies to guard Japanese-flagged vessels with which certain requirements are satisfied and ensures the complete navigational safety of Japanese-flagged vessels.

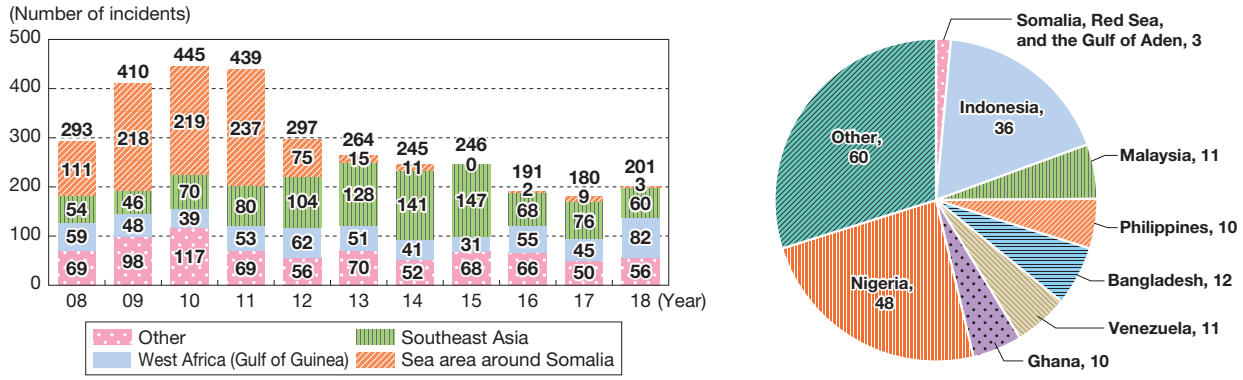
In order to deal with pirates off the coast of Somalia and in the Gulf of Aden, the Japan Coast Guard dispatches eight of its officers to Japan Maritime Self Defense Force destroyers to conduct judicial police activities in cases of piracy incidents. These Coast Guard officers are engaged in vigilance against piracy and the collection of information together with Maritime Self-Defense Force officials. The Japan Coast Guard also dispatches airplanes to littoral states in those areas to conduct pirate escort and extradition drills with the coast guard agencies of the relevant countries.

In the seas of Southeast Asia, the Japan Coast Guard dispatches patrol ships and airplanes to conduct cooperative anti-piracy drills and to exchange opinions and information with the coast guard agencies of countries where port calls are made. These are part of its efforts to promote links and cooperative relationships.

In addition, we are working actively to help increase law-enforcement capabilities, including conducting trainings for members of coast guard agencies of littoral states in these regions. We also contribute to international coordination and cooperation through international bodies, such as by dispatching personnel to the Information Sharing Center (ISC), which was established according to the Regional Cooperation Agreement on Combating Piracy and Armed Robbery against Ships in Asia (ReCAAP).

**Note** Stipulations of self-defense measures (such as measures to avoid piracy and the development of escape compartments onboard a ship) to prevent or minimize the harm caused by Somali piracy as produced by the International Chamber of Shipping and other international shipping organizations.

Figure II-7-5-2 "Changes in the Number of Incidents Involving Piracy and Armed Robbery Worldwide (According to the IMB Report)" and "Number of Incidents Involving Piracy and Armed Robbery by Sea Area in 2017 (According to an IMB Report)"




(Notes) 1 In the years between 2003 and 2009 and in 2014, the number of incidents of piracy in the waters around Somalia involved incidents occurring in Somalia, the Gulf of Aden, and the Red Sea; in the years between 2010 and 2013, the number of incidents of piracy in the waters around Somalia involved incidents occurring in Somalia, the Gulf of Aden, and the Red Sea, as well as incidents occurring in the Arabian Sea, Indian Ocean, and Oman.
2 The number of incidents for West Africa consists of incidents occurring in Angola, Benin, Cameroon, Congo, Gabon, Ghana, Guinea, Guinea-Bissau, Cote d'Ivoire, Liberia, Nigeria, Republic of Congo, Senegal, Sierra Leone, and Togo.
Source) MLIT

### (iii) Security measures for ports

Through the sharing of information with other countries and other international efforts related to port security, such as meetings with Japan-ASEAN port security experts, we are improving port security throughout the region.

## (2) Comprehensive and Strengthened Counter-Terrorism Measures for Public Transport

The threat of global terrorism continues to be a serious one, and so it is important to carry out anti-terrorism measures for public transportation and key infrastructure. Preparing for the Tokyo Olympics and Paralympics in 2020, MLIT established the Antiterrorism Working Group, chaired by a Senior Vice-Minister of Land, Infrastructure, Transport and Tourism, to promote security measures. Under that working group, we established the Soft Target Antiterrorism Team and are proceeding with a cross-ministerial study. Going forward, we will strengthen both structural and non-structural anti-terrorism measures within our fields of jurisdiction and continue to carry out initiatives in coordination with relevant ministries and agencies.

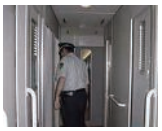
### (i) Promoting counter-terrorism measures for railways

In addition to increasing security cameras within stations and vehicles and strengthening patrols, counterterrorism measures are being promoted, such as setting up and operating crisis management levels. Furthermore, in response to the murder on the Tokaido Shinkansen that occurred in June 2018, current measures that should be urgently taken on the Shinkansen were compiled and put into place one by one.

Figure II-7-5-3 Points of the Current Measures to be Urgently Taken on the Shinkansen in Response to the Killings and Woundings on the Tokaido Shinkansen"

○ Enhancement of independent security

✓ Increased number of lines patrolled by security guards and expanded patrol sections
✓ Security and patrol performed by employees, etc.


(Photo 1) Security guard on a Shinkansen train


(Photo 2) Employee patrolling a Shinkansen train

○ Appropriate installation of crime prevention and protection equipment and medical equipment in carriages

✓ Introduction of crime prevention and protective equipment on Shinkansen across the country, increase in amount of medical equipment


Mid-sized Compact
(Photo 3) Protective shield introduced to Shinkansen trains


(Photo 4) Blade-proof gloves and blade-proof vest introduced to Shinkansen trains


(Photo 5) Medical equipment introduced to guard's room

○ Rules on carrying blades clarified

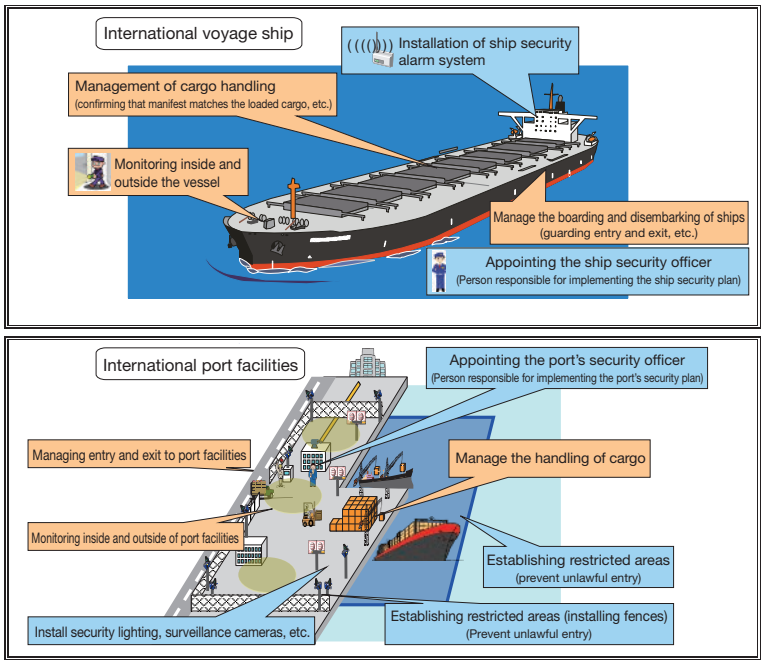
✓ Carrying blades that have not properly been packed made subject to regulation prescribed in the Railway Transportation Regulations (Ministerial Ordinance)

Source) MLIT

### (ii) Promoting counter-terrorism measures for ships and ports

MLIT has been engaged in ensuring security, through approval of the Ship Security Plan of the Japanese ships engaged in international voyage and ship verification of them, approval of the Port Security Plan of the international port facilities in Japan, and control of all the ships entering into the ports, such control includes verification of them and Port State Control (PSC), in accordance with "Act on Assurance of Security of International Ships and Port Facilities." In addition, we will continue to implement joint inspections of security systems with the police, Japan Coast Guard and others in an effort to further strengthen security measures.

Figure II-7-5-4 Security Measures for International Voyage Ships and International Port Facilities




Source) MLIT

### (iii) Promoting counter-terrorism measures for aviation

In addition to strengthening the aviation security system in accordance with the international standards prescribed in the Convention on International Civil Aviation, fences to prevent the intrusion of vehicles and people are being strengthened at airports, and other measures are also being taken, including the installation of sensors to facilitate a prompt response in the case of an intrusion occurring. Furthermore, body scanners were introduced at 13 airports, including Sendai, high performance automatic explosive detection systems were introduced at certain major airports, including Narita International Airport, and other measures have been put into place to strengthen aviation security. Also, information exchanges with major countries are carried out through active participation in international conferences and other opportunities to share Japan's experience with the latest security measures.

### (iv) Promoting counter-terrorism measures for automobiles

Counterterrorism measures are being promoted, including installing security cameras, filing reports with the police in the case of a suspicious person or object being observed, and developing a cooperation system. Relevant businesses are instructed to carry out inspections inside vehicles, strengthen patrols of the inside and perimeters of business offices and garages, and dispatch security officers to major bus stops during seasons with increased travelers, and in addition, the performance of bus jacking training is being promoted.

### (v) Promoting counter-terrorism measures for major facilities

For various river facilities special attention is paid for suspicious objects during river inspections and sight patrols; the lockout of entries and exits of dam management offices and dam body inspection corridors is also being strengthened. For various road facilities, special attention is paid to suspicious objects when patrolling expressways and directly managed roads and the trash boxes of rest facilities is also being aggregated. For national parks, security patrols are strengthened and caution is called for with various bulletins. At construction sites signboards are installed along with other measures calling for greater caution.

### (3) Balancing Security and Efficiency of Logistics

For international logistics, initiatives to balance security and efficiency are spreading to each country, even in our country, the dissemination of AEO system[Note 1] for logistics companies is being promoted. At present, the cargo for which the export declaration is done by AEO exporter, and AEO bonded transporter transports the cargo up to the bonded area, export declaration for the cargo is entrusted to AEO customs broker, also receiving the export permission before the cargo is stored in bonded area.

For the security system of air cargo with the purpose of protecting air cargo from the shipper to loading on aircraft, the KS/RA system[Note 2] based on international standards established by the ICAO is adopted. Then, based on the request of the United States for further security strengthening, the system was revised while maintaining the smooth performance of the logistics, applied from October 2012 for the United States for international passenger flights equipped with cargo, the same system was also expanded for application of all international passenger flights equipped with cargo from April 2014.

Also, in the container terminals of major ports, an access control system is being implemented to accurately confirm the identity and association of truck drivers and full-scale system operation started from January 2015.

### (4) Information Security Measures

The sophistication of cyber attacks on government institutions and businesses has been growing in recent years. Amid the increasing importance of initiatives for information security measures, measures will need to be further fortified as we head toward the Tokyo Olympic and Paralympic Games in 2020.

For this reason, the MLIT is taking action to enhance information security measures, including at incorporated administrative agencies and critical infrastructure operators under its jurisdiction (aviation, airports, railway, and logistics). In particular, we are providing support for the establishment of a “Transportation ISAC” (provisional name), which is a system for sharing and analyzing information and taking joint measures by critical infrastructure operators (provisional operation commenced in FY2018).

## 2 Establishing a Response System for Accident Disasters

When accident disasters such as accidents involving multiple fatalities occur on rail, air, etc. or ships are involved in oil spill accidents, a disaster response headquarters is established within the MLIT to develop a system to collect and aggregate precise information quickly and be able to implement disaster emergency measures with relevant government agencies.

To respond to accident disasters at sea, coordination with relevant organizations is being furthered, such as ensuring a dispatch system for patrol vessels, aircraft, and large-scale dredging and oil collection vessels, and readying disaster mitigation equipment and rescue equipment, in addition to implementing joint training. Also, environmental protection information on coastal waters needed to contain oil, etc., is being compiled and provided.

**Note 1** A system for the customs to certify international trade related business operators with well developed system of security management of cargos and compliance with laws and to grant the bene t of simplifying customs clearance.

**Note 2** A system that confirms the safety of all air cargo before loading the aircraft for designated shippers (Known Shipper), designated air cargo shipping businesses or designated air shipping agents (Regulated Agent), or air carriers.

## 3 Ensuring Public Safety at Sea

### (1) Promoting Counter-Terrorism Measures

As measures to prevent terrorism, nuclear power plants, petroleum complexes, and other important infrastructure facilities are subject to surveillance and detection functions carried out by patrol vessels and aircraft. In addition, enhanced security measures are being taken at so-called soft targets, such as passenger terminals and ferries. In addition, for counterterrorism measures against soft targets, it is vital to promote the performance of counterterrorism measures in partnership with business operators such as the operators of these facilities. For this reason, the Japan Coast Guard has established the "The council on counterterrorism at the sea and waterfront areas" joined by the relevant organizations and maritime and harbor industry groups. They discuss and examine counterterrorism measures and counterterrorism measures are being promoted through public and private organizations working together, with an eye toward the 2019 G20 Osaka Summit and related ministerial meetings, as well as the 2020 Tokyo Olympic and Paralympic Games, etc.

### (2) Promoting Measures Against Suspicious Vessels and Spy Ships

It is well known that suspicious vessels and spy ships are probably engaged in serious crime in our country's territorial waters and to shed light on their objectives and activities, suspicious boats needs to be stopped for boarding inspection and if crime is discovered, it needs to carry out a proper criminal investigation. For this reason, in response to suspicious vessels and spy ships, the Japan Coast Guard which is a police organization deals with them as the primary agency in cooperation with relevant government agencies.

The Japan Coast Guard conducts various training as well as closely works with relevant agencies, etc. to exchange information, and thereby strives to detect suspicious vessels and spy ships early as well as to maintain and improve capabilities to cope with them.

### (3) Promoting Measures Against Maritime Crimes

Examples of recent trends that we are seeing in terms of maritime crimes include cases in which domestic poaching is carried out by poachers and buyers working in tandem and cases in which funding is provided by crime syndicates. Maritime environmental offences, such as cases in which waste products are illegally dumped into the ocean to avoid having to pay for treatment costs, continue to be perpetrated. In addition, in crimes in which foreign fishing vessels operate illegally, some vessels operate unlawfully under cover of darkness to evade control. International criminal organizations are also getting involved in the smuggling and the illegal migration. Regarding various maritime crimes, there is still a need for vigilance and Japan Coast Guard is strengthening surveillance and law enforcement, gathering and analyzing crime information, and strengthening boarding inspections by effectively utilizing patrol vessels and aircraft as well as sharing information with relevant domestic and foreign organizations as part of the efforts to pursue effective measures and take strict yet appropriate measures against maritime crimes.

## Column

### The Parade for the 70th Anniversary of the Establishment of the Coast Guard System and General Training and the Ceremony for the 70th Anniversary of the Establishment of the Coast Guard System

The Japan Coast Guard, under the spirit of "Justice and Humanity" just after the end of the war, in May 1948, embarked on lighting up the Sea of Japan, which had been darkened due to the war, and has engaged in operations night and day to protect the safety and security of the Japanese people since then; it celebrated the 70th anniversary of the establishment of the Coast Guard System in 2018.

In this milestone year, the Japan Coast Guard held a Parade for the 70th Anniversary of the Establishment of the Coast Guard System and General Training in the Haneda area of Tokyo Bay on May 19 and 20, 2018. 24 patrol vessels and 12 aircraft from around the country, as well as vessels belonging to domestic and international related organizations and patrol vessels of the US Coast Guard participated, and in addition to a ceremony, general training full of tension was conducted, including helicopter flight training and rescue, and terrorist suspect capture and restraint training. Princess Takamado and Princess Ayako, as well as the Minister of Land, Infrastructure Transport and Tourism Ishii Keiichi were in attendance on the 19th, and Prime Minister Abe Shinzo and Deputy Minister of Land, Infrastructure and Transport Akimoto Tsukasa and Tourism were in attendance on the 20th. Approx. 5,700 people visited the vessels over these two days, observed the ceremony and the results of the daily training, and deepened their understanding of maritime security work.

In addition, at the Ceremony for the 70th Anniversary of the Establishment of the Coast Guard System" held in June, with both the Emperor and Empress in attendance, congratulatory messages were offered by Prime Minister Abe, Chairman of the House of Representatives Oshima Tadamori, Chairman of the House of Councilors Date Chiuichi, and Chief Justice of the Supreme Court Otani Naoto, and in addition, video messages were played from the coast guard organizations of nine countries, including the United States and Kenya, as well as from four organizations, including The International Maritime Organization, International Association of Lighthouse Authorities, and The International Hydrographic Organization. Furthermore, the foundation of the current Japan Coast Guard was exhibited through the presentation of a video entitled "70 Years of Progress", as well as through display panels. Over the course of the ceremony, the Japan Coast Guard reaffirmed its mission regarding the Coast Guard System, and in addition, each individual member of the coast guard officer personnel renewed their determination to carry out their duties with all of their ability.

Commemorative Ceremony


Photo from the Ceremony


Comprehensive Training (high speed mobile training)

Source) Japan Coast Guard

## 4 National Security and Protecting Citizens' Lives and Assets

### (1) Responding to North Korea Issues

Japan, in response to the launch of the ballistic missile by North Korea in July 2006 and the nuclear testing conducted by North Korea in October 2006, put into a place a ban on the entry of all vessels bearing the North Korean flag that same month, pursuant to the Act on Special Measures concerning Prohibition of Entry of Specified Ships into Ports. In addition, in 2016, in response to the series of provocations by North Korea, third country-flagged vessels and Japanese-flagged vessels confirmed by procedures, etc., under Japanese law to have called in at a North Korean port, as well as vessels determined based on the decision of the United Nations Security Council, were added to the list of vessels subject to sanctions. The Japan Coast Guard checks information related to the ports of call of such vessels in order to ensure that these measures are implemented. Also, to ensure the effectiveness of the measures banning exports to North Korea, such as United Nations Security Council Resolution 1874, in accordance with the Special Measures Law Regarding Cargo Inspections, etc., of Japan in Accordance with United Nations Security Council Resolution 1874, etc., close coordination with relevant administrative agencies is promoted to ensure the effectiveness of measures stipulated by the law.

Based on the repeated occurrences of North Korean transgressions, the MLIT has fortified immediate response systems in close coordination with relevant ministries and agencies, and a system for monitoring and keeping track of North Korea remains in effect. Even in cases of nuclear testing and ballistic missile launches, we collect information and provide necessary information to ensure the safety and security of the nation. In particular, in such cases as the possibility of a North Korean ballistic missile coming near Japan, we transmit information directly, or through business operators, to aircraft and ships near Japan, warning them to be alert. Moreover, the Japan Coast Guard has remodeled the system for the automation of information transmission, and is making efforts to ensure that information is transmitted promptly to vessels in the vicinity of Japan.

### (2) Responding to Armed Attacks and Other Situations Under the Civil Protection Plan

In accordance with the Act concerning the Measures for Protection of the People in Armed Attack Situations and Basic Guidelines for Protection of the People that stipulates measures regarding the evacuation, rescue and minimization of losses due to armed attacks, etc., the MLIT, the Geospatial Information Authority of Japan, the Japan Meteorological Agency, and Japan Coast Guard stipulate a Plan for the Protection of the People. The MLIT, and the Japan Tourism Agency, at the request of local government organizations, etc., is providing support for communication and coordination with transport companies designated as public organizations regarding the transportation of refugees, and has prescribed that the Geospatial Information Authority of Japan (GSI) is to provide information on disaster situations and refugee facilities, etc., using geospatial information to the public, in partnership with the relevant ministries; that the Japan Meteorological Agency is to provide weather information to the public in partnership with the relevant ministries; and that the Japan Coast Guard is to implement measures required for the transmission of warnings and the provision of guidance for refugees.

## 5 Infectious Disease Measures

We are coping with the infectious diseases, by close cooperation with the relevant ministries and agencies, including the Ministry of Health, Labor and Welfare and the Cabinet Secretariat for the measures.

For countermeasures against pandemic influenza and new infectious diseases, "the Act on Special Measures for Pandemic Influenza and New Infectious Diseases Preparedness and Response (hereinafter Act on Special Measures)" was established in May 2012 and put into effect in April 2013. The Act on Special Measures is designed to limit the spread of infections as much as possible, protect the life and health of national citizens, and minimize impact on citizen's lives and the national economy; Specified government organizations, including the MLIT, have the obligation to properly and promptly engage in measures against new strains of influenza, to provide accurate and prompt support for the measures implemented by local government organizations and specified government organization, and through this to establish a posture of readiness across the whole of Japan.

For this reason, the MLIT, in the MLIT Action Plan for New Strains of Influenza, in regard to the operation of the various measures newly incorporated into the Act on Special Measures, prescribed (i) the role of transport operator-specified (local) government organizations, and (ii) the action to be taken in the event of an emergency such as a pandemic of a new a strain of influenza, etc., being declared. In addition to this, we will cooperate with quarantine measures taken by the relevant ministries in the case of an outbreak overseas to delay the spread into Japan as much as possible, in the event of quarantined airports and ports being consolidated, the cooperation of airport and port administrative personnel, etc., will be promoted, and in the case of an emergency declaration being issued during or after the early stages of outbreak within Japan, requests will be made for the emergency transportation of pharmaceuticals and food, etc.

In addition, since 2013, we have conducted an annual information transmission drill based on the scenario of an outbreak of a new strain of pandemic influenza. Additionally, since 2016, we have conducted an operations drill at the MLIT Headquarters for Promoting Measures Against New Strains of Pandemic Influenza and Other New Infectious Diseases, and have confirmed the responses that would be necessary through cooperation with the collective performance of quarantine conducted by the relevant ministries at the time of the spreading within Japan of a new strain of influenza.

Furthermore, on September 9, 2018, the first outbreak of hog cholera in Japan for 26 years since 1992 was confirmed at a pig farm in Gifu Prefecture. This was followed by further outbreaks in the period through March 31, 2019, in agricultural areas in five prefectures, including Gifu Prefecture and Aichi Prefecture. The MLIT took action as best possible, in close cooperation with relevant ministries, in order to prevent the further spread of infection, including the provision of materials required for epidemic prevention measures conducted by the prefectural and local governments concerned, the issuance of requests for cooperation to the relevant businesses concerning the epidemic measures taken by such local governments, and the provision of instructions to tourism industry associations so as to ensure that tourists were provided with accurate information in order to avoid transmission to others.

# Chapter 8 Creating and Preserving a Beautiful and Healthy Environment

## Section 1 Promoting Global Warming Countermeasures

### 1 Implementing Global Warming Countermeasures

At the 21st session of the Conference of the Parties to the Framework Convention on Climate Change (COP21) held in 2015, the Paris Agreement was adopted as a new international framework for reducing greenhouse gas emissions beginning in 2020, with participation by all countries. The agreement went into effect in November 2016, and Japan is a signatory nation.

Based on the Paris Agreement, Japan adopted the Plan for Global Warming Countermeasures by a Cabinet decision in May 2016, and has committed to efforts toward the achievement of the mid-term objective to achieve a 26.0% decrease in the FY2013 level of greenhouse gases by FY2030, and as a long-term objective aims to reduce emissions 80% by 2050.

The MLIT has committed to a wide array of policy development initiatives for achieving the mid-term objective based on this plan, including making housing and buildings more energy efficient, measures for individual vehicles, and the promotion of low-carbon urban development.

In June 2018, the Bill to Partially Amend the Act on Rationalizing Energy Use, which includes provisions for certifying energy-saving efforts through the collaboration of multiple transport operators and allowing corporations to allocate used energy among themselves and report regularly, was promulgated, and entered into effect in December 2018.

In addition, we are working toward the promotion of adaptation measures based on the Climate Change Adaptation Plan (devised in November 2015), which was partially amended in November 2018, to counter the effects of climate change.

**Figure II-8-1-1 Examples of MLIT Efforts in the Plan for Global Warming Countermeasures**

Japanese government's overall $CO_2$, etc., emissions reduction targets for FY2030
-26.0% from FY2013 (-25.4% from FY2005)

Individual Sector Emissions of Carbon Dioxide as an Energy Source
(1 million tons)

| | FY2030 Emissions Target | FY2013 (FY2005) | (Reference) Reduction Rate |
|---|---|---|---|
| Industrial | 401 | 429 (457) | -6.5% |
| Business, other | 168 | 279 (239) | -39.9% |
| Residential | 122 | 201 (180) | -39.3% |
| Transportation | 163 | 225 (240) | -27.6% |
| Energy conversion | 73 | 101 (104) | -27.7% |
| Total | 927 | 1,235 (1,219) | -24.9% |

*"Greenhouse gases" refers to non-energy source $CO_2$, nitrous oxide, methane and others in addition to the energy source $CO_2$ described previously. The overall greenhouse gas reduction target is -26.0%.

(Other MLIT Efforts)
- ○Promotion of low-carbon urban development (cross-sector measure)
- ○Reduction of $CO_2$ emissions from construction machinery (industrial sector)
- ○Installation of small hydraulic power generation facilities, etc. (energy conversion sector)
- ○Enhancing incineration at sewage sludge incineration facilities, etc. (nitrous oxide)
- ○Promotion of urban greening, etc. ($CO_2$ sink measures), etc.

Examples of MLIT Efforts in the Plan for Global Warming Countermeasures
*These are only a portion of the efforts the MLIT is making in each sector.

○Making buildings energy efficient
Promotion of obligation to comply with energy efficiency standards in new buildings, repair of existing buildings, etc.
- Required energy efficiency standards compliance rates in new buildings (floor area of 2,000 m² or more)
  From 93% in FY2013 to 100% in FY2030
- Percentage of building stock that satisfies energy efficiency standards
  From 23% in FY2013 to 39% in FY2030

○Promotion of energy efficiency and creation methods in sewage systems
○Low-carbon urban development via thermal environment improvement through heatisland countermeasures


○Making housing energy efficient
Promotion of compliance with energy efficiency standards in new houses, repair of existing houses, etc.
- Percentage of new houses that comply with energy efficiency standards
  From 52% in FY2013 to 100% in FY2030
- Percentage of housing stock that satisfies energy efficiency standards
  From 6% in FY2013 to 30% in FY2030

○Diffusion of next-generation automobiles, improvement of fuel efficiency
Support for realization of world-class fuel efficiency performance, adoption of next-generation automobiles, etc.
- Average fuel efficiency of privately owned vehicles: From 14.6 km/L in FY2013 to 24.8 km/L in FY2030
- Percentage of next-generation automobiles out of the total number of new cars sold: From 23.2% in FY2013 to 50%-70% in FY2030

○Promotion of traffic flow improvement
○Promotion of the use of public transportation
○Streamlining/modal shift of logistics
○Improvement of energy efficiency in rail, ocean and air transport


FC (Fuel Cell) bus | Micro mobility | CNG truck

Source) MLIT

## 2 Promoting Global Warming Countermeasures (Mitigation Measures)

### (1) Promoting Low-carbon City Development

In urban areas with a considerable concentration of human residents and buildings, low-carbon urban development plans produced by municipalities according to the "The Low- Carbon City Act" have been put into place from the standpoint of the desire to advance "low-carbon urban development" in accordance with consolidating urban functions, promoting the use of public transit in connection with this consolidation, and promoting green conservation and greening initiatives. Low-carbon urban development plans based on this law had been created in 24 cities as of the end of FY2018. Low-carbon urban development is being promoted through various special legal measures and tax programs for initiatives under such plans, as well as by other financial measures.

### (2) Promoting the Development, Distribution and Optimal Utilization of Environment-friendly Vehicles

#### (i) Improving mileage of vehicles

Based on the Law Concerning the Rational Use of Energy (Energy Saving Act), we are formulating fuel efficiency standards and the like, and are striving to improve the fuel efficiency performance of automobiles. Fuel efficiency standards for next-generation passenger cars have been studied by the Automobile Fuel Efficiency Standards Subcommittee (a subcommittee of the Transportation Policy Council) since March 2018.

#### (ii) Framework for promoting improvements in fuel efficiency

To make it easier for consumers to identify and select vehicles that offer exceptional performance in terms of fuel efficiency, we have required automobile manufacturers and others to publish fuel efficiency information in their catalogs, and a program for evaluating and publicizing performance in terms of the fuel efficiency of automobiles is being run.

Stickers are affixed to vehicles to allow consumers to easily understand fuel performance in terms of fuel efficiency.

#### (iii) Promoting the dissemination of environmentally friendly vehicles

We are implementing tax breaks through tax reductions for eco-cars and the green tax system to promote the spread of automobiles that offer superior environmental performance. In the FY2019 revision to the taxation system, reviews of the reduction rate were performed for eco-car tax reductions, and the application period for such reductions was extended. Special measures to promote green transport were also extended in their current state for two years.

In addition, subsidies are being granted to truck and bus business operators for the acquisition of CNG automobiles[Note], hybrid vehicles, and advanced environmental diesel trucks. For ultra-lightweight vehicles, in May 2018, the Working Group for the Harmony of Ultra-Lightweight Vehicles with the Community, comprising specialists, formulated a roadmap aimed at the full-scale spread and mass production of such vehicles, and compiled concrete measures for the future.

#### (iv) Development, application, and creating a usage environment for next generation heavy vehicles

Since FY2015, we have been pursuing scientific research to promote the development and commercialization of technologies related to high-efficiency, next-generation diesel engines and next-generation large-sized vehicles known as large-sized liquefied natural gas automobiles, from the standpoint of reducing carbon footprints and emissions, and have promoted initiatives toward the realization of this, including development of the necessary test methods.

#### (v) Promoting and disseminating ecological driving

MLIT has promoted holding symposiums and events all over the country in cooperation with the relevant ministries and agencies of the government and the District Transport Bureaus. We also worked on promoting and spreading ecological driving based on the "10 Reasons for Driving Ecologically."

Note Compressed Natural Gas Vehicles (Natural Gas Automobiles)

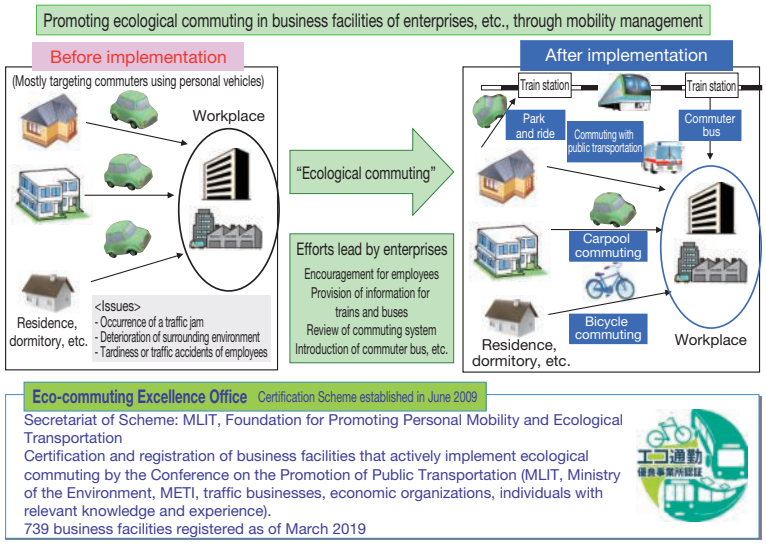
### (3) Promotion of Traffic Flow Improvement

Various traffic flow measures are being tried, since improving the driving speed by smoothing the traffic flow will improve the actual as mileage rate and decrease the carbon dioxide emissions from automobiles. Specifically, we are developing ring roads and other arterial road networks that are effective in reducing through-traffic in the urban center by providing them with alternate routes, working on grade separation of intersections and promoting serial railroad grade-separation projects to eliminate unopened grade crossings. In order to realize smooth, safe transportation services, we are also promoting initiatives for the smart use of roads in which the functions of the entire road network are used optimally, such as improving the maintenance of and making small-scale improvements to existing roads. In addition, we are improving the road environment to encourage the use of bicycles, and introducing LED road lights in order to reduce carbon footprint of road facilities.

### (4) Promoting the Use of Public Transportation

The shift from private vehicles to public transportation, which is more energy efficient and emits less $CO_2$, is a necessary facet of global warming countermeasures. Thus we are helping to make public transportation more convenient by introducing an LRT/BRT system, promoting transitions to universally accessible stations, promoting the introduction of public transit IC cards and other computerization initiatives, and promoting the spread of eco-commuting at the business unit level through the use of an eco-commuting excelling business certification system. Furthermore, information analysis and validation results of past activities for the Environmentally Sustainable Transport (EST) Model Project are being provided.

Figure II-8-1-2 Promotion of "Ecological Commuting" through Mobility Management




Source) MLIT

### (5) Optimizing Logistics

Exceeding 50% of the total domestic transportation modes in Japan, trucks account for the majority of the share ratio (ton kilometer basis in transportation). The $CO_2$ emissions base unit[Note] of trucks is greater than that of mass transportation such as railroads and domestic shipping, and trucks account for 90% of the $CO_2$ emissions in logistics. In order to reduce $CO_2$ emissions while sustaining domestic logistics, we must strive to utilize energy efficient transportation modes such as railroads and domestic shipping in addition to improving energy efficiency and transportation efficiency of trucks. With a view to establishing an efficient system of logistics with a lower environmental impact, we are providing support for initiatives concerning efforts to promote the dissemination of freshness-preserving containers that leverage new technology and large CNG trucks and other environmental vehicles, smaller carbon footprints generated by logistical sites, ports and harbors, and the dissemination of energy-saving natural refrigerant equipment for use in warehouses for frozen and refrigerated goods. In addition, we are providing support for promoting joint transportation and modal shifts and for introducing new container freight cars capable of high speeds and advanced transportation performance, as well as working to revitalize coastal shipping and ferries through such efforts as promoting the construction of energy-saving ships. We are also working to disseminate the Eco Rail Mark (181 products (206 items) and 87 cooperating enterprises certified as of the end of September 2018), and the Eco Ship Mark (146 consignors and 164 logistics businesses enterprises certi-

Note The amount of $CO_2$ emitted by shipping 1 ton of cargo for a distance of 1km.

fied as of the end of March 2019). In ports and harbors that are a hub for maritime and overland transportation, we are endeavoring to reduce overland transportation distances for cargo by promoting the development of international maritime container terminals, international logistics terminals, and domestic logistics sites compatible with combined multimodal transportation. Furthermore, in ports and harbors, we are engaged in efforts to promote a modal shift and streamlined transportation efficiency through the use of ocean shipping for waste distribution, as well as the use of IoT equipment, the introduction of new systems for the sharing of positional information on chassis traveling within and in the vicinity of ports, and the promotion of the introduction of multi-container chassis, with the objective of reducing $CO_2$ emissions.

In addition, in cooperation with the relevant ministries and related organizations, we hold the Green Logistics Partnership Conference to give awards to the excellent operations through the collaboration of logistics operators and shipping companies and to raise public awareness.

Figure II-8-1-3 Promotion of Activities through the Green Logistics Partnership Conference

**Green Logistics Partnership Conference** (Manager: Takehiko Sugiyama, President, Express Highway Research Foundation of Japan)

- This conference was launched as a conference for promoting awareness of the importance of green logistics and stimulating interactions among cargo owners, logistics companies, and other concerned parties in order to advance $CO_2$ reductions in the logistics sector. Since FY2015, this conference has been promoting not just initiatives to reduce amounts of $CO_2$ emissions but also initiatives to reduce other burdens on the environment, improve the productivity of logistics, and otherwise contribute to the establishment of sustainable systems of logistics.
- Organized by: Ministry of Land, Infrastructure, Transport and Tourism; Ministry of Economy, Trade and Industry; Japan Federation of Freight Industries, Japan Institute of Logistics Systems
  Supported by: Japan Federation of Economic Organizations
- Established: April 2005
- Membership: 3,411 members (as of March 23, 2018) --- Logistics Companies, Cargo Owners, each of the industry associations, think tanks, research institutes, etc.
- Introduction and commendation of excellent businesses as well as holding discussions regarding Green Logistics aimed towards the expansion of voluntary efforts in the private sector aimed at reducing $CO_2$ emissions.

**Summary of the awarded enterprises**

[Purpose] To encourage enterprises to autonomously engage in initiatives and promote the dissemination and growth of the concept of green logistics by recognizing meritorious achievements in connection with initiatives carried out to successfully reduce burdens on the environment in the logistics sector, improve the productivity of logistics, or otherwise establish a sustainable system of logistics.

[Types of Awards] Ministers Award, Director-Generals Award, and a Special Award have been created.
Ministers Award --- Award from Minister of Land, Infrastructure, Transport and Tourism; Award from Ministry of Economy, Trade and Industry
Director-Generals Award --- Award from Ministry of Logistics Deputy from the Ministry of Land, Infrastructure, Transport and Tourism Secretariat; Award from Ministry of Commerce and Distribution Safety Deputy from the Ministry of Economy, Trade and Industry Secretariat
Special Award --- Award on the level of the Ministers Award and the Director-General Awards for particularly superior initiatives

**MLIT Awards Examples (FY2018)**

**◆Award from the Minister of the MLIT**

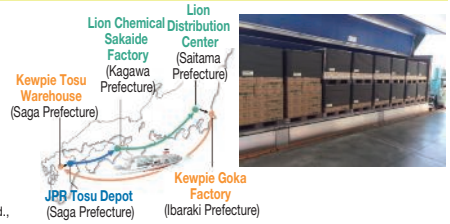
Project name: Realization of new logistics in initiatives for round-trip arterial transportation by business operators in three industries
Business operators: Japan Pallet Rental Corporation, Kewpie Corporation, Lion Corporation, KANKO KISEN Co., Ltd., KRS Corporation, Lion Distribution Services Corporation

**◆Award from the MLIT Minister's Secretariat Deputy Vice-Minister of Logistics**

Project Name: Maritime Transportation Using 27t Improved Gate-type (with Bellow) Ferry Chassis
Business Operators: Maruyoshi Transportation Co., Ltd., JFE Shoji Trade Steel Construction Materials Corporation, Nippon Trex Co., Ltd., Kowa Management Consulting Co., Ltd.,

**◆Green Logistics Partnership Conference Special Award (x2)**

Project Name: "Modal Shift of Courier Cargo Using Dedicated Carriage TOYOTA LONGPASS EXPRESS"
Business Operators: Sagawa Express Co., Ltd., Toyota Transportation Co., Ltd.
Project Name: "Combined Passenger / Cargo Carriage and Joint Transportation Project Using Route Buses"
Business Operators: Miyazaki Kotsu Co., Ltd., Japan Post Co., Ltd., Yamato Transport Co., Ltd.




Award of the Minister of the MLIT Examples
Round-trip arterial transportation by business operators in three industries

Award of the Minister of the MLIT

Source) MLIT

## (6) Promoting Low Carbonization of Railways, Ships, Planes, and Ports

### (i) Initiatives contributing to further enhance environmental performance in the railway sector

While rail has a smaller environmental impact than other modes of transportation, we are promoting the adoption of railroad-related facilities tied to the Ministry of the Environment and systems that help railway carriages generate a smaller carbon footprint and save energy and promoting the development of technologies to help improve environmental performance in order to further reduce the impact that rail has on the environment.

### (ii) Initiatives for energy conservation and low carbonization in shipping

We are promoting a shift to energy-saving, low-carbon ships in domestic shipping by promoting construction of energy-efficient ships and supporting the pilot projects on innovative energy-saving technologies. In international shipping, in order to accelerate measures to mitigate global warming, in April 2018, the International Maritime Organization (IMO)

adopted "Initial IMO Strategy on Reduction of GHG Emissions from Ships", which includes the long-term target of phasing out GHG emissions as soon as possible in this century. In order to develop measures to achieve this target, Japan, as a major shipping and shipbuilding country, launched the Industry-Academia-Government collaborated International Shipping GHG Zero Emissions Project in August 2018. The aim of this project is to contribute to measures to mitigate global warming and the sustainable development of marine industries. During FY2019, this project will put together a road map for the development and dissemination of innovative energy saving and decarbonization technologies in order to realize zero GHG emissions as early as possible. In addition, this project will consider a new international measure to improve energy efficiency of existing ships, which will also have an effect to bring forward constructions energy-efficient new ships with a view of reaching an agreement at IMO within five years.

#### (iii) Initiatives to reduce $CO_2$ emissions in aviation

We are advancing the implementation of area navigation (RNAV), which enables shortening flight time and distance and the User Preferred Route (UPR)[Note] method, which allows the flight to have the most efficient altitude desired by the pilot, as well as enhancing aerial traffic systems by implementing the Continuous Descent Operation (CDO) which sustains minimal engine output by continuously descending without leveling out at any point during descent. We also promote the use of ground power units (GPU) for airplanes and ecological cars such as Ground Service Equipment (GSE) vehicles as a part of Eco-Airport (eco friendly airport) activities. In addition, we are leading international discussions on the establishment of a $CO_2$ emissions trading system in the international aviation sector, which will begin in 2021, and are involved in the construction of an emissions reporting system for aeroplane operators, which will enter into effect in 2019, prior to the introduction of said emissions trading system in Japan. Furthermore, efforts to promote the use of sustainable aviation fuels are being conducted in collaboration with the various stakeholders.

#### (iv) Promotion of Comprehensive Low Carbonization at Ports

Toward the realization of carbon-free ports ahead of the world, we are engaged in the measures for $CO_2$ emission , which are the introduction of offshore wind power generation, the low carbonization regarding transport machinery such as ships, cargo handling machinery and trailers, and the introduction of on-shore power supply equipment. We are promoting the measures for $CO_2$ absorption through use of a blue carbon ecosystem (seaweed beds, etc.) that is created by effectively utilization of industrial by-products such as steel slag.

### (7) Enhancing Energy-saving Capabilities in Housing and Buildings

The rise in the amount of energy consumed by the civilian sector is more prominent than in other sectors, which makes improving energy-saving capabilities in housing and buildings an urgent task.

In response to the fact that the basic energy plan will progressively mandate that new dwellings and buildings comply with energy-saving standards by 2020, the Act on the Improvement of Energy Consumption Performance of Buildings, which sets forth regulatory measures such as measures for mandating compliance with energy-saving standards for buildings above a certain size other than dwellings, entered into full effect in April 2017. In addition, with the objective of further improving the energy-saving performance of houses and buildings, the Draft Bill to Partially Amend the Act on the Improvement of Energy Consumption Performance of Buildings, which expands the scope of buildings subject to the requirement to comply with the energy-saving standards, was submitted to an ordinary assembly of the Diet in 2019.

In order to communicate energy-saving performance to consumers in an easy-to-understand manner, efforts are underway to upgrade and disseminate a housing-performance indication system, such as the Comprehensive Assessment System for Built Environment Efficiency (CASBEE) and the Building Energy-efficiency Labeling System (BELS). Aside from this, the MLIT is supporting various efforts, such as the introduction of cutting edge $CO_2$ emissions-reducing technology and energy-saving renovation, as well as efforts by small and medium-sized contractors to work together to build ZEH (net zero energy housing) and certified low carbon buildings, while also lowering the interest rate by using the Japan Housing Finance Agency's securitization support business framework. In addition, it is working for the development and dissemination of such things as the design and construction technology of energy-saving houses and buildings by holding workshops for design and construction professionals and providing support for the technological development of leading

Note User Preferred Route

private firms.

Furthermore, in order to stimulate energy-saving measures in preexisting establishments, we are formulating supportive taxation measures for renovation work toward energy conservation in already existing residences and buildings.

### (8) Promotion of Energy-saving Methods in Sewage

The reduction of carbon monoxide is being advanced by the implementation of energy-saving measures such as high efficiency equipment for sewage treatment, and with new energy measures such as the processing of raw sewage into solid fuel, and the high temperature incineration of raw sewage.

### (9) Promotion of Environmental Measures for Construction Machinery

The MLIT is implementing a system that gives approval for major construction machinery, such as hydraulic shovels and bulldozers, that meet fuel consumption standards for construction machinery, and added small hydraulic excavators to the scope of that application in April 2018. In addition, we are providing support for the purchase of such construction machinery.

### (10) Implementation of $CO_2$ Sink Measures through Urban Greening

Urban greening is considered re-vegetation activities, which is subject to the greenhouse gas sink reports according to the Kyoto Protocol. Based on the basic plans for greening as formulated by the municipalities, we are promoting maintenance of city parks and the greening of communal facilities, such as roads and ports and private land.

MLIT is also working on public awareness regarding the meaning and effect of $CO_2$ sink measures by making cities more low carbon and green by mitigating the heat island phenomenon through improvement in the thermal environment by things like improving ground covering.

## 3 Promotion of the Use of Renewable Energy

According to the “Energy Master Plan” which was approved by the Cabinet in July 2018 and based on the fact that that the introduction of renewable energy is being expedited as much as possible, MLIT is promoting use of the energy potential in offshore wind-power at extensive infrastructure spaces like airport facilities, as well as rivers and streams, and the stable yet abundant sewage biomass.

### (1) Promotion of the Use of Marine Renewable Energy

Surrounded by the ocean on all sides, Japan is blessed with abundant sources of marine renewable energy, chief among them offshore wind power. The occupation application system created in accordance with the revision of the Port Act in FY2016 was used to hold open applications and select an offshore wind power generation company for Kitakyushu Port and Kashima Port. In addition, we worked together with the METI to establish an Exploratory Committee for Offshore Wind Power Generation Facilities in Ports and Harbors to hold discussions toward streamlining the process of reviewing offshore wind power generation facilities and easing the burden on business operators based on the Electricity Business Act and the Port and Harbor Act. In light of these discussions, we revised technical standards for offshore wind power generation facilities, based on the Ports and Harbor Act, and devised a Uniform Commentary on Technical Standards for Offshore Wind Power Generation Facilities, and Guidelines for Reviews Regarding Construction of Offshore Wind Power Generation Facilities in Ports and Harbors in March 2018, as well as a Uniform Commentary on the Maintenance and Management of Offshore Wind Power Generation Facilities in March 2019.

In addition, since FY2018, in order to reduce the cost of the construction and installation of floating offshore wind turbine, the MLIT are promoting efforts for formulating guidelines on design and safety assessment for realizing simplification of floating structures and installation methods, while also ensuring safety.

With regard to the development of marine renewable energy power generation facilities, the MLIT has prescribed a framework for coordination with stakeholders, and in order to enable long-term private use of the sea, the Act on the Promotion of Use of the Sea for the Development of Marine Renewable Energy Power Generation Facilities was established in November 2018, and promulgated on December 7, 2018.

### (2) Promoting Small Hydroelectric Generation

As initiatives toward an introduction promotion of renewable energy, the implementation of small hydroelectric generation by using rivers is being pushed forward. Specifically, MLIT is working on the thorough use of unused energy by the promotion of subsidiary power generating based on a registration system, providing project formation support by field contact points, technical support such as the provision of information in the study of small-scale hydropower facilities as well as support for the introduction of small-scale hydropower facilities at sediment control dams, as well as the proactive introduction of hydroelectric power generation facilities for dam management at dams directly controlled by MLIT.

### (3) Promotion of the Use of Sewage Biomass

The MLIT is promoting the use of energy derived from sewage sludge and the use of sewage heat.

In May 2015, the Sewerage Act was amended, thereby allowing heat exchangers to be attached to sewage conduits by private businesses and mandating efforts to be undertaken by sewage administrators to reutilize sewage sludge as a source of energy or fertilizer. Through the use of PPP/PFI, we will promote the energy utilization of sewage sludge by the use of bio-gas and solid fuel, as well as the use of sewage heat as renewable energy heat.

### (4) Promotion of Solar Power Generation Using Infrastructure Space

Based on the changes in energy supply and demand triggered by the Great Eastern Japanese Earthquake, and in addition to the effective utilization of the vast spaces of sewage treatment plants, ports and harbors, and airport facilities, steps have been taken to insure the installation and placement of solar power generation facilities by public entities in public infrastructure spaces, such as government buildings, and for private businesses that can install such facilities in roads and urban parks.

### (5) Promotion of Contribution Towards the Hydrogen Society

With the need for hydrogen energy expected to expand in the future, such as fuel cells for residential use (introduced to the market in 2009) and fuel-cell cars (introduced to the market in 2014), MLIT is working on realizing a hydrogen energy fueled society by preparing a conducive environment for the manufacturing, storage/transportation and usage of hydrogen. The MLIT also intends to continue its efforts in collaboration with relevant ministries and agencies on the Basic Hydrogen Plan determined at the Cabinet Meeting on Renewable Energy and Hydrogen in December 2017.

#### (i) Promotion of dissemination of fuel-cell cars

The MLIT will support the fuel-cell vehicle introduction projects of private businesses and others in an effort to work toward the world's fastest diffusion of fuel-cell vehicles, and with the understanding that the diffusion of fuel-cell buses and other vehicles that are expected to create a relatively consistent demand for hydrogen is particularly important in the development of hydrogen supply infrastructure. For fuel-cell buses, introduction support was provided for 5 vehicles up to the end of FY2017 (all within Tokyo), and in FY2018, introduction support was provided for 13 vehicles in partnership with the Ministry of the Environment.

#### (ii) Initiatives for the commercialization of vessels powered by hydrogen fuel cells

Through a partnership between the MLIT and the Ministry of the Environment, we have promoted efforts towards the formulation of future roadmap for the expanded use of hydrogen on ships, including examining the various technical issues and response measures, as well as calculating the economic rationality.

#### (iii) Setting up a marine transportation system for liquefied hydrogen

Since FY2015, Kawasaki Heavy Industries and other companies have been producing hydrogen through the use of brown coal, an unutilized energy source in Australia, and implementing a project to establish a supply chain for transporting liquid hydrogen to Japan (METI Project to Demonstrate the Establishment of a Supply Chain for Hydrogen Derived from Unutilized Energy Sources (MLIT partnership project)).

Therefore, in order for the MLIT to establish a highly efficient and safe method of loading and unloading liquefied hydrogen, energy carriers associated with the Strategic Innovation Promotion Program (SIP) engaged in research and development since FY2014 on loading systems for liquefied hydrogen in collaboration with the Cabinet Office.

### (iv) Promotion of the manufacture, use and application of hydrogen derived from sewage sludge

Sewage sludge is stable in terms of both quantity and quality, and is consolidated at sewage treatment plants. The proximity to urban areas and other characteristics of sewage treatment plants create promise for the realization of an efficient, stable hydrogen supply. Toward that end, we support the development and experimentation of hydrogen production technology at sewage treatment facilities to promote the manufacture, use and application of hydrogen derived from sewage sludge, which is a form of renewable energy.

## 4 Promotion of Global Warming Countermeasures (Adaptation Measures)

In regard to initiatives to prepare for the various impacts of climate change, these are being comprehensively and systematically promoted, based on the government's Climate Change Adaptation Plan (adopted by a Cabinet decision in November 2018), which was formulated based on the Act on the Climate Change Adaption Act (Act No. 50 of 2018).

The MLIT, which is responsible for the development of safe and secure national land and regions, and oversees various fields, including the preservation of the land, made a partial amendment to the MLIT Climate Change Adaptation Plan (formulated in November 2015) in November 2018 to reflect the latest measures.

Based on the MLIT Climate Change Adaptation Plan, we are engaged in efforts to discuss and develop comprehensive adaptation measures regarding both structural and non-structural aspects in the fields of natural disasters (floods, landslides, storm surges, tidal waves, etc.) and water resources and aquatic environments, as well as efforts regarding measures based on the Outline of the Policy Framework to Reduce Urban Heat Island Effects, which contribute to the continuous monitoring of climate change and the delivery of forecast data and other information, and to adaptation measures in the fields of national and urban lifestyles.

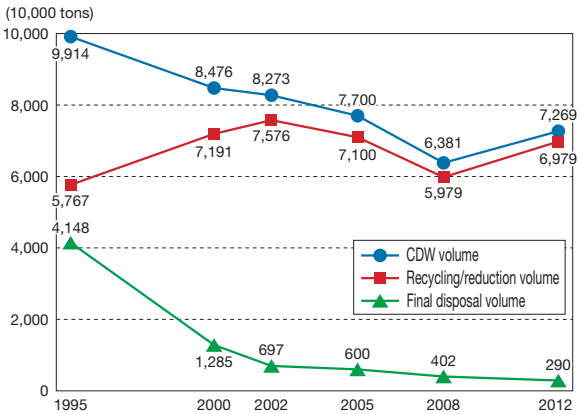
# Section 2 Promoting the Creation of a Recycling Society

## 1 Advancing Recycling in Construction

Construction and demolition waste (CDW) excluding excavated soil accounts for approximately 20% of all industrial waste, and therefore, suppressing its generation and promoting its reuse and recycling are major tasks. In FY2012, the amount of CDW excluding excavated soil generated was reduced to 72.69 million tons, and the recycling/reduction rate was high at 96.0%. The impending era of maintaining and updating of social infrastructure will likely result in changes to the quality and quantity of construction byproducts, and therefore, we must promote further CDW recycling in the future.

Sewage sludge also accounts for 20% of all industrial waste, reaching approximately 78.07 million tons in FY2015. We are working on recycling and reduction of sewage sludge.

**Figure II-8-2-1** Trends in CDW Volume, Recycling/Reduction Volume and Final Disposal Volume, and Recycling Rates by Item




Source) MLIT

| Item | | FY2012 Actual | FY2018 Target |
|---|---|---|---|
| Pieces of asphalt concrete | Recycling rate | 99.5% | 99% or more |
| Pieces of concrete | Recycling rate | 99.3% | 99% or more |
| Woodchips generated by construction | Recycling/reduction rate | 94.4% | 95% or more |
| Construction sludge | Recycling/reduction rate | 85.0% | 90% or more |
| Construction waste | Generation rate | 3.9% | 3.5% or less |
| | Recycling/reduction rate | 58.2% | 60% or more |
| Overall CDW volume | Recycling/reduction rate | 96.0% | 96% or more |
| Excavated soil | Efficient use rate | – | 80% or more |

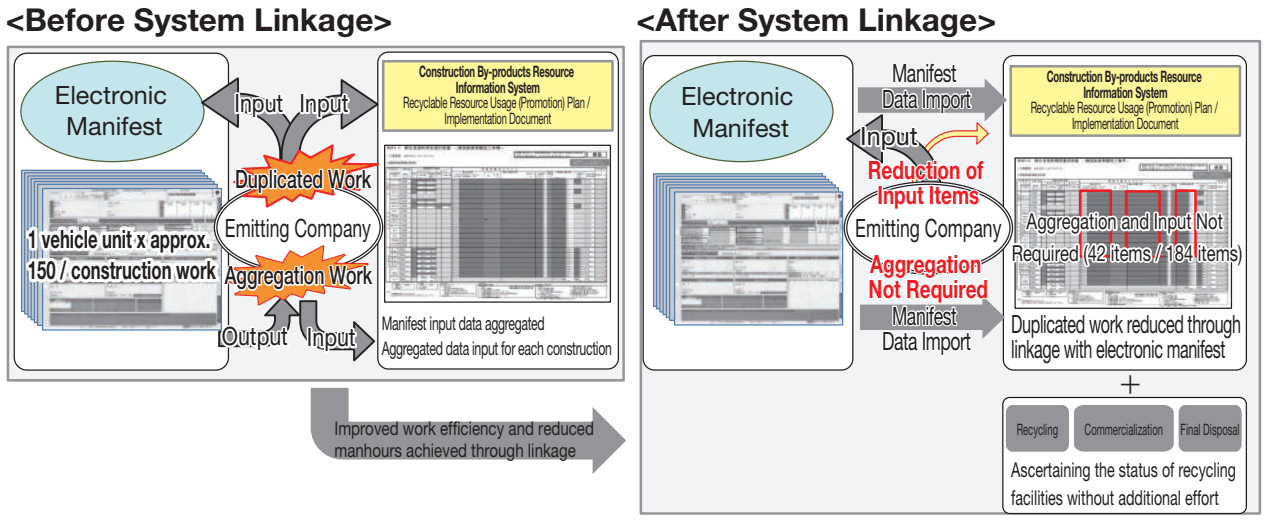
Source) MLIT, Construction Recycling Promotion Plan 2014

### (1) Advancing Recycling in Construction

Based on the "Construction Material Recycling Act (Construction Material Recycling Law)," we are working to enforce proper measures through a simultaneous patrol throughout Japan. In September 2014, the MLIT developed the Construction Recycling Promotion Plan 2014, which sets out our basic approach, targets and specific policies for promoting CDW recycling. We have been working on various policies throughout the plan period, which ends in FY 2018.

Specifically, we will work intensively on fortifying the monitoring of construction byproduct logistics, prevention before the start of construction, promoting recycling/reduction by thorough on-site sorting and carrying out to recycling facilities, promoting the use of recycled materials, and promoting the efficient use and appropriate disposal of excavated soil. As a means for the enhanced monitoring of construction by-product logistics in particular, we have been examining the use of electronic manifest notification information since FY2017, have streamlined the work for various notices, based on existing regulations, and have examined mutual cooperation initiatives targeted at the promotion of work reform.

Figure II-8-2-2 Conceptualization of Electronic Manifest Data Use




Source) MLIT

### (2) Reducing Sewage Sludge and Promoting Recycling

MLIT is promoting the recycling of sewage sludge (FY2017 recycle rate 73%) and moving forward with the use of sewage sludge made into solid fuel for energy. Furthermore, we are proceeding with the Breakthrough by Dynamic Approach in Sewage High Technology Project (B-DASH Project) for proving innovative technology and systems for the effective use of sewage based resources.

## 2 Constructing a Logistics System for Recyclable Resources

### (1) Forming a Logistics System for Recyclable Resources by Sea

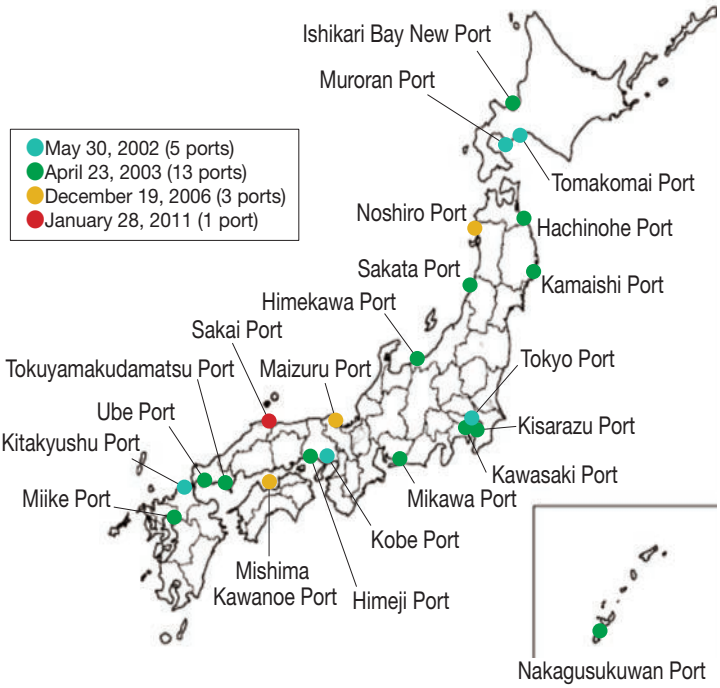
In order to form the "loop" of recyclable resources for creating a sound material-cycle society, MLIT have specified 22 ports throughout Japan as Recycle Ports (Integrated Reverse Logistic Base Port) for wide-spread flows concerning recyclable resources. At the Recycle Ports, they undertake activities such as securing coastal facilities like wharfs, aiding in establishing recyclable resources handling support facilities, promoting the public-private partnership, and improvements in operations related to handling recyclable resources. MLIT have partnered with the Ministry of the Environment to engage in efforts to promote modal shifting and lower the carbon footprint and costs of reverse logistics through improvements in transportation efficiency through the "Project to Promote Low-Carbon Type Reverse Logistics by Model Shift / Transport Efficiency."

Figure II-8-2-3 Specified Recycle Ports

Recyclables Handling Support Facility

(Guard-fenced, tire-washing, and water-collecting facility)

(Storage facilities for contaminated soil, etc.)




Source) MLIT

### (2) Systematic Acquirement of Bay Area Landfi¬ll Sites for Waste

Bay area landfills are being prepared in order to receive dredge soil produced by harbor improvement, or to receive waste materials that have difficulty finding final landfill sites. In the Osaka Bay area in particular, regional waste disposal sites are being developed to receive waste generated around the Osaka Bay area through the Osaka Bay Phoenix Project[Note 1]. Construction-generated soil generated in the Tokyo Metropolitan Area is transported by sea and used widely for land-reclamation purposes in ports and harbors across the country in accordance with the Super Phoenix Plan[Note 2].

Note 1 Business to promote the orderly development of the port by properly disposing in the sea landfill the waste generated from the 6 prefectures and 168 municipalities of the Kinki region.

Note 2 A mechanism for coordinating excavated soil from the Greater Tokyo area on a national level toward effective use as a resource for port construction at ports that require landfill materials

## 3 Recycling Vehicles and Marine Vessels

### (1) Recycling Vehicles

In accordance with the Act on Recycling, etc., of End-of-Life Vehicles (Act for Automobile Recycling), a system for confirming that end-of-life vehicles are properly recycled is being implemented. When a vehicle registration is deleted, as provided for in the Road Transport Vehicle Act, the vehicle weight tax will be subject to a refund program. We are endeavoring to promote the proper disposition of used vehicles and prevent illegal dumping. In FY2016, vehicles confirmed to have been scrapped numbered 1,367,951.

### (2) Recycling Marine Vessels

The recycling of large vessels (ship recycling)[Note 1] has generally been conducted in developing nations such as India and Bangladesh, where industrial accidents, environmental pollution and other problems continue to raise concern. In order to solve these issues internationally, Japan led discussions and convention drafting at the International Maritime Organization (IMO) as a world leader in shipping and shipbuilding, which resulted in the adoption of the 2009 Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships (Ship Recycling Convention).

In order to secure its obligations under this convention, Japan promulgated the Act on the Proper Implementation of Ship Recycling and Dismantling in June 2018, and concluded the convention in March 2019. This act will be enforced in line with the convention.

Toward the early entering into effect of the convention, Japan, as an initiative to promote the early conclusion of the convention by India, which is a major recycling country, provided support for the improvement of ship recycling facilities in that country. At the Japan-India Summit Meetings held in 2017 and 2018 as well, Prime Minister Shinzo Abe called on Prime Minister Narendra Modi to sign the convention in the near future, and reconfirmed India's intention to conclude the convention at an early stage.

The requirements for the efficacy of the convention are (i) participation by 15 or more countries, (ii) the total number of merchant vessels in convention companies being 40% or more, and (iii) the total maximum annual recycling volume in the convention countries over the past 10 years being 3% or more of the commercial vessels of the convention country; as of the end of March 2019, the current situation for these three targets was (i) 10 countries, (ii) 23.4%, and (iii) 0.32%[Note 2].

Pleasure boats, however, are made of FRP (fiber reinforced plastic), and are very difficult to recycle. Therefore, led by the Japan Marine Industry Association, the FRP Vessel Recycling System, which uses a broad recognition system based on the Waste Disposal Act, was constructed, making it possible for FRP vessels to be recycled as cement-firing materials. At the current time, approximately 500 vessels are being recycled across Japan each year under this system.

## 4 Efforts in Green Procurement [Note 3]

In light of partial revisions to the basic government policies, based on the "Law Concerning the Promotion of Procurement of Eco-Friendly Goods and Services by the State and Other Entities (Law on Promoting Green Purchasing)," the "Policy for promoting the procurement of ecologically friendly goods, etc." was adopted. Based on this, we are actively advancing the procurement of ecologically friendly goods for building materials, construction machinery, method of construction, and objectives in public construction work.

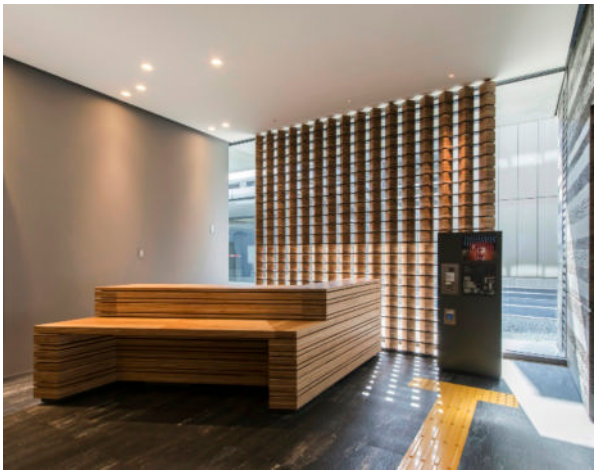
Note 1 Vessels that have reached the end of their operational use are dismantled, and the majority of the parts are reused as steel.
Note 2 Calculated using 40% of global merchant ship volumes in 2017.
Note 3 Here, Green Procurement refers to procuring eco-friendly goods as defined in Article 2 of the Green Purchasing Law.

## 5 Promoting the Use of Wooden Materials

Because wood is an environment-friendly building material due to reasons such as requiring less energy to process in comparison to other materials, and long-term utilization in various applications contributing to preventing global warming and forming a recycling-oriented society, we strive to encourage the utilization of wooden materials in public construction.

Based on the "Act for Promotion of Use of Wood in Public Buildings", etc., MAFF and MLIT publish the implementation status of the promotion and usage of wood every year, and MLIT endeavors to use wood for the structure and/or interior of Government buildings, establishes technical standards concerning design and construction methods for wooden Government buildings. Furthermore, MLIT endeavors to disseminate the preceding standards.

Figure II-8-2-4 Example of a building using wood: Wakayama Government Office Building



Source) MLIT

In order to advance the construction of wooden dwellings and buildings, various initiatives are being undertaken, such as supporting the construction of long-lasting quality housing built out of local wooden materials as well as other high-quality wooden housing; supporting the construction of medium-sized and large wooden buildings incorporating pioneering design and construction technologies; supporting the construction of wooden dwellings suited to regional climates; developing local programs for the production of wooden housing; and training leaders.

# Section 3 National Land Development That Revives and Preserves the Natural Environment

## 1 Initiatives for Biodiversity Conservation

COP 10 was held in Nagoya, Aichi Prefecture of Japan in October 2010, where the Strategic Plan 2011 - 2020 (Aichi Targets) was adopted. In order to achieve these targets, MLIT has promoted various actions in nation-wide level. "The National Biodiversity Strategy 2012 - 2020" was formulated in September 2012, which and aims at the conservation, restoration, and creation of wildlife habitats in rivers, urban green areas, coastal areas, and harbors. In addition, the "Technical Guidelines for Biodiversity Conservation in the Basic Green Plan" were formulated in October 2011, as reference material for use in the formulation of a Basic Green Plan for each municipality. A draft of the Urban Biodiversity Index, a metric for evaluating the state of biodiversity and policy progress in local governments, was formulated in May 2013, and a simplified version of the index, which enhances its ability to illuminate and evaluate the state of efforts more easily, was formulated in November 2016. In addition, the "Guidebook on the Formulation of Basic Green Plans in Consideration of Biodiversity" was created in April 2018 in order to promote the formulation of basic green plans to secured urban biodiversity, based on past results. Furthermore, in March 2015, the MLIT, together with Ministry of the Environment and Ministry of Agriculture, Forestry and Fisheries, formulated the Action Plan for Protection from Alien Species, which aims to promote the management of Alien Species comprehensibly and effectively, as well as the conservation and sustainable use of rich biodiversity in Japan.

## 2 Creating Rich and Beautiful River Environments

### (1) Creating and Conserving a Healthy River Environment

#### (i) Creating a rich river environment and stimulating revival

In river development, based on the "Basic Guideline for Rich River Development (established in October 2006)," we work for the conservation and restoration of animal habitats and diverse river scenery, while concurrently sustaining

safety over flood control.

While promoting the restoration of marshland by nature restoration projects and the improvement of the upstream and downstream migration environment for fish by fixing the fish passage ways, we are also promoting the protection and restoration of the watershed ecosystem with the goal of forming an ecosystem network[Note] by cooperating with various entities, as demonstrated in the project of rehabilitating storks to the wilds in Maruyama River (Toyooka City, Hyogo Prefecture).

Moreover, to effectively proceed with these activities, we are joining efforts with educated experts and various institutions, as well as utilizing research findings of government inspections of river areas and the Aqua Restoration Research Center, which has the largest experimental waterway in the world.

#### (ii) Countermeasures for non-native species in the waterways

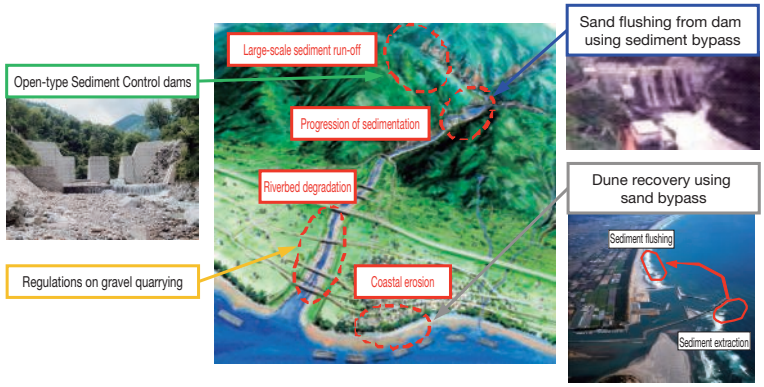
Non-native species, which are one of the threats against biodiversity, have been expanding their habitat in the waterways all over Japan. As a countermeasure, we have circulated information such as the "Guideline for Countermeasures for Nonnative Plants in Rivers" and "Examples of Countermeasures for Non-native Fishes (December 2013)" and are implementing measures against foreign species in various locations.

### (2) Initiatives to Recover the Water Supply in Rivers

In order to preserve a healthy river environment, it is essential to sustain a rich supply of water. For this reason, we have specified the required amount of water in the basic policies for river improvement, based on the habitat of plants and animals, scenery, and water quality. In addition to working to sustain the supply, we are proceeding with activities for clean river recovery in recession areas downstream from dams of hydroelectric power plants. Meanwhile, in order to preserve the river environment downstream of dams, flowing water is being retained in flood-control reservoirs to the extent that flood-control functions are not impeded and usable discharge dams are subject to elastic management practices and elastic management testing. (Water was retained using twenty-three dams in total in FY2018, eighteen of which were subject to the usable discharge of water.) Initiatives concerning medium-sized flash discharging to cause changes in river formations are also being undertaken. Furthermore, we are working to restore the water supply of rivers in urban areas, where the average amount of naturally flowing water has diminished, by pumping treated water from sewage plants.

### (3) Promoting Activities in the Comprehensive Management of Sediment from Mountains to Coastal Areas

Figure II-8-3-1 Initiatives in the Comprehensive Management over Sediment




Source) MLIT

Concerned that water systems will accelerate problems such as variation in river environments caused by changes in sedimentary transport, diminishing sand supplies to the coast, and coastal erosion caused by changes in littoral drift, relevant institutions are working in cooperation to comprehensively control sediment transport from mountains to coastal areas. Specifically, in order to deal with the problem caused by the sediment transport in mountain streams, dams, waterways and the coasts, in cooperation with the relevant organizations, MLIT is working on projects for formulating comprehensive sediment management plans for effective sediment management and building sediment control dams, building open-type sediment control dams so that sediment can be effectively washed downstream, improving existing sediment control dams, creating an effective flow of sediment by sediment bypasses for dams, and recovering of sandy beaches by such methods as appropriate sand and gravel extraction of the waterways, sand bypass and littoral nourishment.

**Note** Using districts that have excellent natural conditions as core areas and connecting them organically to ensure the appropriate placement and connections between habitat spaces

### (4) Environmental Education on Rivers

Rivers, as natural environments close to communities, have been the site of a variety of activities, such as environmental studies and natural experience activities. Because there are hidden dangers, and proper knowledge is essential for children to play and learn safely at rivers, we cooperate with the NPO River Activities Council (RAC), an organization established mainly by citizens' groups, to promote the cultivation of river administrators.

Also, in order to widely disseminate environmental education on rivers in the schools, the MLIT is providing information to textbook publishers to introduce environmental education projects.

○ Children's Riverside Rediscovery Project

With the cooperation of citizens' groups, educators, and river administrators, rivers are registered as Children's Riversides and receive various means of support from the Center for Supporting Children's Riverside Activities. As of the end of March 2018, 302 locations had been registered.

○ Riverside Fun School Project

Waterfront development required for enhancing experiential activities is being conducted at registered Children's Riversides. As of the end of March 2018, 287 locations had been registered.

○ National Aquatic Organism Study

Conducted with the goal to increase interest in rivers through a survey of life forms found in nearby rivers. In FY2017, 54,981 people participated. 63% of the inspection points (2,004 points) were judged to have "clean water."

## 3 Preserving and Improving Coastal Environments

Because we must preserve animal habitats, care for scenery, and sustain appropriate usage of beaches, while protecting the coast from storm surges, tsunamis, and high waves, we are proceeding with maintenance and conservation that balances between "defense," "environment," and "usage."

In addition, based on the Law for Protecting Beautiful and Rich Nature through the Promotion of Disposing Beached Coastal Waste Contributing to the Preservation of Coastal Scenery and Conservation of the Environment (Coastal Waste Disposal Promotion Act), we are working in close cooperation with relevant organizations to promote effective measures against beached waste and the like.

We are also providing support to administrative agencies for coasts under the "Project for Emergency Measures to Dispose of Large-Scale Driftwood and Other Debris Items that have Washed Ashore in Connection with Disasters" when large quantities of driftwood and other debris are washed ashore and impede the functions of coastal protection facilities.

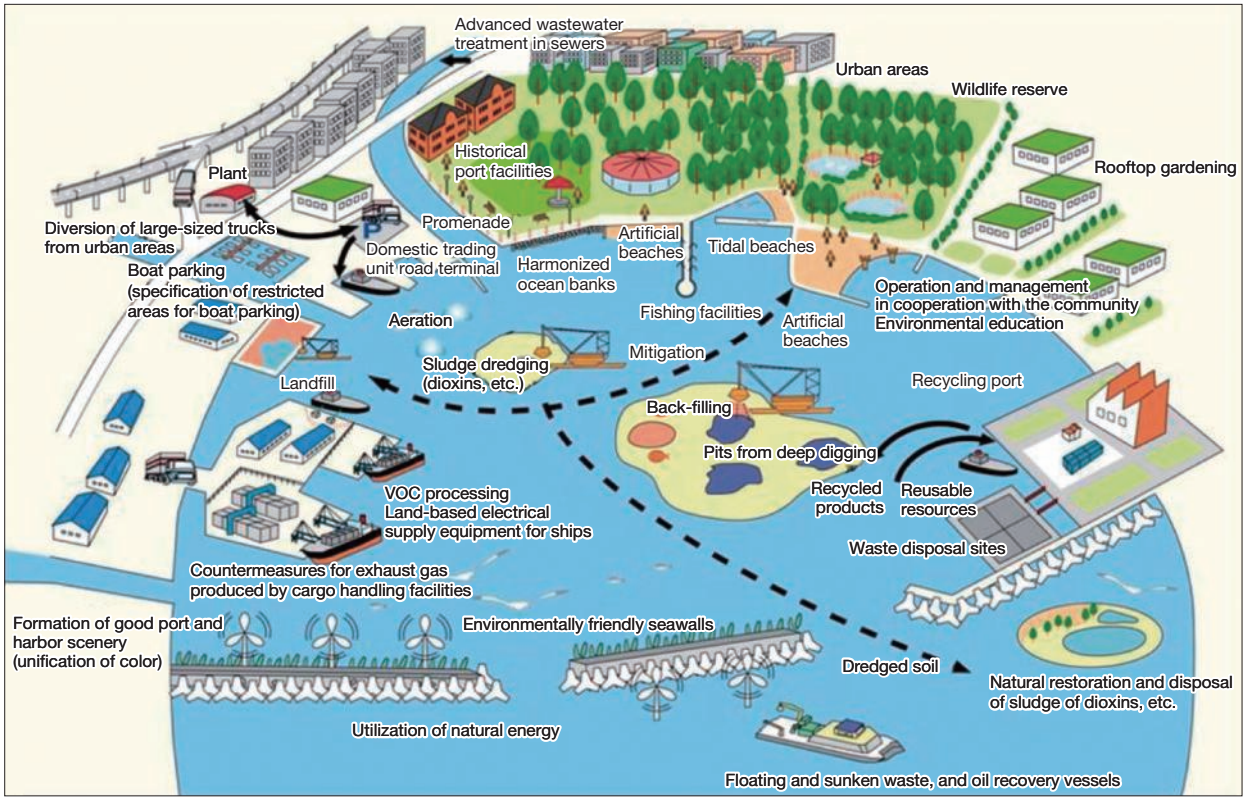
We are also providing support for the processing of neglected and stranded vessels and the removal of slime that abnormally accumulates in sea areas in order to secure the functions of coastal protection facilities, conserve the coastal environment, and facilitate the proper use of coastal areas.

## 4 Greening Port and Harbor Administration

### (1) Basic Direction of Future Port and Harbor Environment Policies

In order for ports and harbors in Japan to uphold their position as grounds for logistics, industry and living, and sustain continual growth, they must recover as much degraded or lost nature as they can, and incorporate environmental conservation in various port functions. For this reason, we are working towards greening port administration, which involves the two parts of port and harbor development and utilization, and conservation, revival, and creation of environments in to one consolidated subject.

Figure II-8-3-2 Greening Port and Harbor Administration




Source) MLIT

## (2) Actively Preserving, Reviving, and Creating a Healthy Sea Environment

We strive to efficiently utilize dredged sediment derived from harbor maintenance, by usage in creating tidal flats, sand capping, filling pits from deep digging, and disseminating port facilities that can coexist with organisms. At the same time, various organizations such as administrative agencies and research institutes will register environmental data and construct a sharable database on the ocean environment; gathering, accumulating and analyzing data. Together, we actively work to preserve, revive and create a rich natural environment in coastal areas.

In addition, the "Seaside Nature School," which utilizes the areas preserved, revived or created, is being held in various locations throughout Japan as an effort to create opportunities for learning the importance of the natural environment.

## (3) Initiatives in Measures for Preventing Illegal Boat Parking

As there is concern that parked boats may mar the scenery, affect the navigation of other vessels, and cause secondary damage in the event of a tsunami, regulatory measures are being implemented, such as by improving the mooring and storage capacity of small vessels and by designating no-parking zones.

Mainly aquatic area administrative agencies and others are promoting efforts toward various measures for preventing illegal boat parking, based on the a promotion plan consisting of comprehensive measures for properly managing pleasure boats and improving their usage environment, which was formulated in May 2013.

### 5 Greening Roads and Promoting Natural Environmental Measures

Greening roads is crucial for providing a comfortable atmosphere for those who use them, creating favorable scenery that matches the surrounding scenery, and as a countermeasure against heat island effects. To this end, we are promoting the favorable greening of roads and the appropriate management of this process in accordance with technical standards pertaining to the greening of roads. Based on recommendations provided in October 2016 by the Commission for Athlete-/Spectator-Friendly Road Development, whose membership included scholars and experts in athletic competition, we are also endeavoring to green roads and initiatives for comprehensive measures to keep road surface temperature from rising in preparation for the Tokyo Olympic and Paralympic games in 2020.

Figure II-8-3-3 Example of Greening Roads (Chiyoda-ku, Tokyo)

Source) MLIT

## Section 4 Maintenance and Restoration of Sound Water Cycles

### 1 Aiming to Maintain a Society in which the Benefits of Water Can Be Savored for a Long Time to Come

In recent years, water resources in Japan have been exposed to new risks and issues, including serious water shortages, large-scale disasters including earthquakes, and the aging of the water infrastructure.

In light of these circumstances, we have promoted a transition in water resource policy, from the demand-driven promotion of water resource development to a risk management-oriented stable water supply. Based on the May 2017 report of the National Land Development Council, we decided to drastically revise the Master Plans for Water Resource Development at seven major river systems, which cover roughly half of the Japanese population. We started advance deliberations on drastic plan changes in February 2018 in regard to the Yoshino River System, which is in particular need of a swift transition to risk management-oriented policy, as it is facing the most frequent water shortages of the seven river systems. In FY2018, the National Land Development Council Water Resource Development Subcommittee and the Yoshino River Association held multiple discussions, resulting in improvements being made to water demand forecasting methods in consideration of uncertainties that arise in the social economic situation and water supply process; inspections being conducted on balancing supply and demand of water at times of critical water shortages; and a draft basic plan including measures for such matters being formulated. The new plan was decided on by the Minister of Land, Infrastructure, Transport and Tourism upon being passed by a Cabinet decision in April 2019.

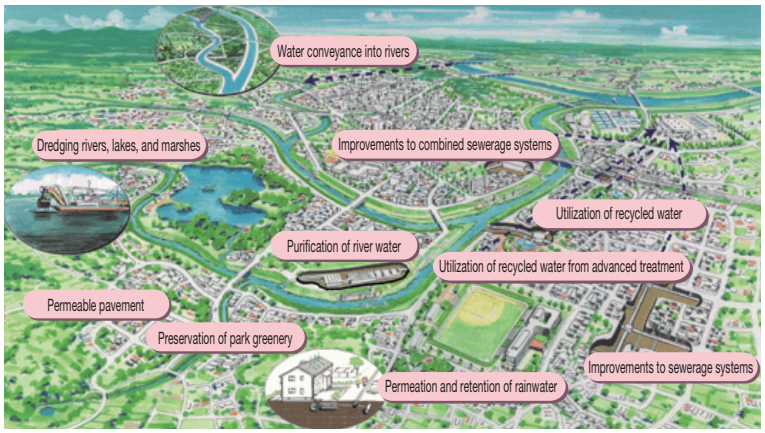
These revisions are expected to ensure the minimum required water quantity during crises through the integrated promotion of necessary non-structural measures and structural measures involving the rigorous utilization of existing water infrastructure.

## 2 Initiatives in Improving the Water Environment

### (1) Promoting Water Purification

The MLIT is implementing purification of contaminated water in rivers with seriously deteriorated water environments and water purification of dredged bottom mud. In addition, the local municipalities that are proactively working on the water environment improvement and related institutions, such as river administrators and sewage work administrators are working together to formulate the "Second Water Environment Improvement Urgent Action Plan (Clear Stream Renaissance II)" and implementing the plan (formulated in 32 locations).

Figure II-8-4-1 Clear Stream Renaissance II



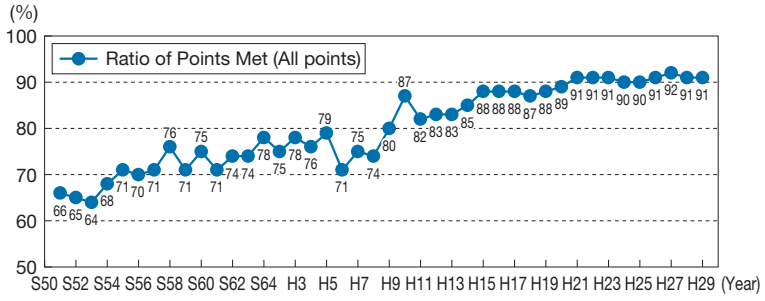

Source) MLIT

### (2) Water Quality Survey and Water Quality Accident Response

Water quality surveys are vital in conserving and maintaining a favorable water environment. In 2017, surveys were done at 1,080 locations on 109 water systems of Class A rivers.

The MLIT is creating water quality survey maps and conducting surveys of aquatic organisms in cooperation with citizens. As a result of surveys being conducted on Class A rivers in cooperation with the local residents — which were based on indices such as the amount of garbage and on odor — in 2017 approximately 20% (59 locations/299 locations) were judged to be "rivers that look clean enough for swimming."

Figure II-8-4-2 Ratio of Survey Locations on Class A Rivers (Including Lakes and Coastal Areas) where BOD (or COD) Value Met Environmental Standards




Source) MLIT

In 2017, there were 865 water quality accidents in Class A rivers due to spillage of oil and chemical substances, a decline of 104 from the previous year. In terms of water pollution prevention, Water Pollution Prevention Liaison Councils composed of river administrators and related institutions have been put in place for all 109 waterways, and they are working on prompt information communication for incidents of water quality accidents as well as damage prevention by building oil fences.

- For Class A Rivers (including lakes and coastal areas), the proportion of survey sites that met the environmental standards for BOD (biochemical oxygen demand) or COD (chemical oxygen demand) value was approximately 91% in 2017.
- For environmental standard items relating to the protection of human health (27 items such as arsenic), the proportion of survey sites that met the environmental standards was approximately 100%, with most sites meeting the standards.

### (3) Improving the Water Environment of Enclosed Coastal Seas

Although the pollution load from land has decreased in the enclosed coastal seas of Tokyo Bay, Ise Bay, Osaka Bay, and the Seto Inland Sea, the fishing industry continues to suffer damage from the occurrence of red and blue tides because the loss of tidal flats and seaweed forests and other problems have caused purification capacity in ocean areas to decline. In addition to this, there have been occurrences of environmental deterioration, as well as navigational obstacles to vessels, due to drifting debris and oil.

Therefore, we advance activities to revive clean, abundant oceans by (1) sediment dredging, sand capping, and back-filling pits from mining to improve the substratum, (2) creating habitats for organisms by reviving tidal flats and seaweed forests and disseminating buildings that can coexist with nature, (3) removing floating waste and oils by using sea environment maintenance ships, (4) reducing the amount of pollutants by improving sewage treatment facilities, and (5) developing a system to get diverse entities to improve the environment in collaboration with one another.

In the case of heavy rain in July 2018, since a large volume of driftwoods flooded into the Setonaikai Sea, and these driftwoods caused prevention of ship navigation as well as a deterioration in the water environment, we worked closely with related organization such as port managers, related authorities, and related private organizations and we gathered these driftwoods quickly through the use of multiple marine environment maintenance vessels. We are going to improve the system of gathering marine pollution materials by marine environment maintenance vessels.

### (4) Stimulating Sewage Maintenance to Improve the Water Environment

We appropriately formulate and review comprehensive basin-wide planning of sewage systems, and promote advanced treatment including incremental initiatives through such efforts as improving portions of facilities as a measure against the eutrophication of enclosed water systems. We also promote active water environment management and water systems where the goal is to revive abundant oceans through such efforts as implementing seasonal operation management of nitrogen and phosphates at sewage treatment plants.

As for the combined sewerage system, we plan to complete implementation of measures by the end of FY2023 through controlling the amount of water and the frequency at which untreated water is released in to streams during heavy rains.

## 3 Cultivating Water and Using It Efficiently

### (1) Stable Supply of Water Resources

In order to secure stability in the utilization of water, there must be a variety of policies to meet the differing situations in communities, from the standpoints of both supply and demand. Specifically, in the case of demand, we are promoting measures to strengthen the recovery and reuse of water and increase awareness about conserving water. For supply, we are promoting measures to build and maintain facilities to supply water, including water resource development facilities such as dams, implementing countermeasures for aging facilities, and developing crisis management measures, etc. In addition to promoting sustainable conservation and use of groundwater, as well as the use of rainwater and recycled water, based on the “Special Measures for Water Source Area Act,” work is being done to develop the living environment of water source areas and industrial infrastructures, along with prevention of water pollution of the dam reservoirs.

Furthermore, there is concern that climate change such as global warming will lead to more frequent, severe water shortages that last longer and give rise to more drought-related damage. For this reason, the MLIT will promote measures to prevent/mitigate the damage caused by drought, such as strategies to minimize damage at the time of critical droughts.

## Column

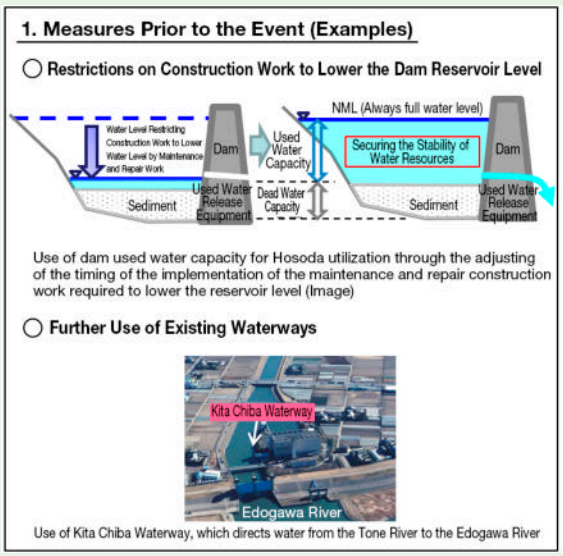
### Enhancement of Water Shortage Response during the Tokyo 2020 Olympic and Paralympic Games

The Tokyo 2020 Olympic and Paralympic Games, which are international events, will see a total of more than 10 million tourists alone visit Japan, and are being held during the midsummer season, when demand for urban water (tap water and industrial water) and agricultural water is high. When the 1964 Tokyo Olympics were held, there was a serious shortage of water to the extent that it was named the Tokyo Desert, but by taking emergency measures, such as the temporary flow of water from the Tone River channel, which connects the Tone River and the Arakawa River, no serious impact was felt during the Games.

Water shortages accompanied by restrictions on water intake occurred in the Tokyo metropolitan area in two consecutive years, 2016 and 2017, and there is a concern that such shortages will also occur during the Olympic and Paralympic Games. In addition, there are concerns that future climate changes, such as global warning, will cause frequent, prolonged, and more serious water shortages, resulting in further drought damage occurring.

In order to minimize the impact in the event of a water shortage occurring during the Olympic and Paralympic Games, the Tokyo 2020 Olympic and Paralympic Games Water Shortage Countermeasures Committee was established on December 20, 2018, with the cooperation of the national government as well as metropolitan and six prefectural government organizations.

We will compile a draft action plan in March 2019 or thereabouts, and trial measures to be implemented will be selected in advance. In autumn 2019, we will create a Water Shortage Action Plan, and will implement the necessary measures based on the action plan, with the cooperation of related organizations. We will promote the more effective use of limited water resources, and will make every effort to ensure a stable supply of water even if a water shortage is forecast.




### (2) Efficient Use of Water Resources

#### (i) Initiatives towards expanding the utilization of recycled water derived from sewage

Stable amounts of recycled water can be secured and is a valuable water resource in urban areas. Of all the treated sewage, approximately 1.3% undergoes treatment according to purpose, and recycled water is used in streams, sustaining water levels of rivers and the sanitation of toilets. We aim to further expand the utilization of recycled water.

#### (ii) Promoting the utilization of rain water

In order to efficiently utilize water resources, initiatives are being promoted to treat and use rainwater and wastewater from facilities for sanitation of toilets and sprinklers. There are approximately 3,529 facilities utilizing treated water as of the end of FY2017, and they use over 11.20 million $m^3$ a year. The "Law for Promoting the Use of Rainwater (2014 Laws, Issue 17)" was enacted on May 1, 2014, and in March 2015 the "Basic Policy for the Promotion of Rainwater Use" and the "Goal for Establishing a Facility for the Use of One's Own Rainwater in Cases Where the Building is Equipped by the National Government or an Independent Administrative Agency" were established in order to promote the use of rainwater and thereby facilitate the effective use of water resources. Additionally, the government will formulate and enact comprehensive measures for the purpose of contributing to the containment of concentrated drain of rainwater to the sewers and waterways.

### (3) Securing Safe and High Quality Water

In an effort to provide safe and high-quality tap water, we have worked to preserve water quality in public water areas, which serve as our source for tap water, by ensuring river flow rates required for river environments and for water use by relevant river users, by enhancing monitoring systems through coordination of river administrators, waterworks operators and other relevant organizations to prepare for unforeseeable incidents such as water quality degradation, and by implementing household wastewater measures based on the appropriate division of burdens between sewage systems, community wastewater facilities and septic tanks.

### (4) Promoting Measures Concerning the Permeation of Rainwater

Due to the spread of impervious areas in recent years by urban development in basins, more rainwater flows into rivers in short periods of time instead of being absorbed into the ground. In addition to reducing flood damage from heavy rains by absorbing as much rainwater as possible into the ground, we are promoting and encouraging the installation of infiltration facilities for storage of rainwater that contribute to the establishment of sound water cycles by recharging groundwater, reviving springs and more.

### (5) Advancing the Conservation and Use of Sustainable Groundwater

It takes an extremely long time to recover from damage caused to groundwater, such as in the form of groundwater pollution or saline contamination. In particular, ground subsidence is an irreversible phenomenon. For this reason, we will engage in groundwater management in accordance with local conditions in order to prevent groundwater damage, conserve the ecosystem, protect local groundwater sources, and advance the conservation and use of sustainable groundwater to be used as a water resource.

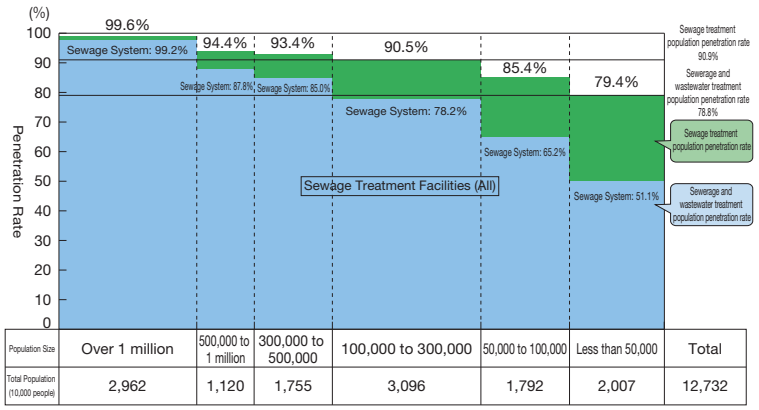
## 4 Realizing Amenity by Promoting Improvements to Sanitary Drainage

Sewage is the indispensable social infrastructure for the development of healthy cities, treating waste, and preventing floods. In recent years, sewage systems have been asked to take on new roles in helping to form a low-carbon, recycling-oriented society and in maintaining or restoring a healthy water cycle.

### (1) Dissemination of Sewage Processing with Sanitary Drainage

Although the dissemination of sewage treatment plants reached 90.9% of Japan (with the dissemination of sewage systems at 78.8%) as of the end of FY2017 (statistical data, excluding some municipalities in Fukushima due to the effects from the Great Eastern Japan Earthquake), there are large gaps among regions. In particular, the dissemination rate of sewage treatment plants in small to medium communities with populations of less than 50,000 people remain low, only reaching a ratio of approximately 79.4% (dissemination rate of sewage systems approximately 51.1%). Focusing on improvement in areas with high population density, the advancement of efficient development in accordance to condition of communities and the rectification of the gap between communities are seen as being of the utmost importance for developing sewage systems in the future.

Figure II-8-4-3 Sewage treatment population penetration rate by city size (as of end of FY2017)




| Population Size | Over 1 million | 500,000 to 1 million | 300,000 to 500,000 | 100,000 to 300,000 | 50,000 to 100,000 | Less than 50,000 | Total |
|---|---|---|---|---|---|---|---|
| Total Population (10,000 people) | 2,962 | 1,120 | 1,755 | 3,096 | 1,792 | 2,007 | 12,732 |

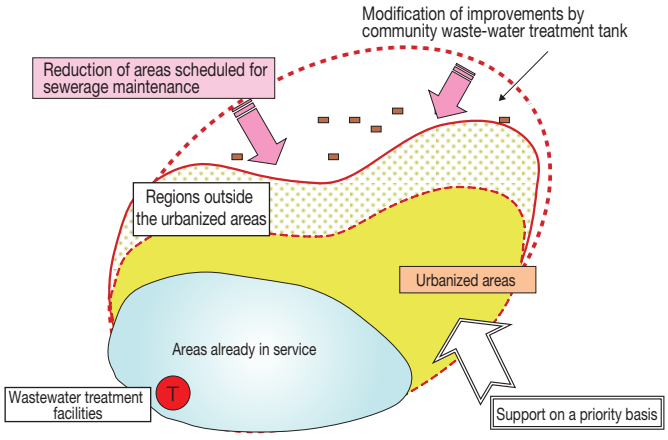
Note) Statistical data excluding the municipalities in Fukushima Prefecture that could not be surveyed due to the effects of the Great East Japan Earthquake.
Source) Created by MLIT through materials published by the Ministry of the Environment and Ministry of Agriculture, Forestry and Fisheries

#### (i) Initiatives towards the septic system overview in roughly 10 years

In regards to the maintenance of sewage treatment facilities, individual disposal by using septic tanks are economical in areas where households are widely distributed throughout a region, while the collective disposal with sewerage systems and drainage facilities for agricultural communities become more economical as the population density rises. For this reason, for the promotion of such maintenance, each prefecture has established a Prefectural Plan, a comprehensive maintenance plan for sewerage treatment, which reflects considerations over regional characteristics such as the economic efficiency and of its importance for protecting water quality, and prescribes the appropriate sharing of roles.

Maintenance will be promoted under a policy generalizing sewage treatment facilities by the end of 2026, and thorough reviews of sewage treatment methods will be promoted based on changes in social circumstances, such as the declining population. In addition, in order to enable prompt and low-priced maintenance, we will promote efforts to eliminate areas where this has not been disseminated by devising maintenance methods and ordering methods, including the introduction of quick projects that introduce new maintenance technique in accordance with the local situation, and the introduction

Figure II-8-4-4 Revision of Sewerage Plans and Focused Improvement




Source) MLIT

of public-private partnerships for maintenance through the use of the vitality of the private sector.

### (2) Attaining Durability in Sewage Projects

#### (i) Proper stock management

Sewage systems possess enormous amounts of stock consisting of approximately 470,000 kilometers of pipes and conduits and approximately 2,200 terminal treatment stations (as of the end of FY2016).

As these systems were rapidly developed during and after the period of high economic growth, aging facilities are expected to rapidly increase in number in the future. Although mainly small scale issues were arising, road collapses have occurred in approximately 3,000 places due to corrosion caused by hydrogen sulfide and aging of the conduit facilities. Because the sewage system is an important social infrastructure which supports the safe and secure social and economic activities of urban living and provides a lifeline that is difficult to replace with alternative means, there is a necessity to sustain the required functions by conducting efficient, planned measures to deal with aging facilities through the introduction of stock management that practices preventative maintenance, while at the same time considering the introduction of comprehensive private consignment and efficient pipe inspection methods.

In May 2015, the Sewerage Act was amended and standards for maintaining and repairing sewage systems were established. In response, it was decided that drainage facilities at significant risk of corrosion would be inspected at an appropriate frequency of at least once every five years and initiatives to ensure sustainable sewage functions are being undertaken. Under these amendments, a council meeting program for engaging in necessary discussions on widening the geographic scope of sewage works and forming partnerships among the administrators of sewage works shall be established and the provision of support to local governments will otherwise be reinforced to ensure the durability of sewerage projects.

#### (ii) Efforts to expand sewage systems

For the sustainable management of sewage systems, we have established a goal to develop expansion/merging plans in all prefectures by FY2022, and had each prefectural government complete their verification and system development of these plans during FY2018. We also intend to continue providing both financial and technical support; we created a General Project for Promoting Sewage System Expansion in FY2018, and provide support for the horizontal development of the results from the examination of model cases at prefectural governments that have worked on devising plans ahead of others.

#### (iii) Promoting financial health

In the operation of sewerage projects, it is a fundamental rule to cover costs (excluding portions covered by public expense) for treating waste water with money acquired from usage fees, and although financial health has been improving overall in recent years, the business environment is expected to grow more stringent in the future due to the impending decrease in income from user fees due to the reduced population and other factors, the increase of repair and update expenses due to deterioration of facilities, and other factors. For this reason, upon ascertaining (visualizing) the sewage management situation, we will promote initiatives toward the improved financial robustness of sewage management, such as thorough promotion of spending reductions and the securing of stable income, through the formulation of management plans based on medium- to long-term income and expenditure forecasts.

#### (iv) Consigning facility management to private sectors and acquiring technical capabilities

In the sewerage sector, we are introducing and examining concession systems and other methods of PPP/PFI, and working toward the increased use of comprehensive private sector consignment[Note] for the maintenance of sewage treatment plants and elsewhere. Regarding the concession method in the sewerage sector, Hamamatsu City began a project in April 2018 in which maintenance and management will be conducted at treatment and pump areas in the Seien Treatment Area, which is the largest treatment area in the city, and in which machinery and electrical equipment will be renovated and updated by the holders of operating rights over the next 20 years. The proposal from the operation rights holder included goals to work toward cooperation with the community and provide new technology, in addition to a 14.4% cost reduction (VFM); the project is expected to streamline business through private-sector ingenuity and introduce private-sector vitality.

Regarding the securement of technical capacity, based on demands from local public organizations, the Japan Sewage Works Agency provides technical support for constructing sewage facilities, as well as for optimizing their operation and maintenance, and for cultivating technical experts at local public organizations while developing new technology.

### (3) Revitalizing Communities through Sewage

Sewage systems contribute to regional revitalization in a variety of ways: the proper treatment of wastewater through improvements in sewage systems preserves and creates healthy water environments and stimulates industry and tourism, and sewage system resources can be used effectively by creating waterfront areas using recycled water from advanced wastewater treatment, stimulating regional activities through the operation and management of harmonized water spaces by citizens and others, utilizing space above wastewater treatment facilities, using sewage heat for heating, cooling, melting snow and as biogas energy throughout communities, and using sewage sludge as fertilizer.

### (4) Promoting Public Relations in the Field of Sewage

Since FY2008, we have been attempting to disseminate positive examples across the country of contributions to society by fulfilling the mission of sewage by commending and honoring such contributions through the Ministry of Land, Infrastructure, Transport and Tourism Awards (Circulation Path and Sewerage Award), and through the broad publicizing of these. Furthermore, we are sharing examples of advanced sewerage public relations activities with various local government organizations, aiming for the development of such across the country, and in addition, are promoting sewerage environment system education with the objective of cultivating human resources to work in the sewerage industry in the future, and to advance understanding of the diverse functions of the sewerage system.

Figure II-8-4-5 Promotion of public relations in the sewerage field

FY2018 Awards of the Minister of the MLIT (Circulation Path and Sewerage Award)

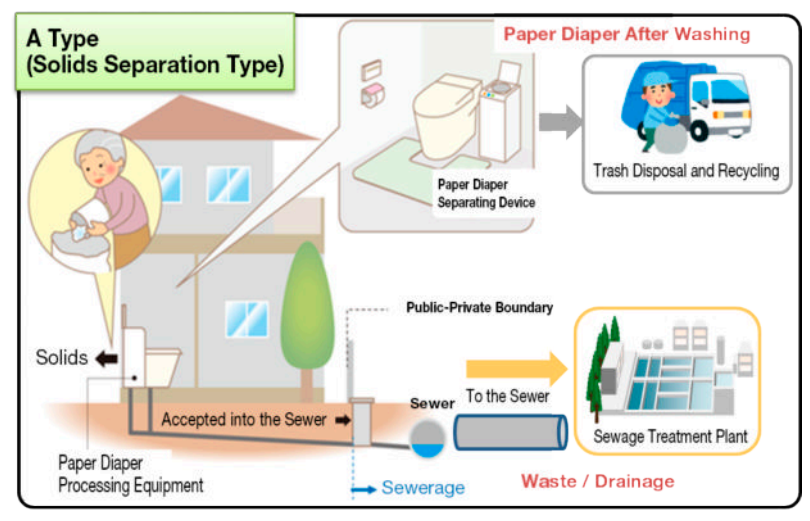
Source) MLIT

**Note** A method of ordering in pursuit of streamlined operations that reflects the original ideas of private contractors by entrusting operation methods and other details to them, while the ordering entity sets out conditions to ensure a level of performance in terms of facility management, such as observance of effluent quality standards

## Column

### Toward Accepting Disposable Diapers in Sewers

In the current era, the declining population, declining birthrate and aging population are social issues. Although the storage, treatment, and disposal of disposable diapers used in the care of elderly people is a major burden, there is also a need to create an environment friendly to raising children that will contribute to an improvement in the declining birth rates. In the sewerage sector as well, the environment surrounding management resources, such as people (weakening execution system), things (aging facilities), and money (decrease in usage volume and revenue), is becoming increasingly severe, and in order to develop a more effective and efficient sewerage business, it will be necessary to improve the added value of sewerage through the establishment of a new mission as social infrastructure and improving convenience for residents. As one of the solutions to these issues, we are aiming to contribute to the reduction in the burden on nursing care and childcare, and to the securing of a healthy life, by examining ways to handle soiled disposable diapers in the sewers.



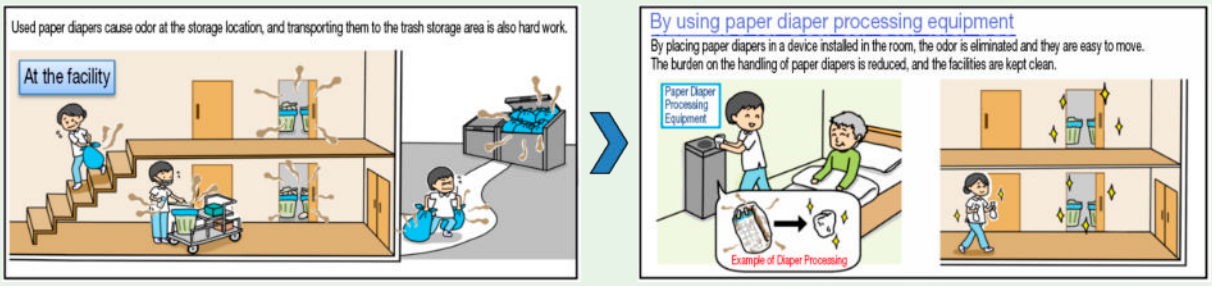

Three options are being considered as methods to accept soiled disposable diapers in the sewers, taking into consideration the local characteristics and the condition of the sewer facilities:

(i) Disposable diapers being separated from excrement and flushed into the sewer, where the solid materials of the disposable diaper, including the water absorption agent, will be collected as garbage (Option A)

(ii) Disposable diapers being crushed, then collected in a separation and collection device outside of the building, excrement being separated and drained to the sewer, and the solid materials of the disposable diaper being collected as garbage (Option B)

(iii) Disposable diapers being crushed, and both the excrement and disposable diapers flowing into the sewer (Option C)

In FY2018, we proceeded with an examination of Option A, and drafted basic concepts for the implementation of practical experiments in the form of (draft) guidelines. In FY2019, we plan to implement practical experiments for Option A based on these guidelines.




Source) MLIT

# Section 5 Protecting the Marine Environment

## (1) Control Measures on Air Pollution from Ships

Sulfur oxide (SOx) in the exhaust gas from ships can cause respiratory illnesses and otherwise negatively affect the human body. The International Maritime Organization (IMO), through MARPOL Convention, regulates sulfur content of fuel oil used on board ships. Presently, the Convention stipulates the maximum sulfur content of 0.1% in designated strictly controlled sea areas (emission control areas) and the maximum content of 3.5%, which will be 0.5% from January 1, 2020, in all other sea areas.

Stable supply of low cost oil meeting the requirements of sulfur content and having sufficient quality that enable ships to operate safely will be required in order to smoothly implement these regulations. Therefore, we are arranging meetings for direct discussions between the shipping and oil industries. In addition, we are coordinating the understanding of compliant fuel oil quality, through investigating the effects of changes in fuel oil properties and providing those information to both industries.

In addition, in order to prevent concentrated demand for the such oil, and to stabilize supply and demand and the price of fuel oil, we will provide support for the construction of Class A heavy oil fueled ships, and will proceed with initiatives, including promotion of the installation of scrubbers (equipment for desulfurizing emissions) that allow ships to use conventional inexpensive high-sulfur Class C heavy oil, as well as promotion of the introduction of LNG-fueled ships.

## (2) Control Policies over Large Scale Oil Pollution

As countermeasures for occurrences of large scale oil pollution, Japan has strengthened international cooperation under marine environment protection frameworks. As an example of the framework, "Northwest Pacific Action Plan (NOWPAP)" which is composed of four countries around Japan Sea (China, Japan, ROK and Russia) was established in 1994 and developed "NOWPAP Regional Oil and HNS Spill Contingency Plan." In addition, we have developed measures dealing with large-scale oil spillages promptly and reliably, which include the establishment of the "Plan for Prevention and Control Discharge Accident of Oils" and development of large trailing suction hopper dredgers.

The MARPOL Convention[Note 1] imposes controls on the discharge of harmful materials for marine environment such as oil or garbage from vessels. In Japan, supporting activities such as taxation management are being provided for development of facilities which receive waste oil or garbage generated from vessel, and also the "Guidelines for Reception Facilities of Ship-generated Garbage in Ports and Harbors" have been drafted to ensure that oil and garbage are appropriately received in ports and harbors.

## (3) Responding to Issues of Invasive Aquatic Species Carried by Ships

In order to address the issue of the transfer of aquatic species due to adhesion to hull of ships, contamination in ships' ballast water[Note 2] etc., and the effects to the ecosystem of the destination sea area, "International Convention for the Control and Management of Ships' Ballast Water and Sediments in 2004" and "2011 Guidelines for the Control and Management of Ships' biofouling to minimize the transfer of invasive aquatic species" were adopted at the IMO. The convention entered into force on September 8, 2017. It is worth noting that the convention provides an experience building phase (EBP) for gathering and analyzing data toward future revisions of the convention. Japan is proactively contributing to the gathering and analyzing of data during EBP while also faithfully fulfilling the duties set out in the convention.

## (4) Establishment of Convention Implementation System

In order to eliminate substandard ships, which are a major cause of marine pollution, we have been actively participating in international initiatives, such as the construction of the international ship database (EQUASIS), and in addition, have strengthened Port State Control (PSC) to include conducting on-site inspections on ships calling at Japanese ports, and to confirm that standards are being met. Furthermore, in regard to the system that calls for governments to supervise and monitor ships bearing their flags, which was audited by the IMO Audit Team, its establishment was approved as a voluntary system as proposed by Japan at the IMO General Assembly held in 2005, and auditing has been mandatory since January 2016. In Japan as well, a quality control system has been introduced based on ISO9001, and an interna-

Note 1 International Convention for the Prevention of Pollution from Ships
Note 2 Seawater loaded as weight to balance the ship.

tional grade treaty implementation system has been established. It should be noted that Japan plans to undergo an IMO Member Country Audit in October 2020.

## Column

### Marine Environment Conservation Promotion Activities

The slogan of the Japan Coast Guard ("Preserving Blue Seas for the Future") is the basis for its efforts to provide instruction and education about marine environment conservation through efforts such as holding seminars on the topic aimed at raising awareness among key people in the marine and fishing industries of compliance with laws and ordinances, and hosting coastal clean-up activities and lessons about the environment for the general public. Here, we introduce two of their main activities.

(1) "Preserving Blue Seas for the Future/Japan Coast Guard Drawing Contest"

The Japan Coast Guard hosts the annual "Preserving Blue Seas for the Future/Japan Coast Guard Drawing Contest" with the aim of spreading the concept of marine environmental conservation to children.

For the 19th annual contest in 2018, 31,800 entries were submitted by elementary and junior high school students throughout Japan.

The entries were strictly judged to determine prize winners – among them one special prize (the MLIT Minister's Award) and three Japan Coast Guard Commandant's Awards.

This year, to commemorate the 70th anniversary of the establishment of the coast guard system, a decision was made to establish the Coast Guard System 70th Anniversary Commemorative Award and to issue an award to one recipient.

The works are displayed in various places, and are also used in various public relations in an effort to spread the concept of marine environmental conservation far and wide.

Special Award (Minister of the MLIT Award) Winners

Source) MLIT

Coast Guard System 70th Anniversary Commemorative Award

Source) MLIT

(2) Beach clean-up activities, etc., in collaboration with the Umi-to-Nippon Project (Ocean and Japan Project)

The Japan Coast Guard continues to participate in the Umi-to-Nippon Project held by the Japan Foundation and other organizations. Part of the efforts includes beach clean-up activities throughout Japan, using standard-design garbage bags. In 2018, 31,417 people in 108 locations throughout the nation collected and sorted roughly 37,000 bags of waste. Through this project, the Japan Coast Guard has promoted understanding of the impact of everyday waste on the marine environment.

The Japan Coast Guard intends to promote activities and intensify collaboration with this project to increase opportunities for people to participate and further spread the concept of marine environmental conservation.

Marine conservation program for the general public


Source) MLIT

# Section 6 Improving Living Environments by Preventing Atmospheric and Noise Pollution

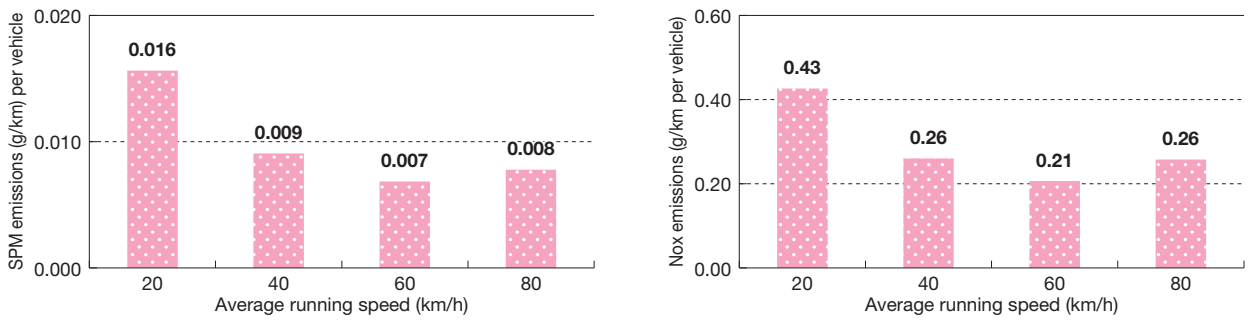
## 1 Policies for Environmental Issues Related to Road Traffic

### (1) Measures for Individual Vehicles

#### (i) Exhaust gas reduction measures

Regarding measures for emissions of new passenger vehicles, trucks, buses and two-wheeled motor vehicles, we have introduced the Worldwide Harmonized Heavy-Duty Certification, and are applying global top level emission regulations.

Figure II-8-6-1 Relationship of suspended particulate matter (SPM) and nitrogen oxides (Nox) from automobiles and vehicle speed




*Emissions by running distance in 2015 estimated by MLIT
Source) MLIT

In addition, in response to the Volkswagen exhaust gas fraud case that came to light in September 2015, we will be introducing a road running inspection at the time of specification of model, such as diesel passenger car, and will begin applying this in stages from 2022.

We are also implementing a program to certify low-exhaust gas vehicles that emit harmful substances from their exhaust pipes at levels far below regulatory values. These vehicles will be certified according to the level of their reduction of exhaust gas in an effort to help consumers identify and select vehicles that perform exceptionally well in terms of reducing emissions.

Exhaust gas measures are being implemented in Tokyo, Nagoya, Osaka and other major cities. One example is countermeasures based on the Act Concerning Special Measures for Total Emission Reduction of Nitrogen Oxides and Particulate Matter from Automobiles in Specified Areas (Automobile NOx/PM Law).

#### (ii) Reinforcing noise regulations

Regarding measures for automobile noise, we have introduced international standards for regulating noise created by tires as a measure to reduce the levels of tire noise generated by four-wheeled vehicles, which have a high contribution rate when being driven, and began applying the measures progressively in April 2018.

### (2) Promotion of Traffic Flow Measures

#### (i) Countermeasures for air pollution

The volume of particulate matter (PM) and nitrogen oxide (NOx) emissions from automobiles is increasing because of the increasing frequency of stop-and-go traffic and the reduced travel speed. For this reason, we are advancing the shift through traffic in urban areas to bypasses as a way to improve the roadside environment.

#### (ii) Countermeasures for noise pollution

Japan is proceeding with the lamination of low-noise pavement, installation of noise barriers, and maintenance of environmental roadside facilities. Based on the "Law for the Improvement of Areas along Trunk Roads," in addition to preventative measures for issues caused by traffic noise, financial assistance is being provided for buffer buildings and noise insulation work for housing in construction projects in areas alongside roads.

## 2 Environmental Measures for Airports and Surrounding Areas

In Japan, we have been steadily implementing various measures to deal with aircraft noise through improvements in materials made possible by the introduction of low-noise aircraft, restrictions on departures and arrivals imposed via regulations governing night-time flights, improvements in flight methods based on noise-abatement operations, upgraded airport structures, and measures concerning the peripheral environment, including sound-insulation work and the provision of compensation for relocation. In recent years, the growing popularity of low-noise aircraft accounts for a reduced impact that aircraft noise is having on areas surrounding airports even as the number of departures and arrivals by aircraft is rising.

We will need to strive to accommodate the growth of areas surrounding airports and the desire to conserve the local environment by continuing to take comprehensive measures to deal with aircraft noise while gaining the understanding and cooperation of local residents in accordance with changes in such conditions as the demand for air travel.

## 3 Countermeasures for Railway Noise

We are installing noise barriers, raising embankment heights and implementing other measures for noise generated by Shinkansen trains to enable the achievement of environmental standards based on the Environmental Quality Standards for Shinkansen Superexpress Railway Noise announced by the then-Environment Agency in 1975.

As for local railway lines, we are switching to continuous welded rails and implementing other measures to satisfy guidelines based on Noise Countermeasure Guidelines for the New Construction and Large-Scale Improvement of Local Railways, announced by the then-Environment Agency in 1995.

## 4 Countermeasures for Urban Heat Islands

The heat island effect refers to the phenomenon in which the temperature in the central area of a metropolis is significantly higher than the areas that surround it. Due to the effects of global warming, the global annual mean temperature is rising at a rate of around 0.7˚C per century, while that of Japan is rising at a rate of around 1.2˚C per century. In contrast, the temperature is rising roughly 2˚C to 3˚C in Japan's major cities; the addition of the effects of urbanization to the trend of global warming is producing these remarkable increases in temperature.

In order to advance comprehensive and effective measures for dealing with the urban heat island effect, we are engaged in various initiatives according to the Outline of Measures for Dealing with the Heat Island Effect (formulated in 2004, revised in 2013), which systematically summarizes specific measures put forth by relevant ministries and agencies. These initiatives include the following: Initiatives that reduce artificial heat emitted by air-conditioning systems and automobiles, initiatives that improve ground surfaces based on the greening of public spaces and the use of water, initiatives that consist of urban development projects that take wind channels into account, and initiatives for which observations, monitoring, and surveys are conducted with respect to the heat island phenomenon.

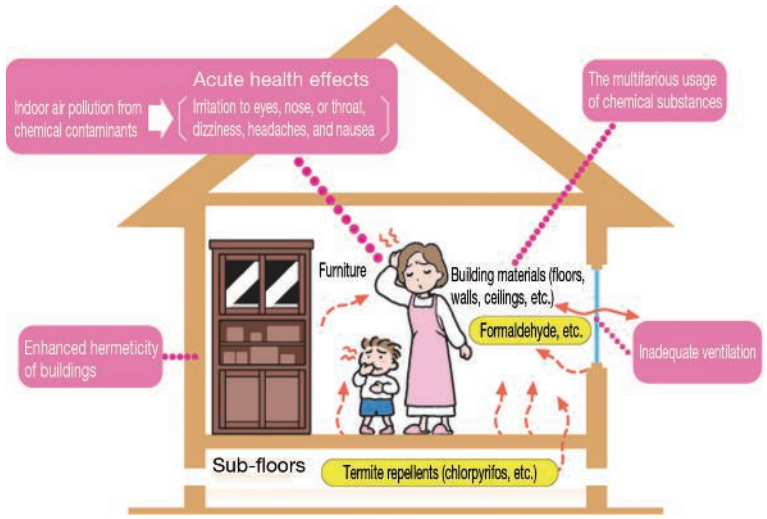
## 5 Countermeasures for Sick Building Issue and Soil Contamination

### (1) Countermeasures for Sick Building Issue

Sick building issue describes a situation where materials used in the interior of a building disperses chemical substances which are hazardous to health. Japan is taking measures such as regulations on building materials and ventilation in the "Building Standard Act," and formulating performance labelling systems based on the "Housing Quality Assurance Act."

In the maintenance of government facilities, Japan has implemented restrictions over the usage of building materials containing chemical substances, as well as measuring the indoor concentration of airborne chemical contaminants after completing construction.

Figure II-8-6-2 Conceptualization of Sick House Problem




Source) MLIT

### (2) Countermeasures against Issues Related to Dioxins

Studies over the water and earth quality of class A river systems throughout Japan are being conducted for dioxins specified in the "Act on Special Measures concerning Countermeasures against Dioxins." In FY2017, the sediment of all locations and the water quality of 99% (210 locations out of 212) of the locations satisfied environmental standards.

For rivers, ports, and harbors, we have implemented dioxin countermeasures as required according to the Manual on Measures to Deal with Dioxins at the Bottom of Lakes (proposed), which was revised in April 2008, and the Technical Guide on Measures to Deal with Dioxins at the Bottom of Ports and Harbors (revised edition). Support for programs involving pollution-prevention measures is being provided for rivers, ports, and harbors where dioxins exceeding standards have been detected in samples taken from the bottom of these locations.

### (3) Measures against Asbestos

Issues concerning asbestos are life-threatening. As buildings that were built in the 1970s — when mass amounts of asbestos was imported to Japan — each their dismantling period, it is important to implement pre-emptive measures to prevent injuries from occurring.

In order to accurately and efficiently determine the actual use of asbestos building materials, investigators are being trained based on the course for investigators of structures containing asbestos building materials, which was created in FY2013. In FY2018, in order to make further enhancements, we began co-administering the system with the Ministry of Health, Labor and Welfare and the Ministry of the Environment.

Also, based on the "Building Standards Law," the removal of sprayed asbestos when renovating a building is required, and subsidy of comprehensive grants for social capital development is in place to promote the asbestos removal in existing buildings and follow ups are being done for the situation of the removal and anti-scattering of asbestos in the existing facilities under the jurisdiction of national ministries and agencies.

We are also promoting the dissemination of information, including disseminating documents useful for identifying building materials containing asbestos (visually identifiable building materials containing asbestos), converting information on materials containing asbestos, into database form, and disseminating pamphlets spreading awareness of measures related to asbestos in buildings.

## 6 Environmental Measures in Construction

Gas emissions measures (NOx, PM) for construction machinery that is not driven on public roads are being handled based on the Act on Regulation, Etc. of Emissions from Non-road Special Motor Vehicles. In addition, support is being provided, such as in the form of a low-interest loan system, in order to provide assistance for purchasing environmentally friendly construction machinery that meets the latest emissions standards, etc.

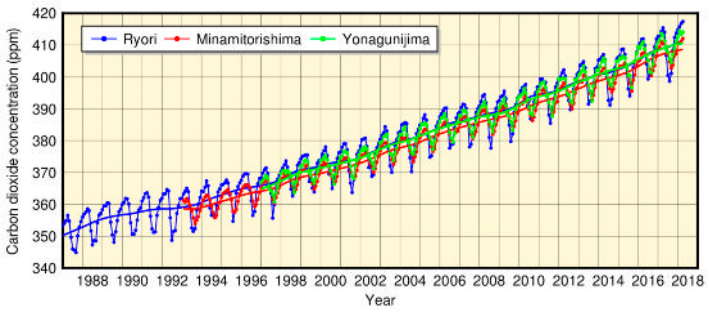
# Section 7 Observing, Monitoring, and Forecasting Changes in the Global Environment

## 1 Observing and Monitoring Climate Change

### (1) Observing and Monitoring Climate Change

In order to grasp the status of greenhouse gases (GHGs), the Japan Meteorological Agency (JMA) is observing GHG concentrations in the atmosphere at three stations in Japan. $CO_2$ concentrations in the marine atmosphere, as well as those in the sea surface water are being observed in the western North Pacific by research vessels. GHGs in the middle-troposphere in the western North Pacific is also being observed. Furthermore, JMA conducts observation of solar and infrared radiation at five stations in Japan in order to monitor climate changes and reduce uncertainty in global warming projections.

Figure II-8-7-1 Temporal Variations of Atmospheric Carbon Dioxide Concentration in Japan




Source) Japan Meteorological Agency

In addition, JMA observes sea level rise accompanied by global warming, and publish information on the long-term change in sea levels around Japanese coasts.

JMA also produced the Japanese 55-year Reanalysis (JRA-55), a historical global atmospheric data with homogeneity in space and time, and is using it to monitor climate change and improve the accuracy of seasonal forecasting.

Moreover, the "Climate Change Monitoring Reports" and the "Report on Climate Change and Extreme Weather" (in Japanese) are being compiled based on the results of observation, and future projections of climate change, extreme weather events and global warming are being disclosed to the public. Serving as the World Data Centre for Greenhouse Gases (WDCGG) of the World Meteorological Organization (WMO), JMA also archives and provides observation data on greenhouse gases around the world.

### (2) Observing and Monitoring Extreme Weather Events

JMA monitors unusual weather events occurring in Japan and elsewhere in the world and summarizes and releases periodic and extraordinary information concerning weather disasters and areas where extreme high/low temperatures and precipitation, and other such events have been observed. Also, when extreme weather conditions are occurring that significantly affect the public, summary reports are given covering the information regarding features, factors and the outlook.

Furthermore, as a Regional Climate Centre of the World Meteorological Organization (WMO), JMA provides information such as monitoring and analysis of extreme weather as well as technical assistance through training and dispatch of experts to National Meteorological and Hydrological Services in Asian countries to support the climate service in the Asia-Pacific region.

### (3) Observing and Monitoring using Geostationary Meteorological Satellites

JMA continues to operate the geostationary meteorological satellites Himawari-8 and Himawari-9. The two-satellite system was established to ensure consistent observation over the long term, and provides constant, 24-hour observation of wide areas of East Asia and the Western Pacific region. By using these satellites, in addition to improving the disas-

ter prevention function against such things like tropical cyclones and torrential rainfalls, Japan is leading the world in strengthening its monitoring function of the Earth's environment, including global warming.

### (4) Observing and Monitoring the Ocean

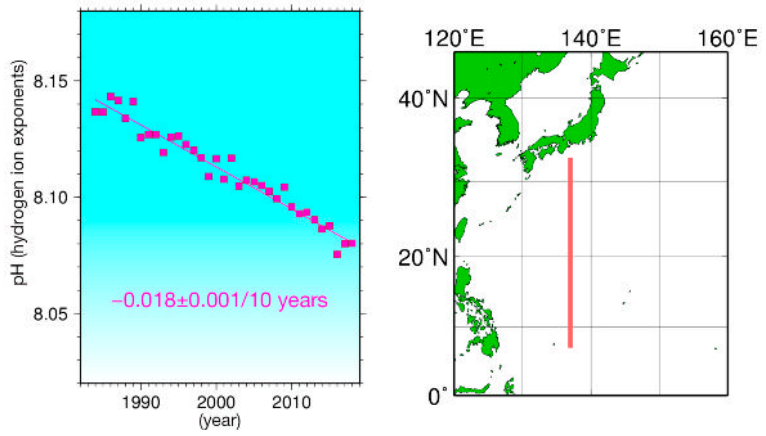
The ocean is greatly impacting the earth's climate by storing a much larger amount of heat than the atmosphere, and it is also easing the progression of global warming by absorbing $CO_2$ emitted by human economic activity. In order to monitor global warming, an accurate grasp of oceanic conditions is essential.

The Japan Meteorological Agency (JMA), under the international cooperative structure, monitors oceanic conditions by carrying out ocean observation with high accuracy from research vessels in the western North Pacific along with using data from satellites and Argo floats, or profiling floats to automatically observe the ocean interior.

JMA website "Marine Diagnosis Report" provides general information on the ocean such as sea surface temperatures, ocean currents, sea level, sea ice, as well as the present status and the prospect for the future.

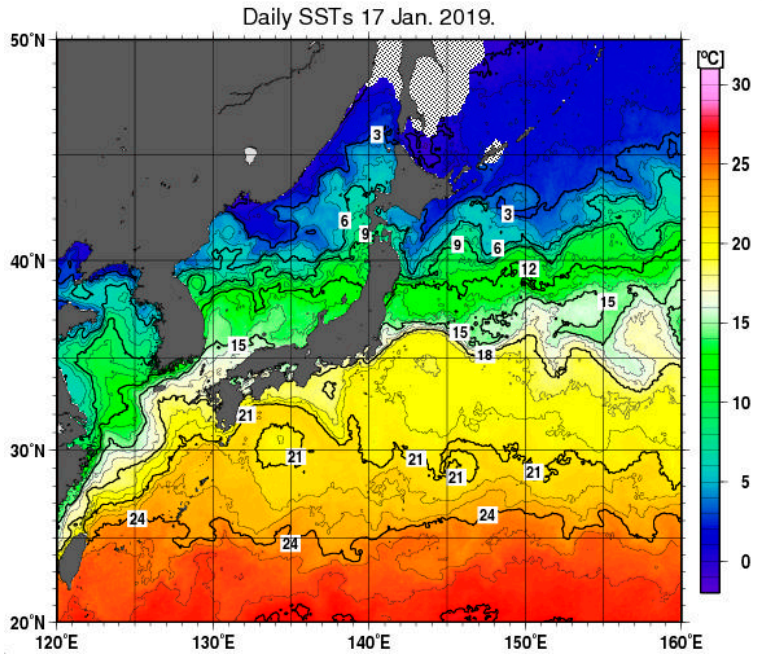
The Japan Coast Guard uses autonomous ocean vehicle (AOV), drift buoys and High Frequency radar to constantly monitor and fully understand the state of ocean around Japan, and publishes their observation results. In addition, the Japan Oceanographic Data Center collects and manages data obtained by Japanese marine research organizations, and discloses it to relevant institutions and to the public.

**Figure II-8-7-2** Monitoring the Global Environment Using Research Vessels




This diagram shows long-term changes in the hydrogen ion exponents on the surface of the ocean during the winter along 137° E (average from 7° N to 33° N). The 0.018 decrease in pH over the last decade indicates that the acidification of the oceans is progressing.
Source) Japan Meteorological Agency

**Figure II-8-7-3** Example of a "Marine Diagnosis Report" Published on the Japan Meteorological Agency Website




[Daily Sea Surface Temperature Distribution Map]
- Sea surface temperature distribution map analyzed through the use of observation values from satellites, buoys, and ships is published on the website and updated every day.
- The sea surface temperature is color coded by the scale shown on the right of the map. Ocean areas for which there is no seasurface temperature due to ocean ice are indicated with gray shading.

(Sea Surface Temperature Distribution Map for January 17, 2019)
The sea surface temperature near to Japan has complex distribution due to the effect of ocean currents, including the Kuroshio, which flows north in the East China Sea, passes through Tokara Strait, and flows east to the south of Japan up to the east of Kanto, as well as the Oyashio, which flows south along the Kuril Islands to the east of Japan.
Source) Japan Meteorological Agency

### (5) Observing and Monitoring the Ozone Layer

The Japan Meteorological Agency (JMA) annually publishes the outcome of observations on ozone and ultraviolet radiation. According to these studies, the global amount of ozone has increased slightly since 2000, but continues to be lower than it was in the 1970s. JMA also provides hourly updates of the current intensity of ultraviolet rays (UV analytical values) and daily updates of the projected intensity of ultraviolet rays for the current and following day (UV projected values) on its website to contribute to Japanese residents' measures against harmful ultraviolet rays[Note]. To describe the intensity of ultraviolet rays, the agency uses the UV index, a metric that indicates the effects of harmful ultraviolet rays on the human body.

### (6) Promoting Routine Operational Observation in the Antarctic

The Geospatial Information Authority of Japan facilitates activities carried out by Antarctic research expeditions. At the same time, it makes geodetic observations, produces and updates topographic maps, and develops satellite image maps on the Antarctic region in order to contribute to international activities relating to research on global environmental changes and geodetic surveys.

The Japan Meteorological Agency continues to conduct observation of ozone, solar and infrared radiation, surface and upper-air at the Syowa Station (Antarctica). Accumulated meteorological data contribute to monitor and research the global environment, such as the changes in Antarctic ozone hole and global climate, and are utilized for the formulation of international policies.

The Japan Coast Guard is conducting bathymetric survey. The observation data is being used for compiling nautical charts and as the basis for research related to past environmental conditions such as glacial erosion and sedimentary environments. In addition, they conduct tidal observations and contribute to monitoring the fluctuations in sea levels, which are closely tied to global warming.

## 2 Research of and Predictions of the Global Environment

The Japan Meteorological Agency and its Meteorological Research Institute are developing numerical models climate change projection over and around Japan and the world, and actively participate in international research programs such as the World Climate Research Programme (WCRP). In addition, they are developing earth system models that include the carbon cycle process and regional climate models with high resolution, and are conducting research on global warming projection. JMA has published "Global Warming Projection Volume 9" in March 2017, which shows detailed climate projection for the end of the 21st century in Japan based on a highly advanced regional climate mode, and in addition, climate projection information for each prefecture has been published (FY2017 to 2018). Through such initiatives, proactive contributions have been made to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) (released in 2013-2014), the Plan for Global Warming Countermeasures (adopted by a Cabinet decision in May 2016), the Climate Change Adaptation Plan (adopted by a Cabinet decision in November 2018), and efforts toward the development of adaptation measures by local governments and others.

The National Institute for Land and Infrastructure Management released the results of research into climate change adaptation in terms of flood control, water utilization, and the environment in the Report on Research into Climate Change Adaptation (2017) and other documents. These results have been incorporated into various materials, including a report issued in August 2015 by the Social Development Council entitled Adapting to Climate Change in the Area of Water Disasters, and a plan for adapting to climate change drafted by the MLIT in November 2015.

Note JMA UV Information website: https://www.jma.go.jp/en/uv/

## 3 Promoting Global Geodetic Observation

Japan contributes to the determination of the shape and variation of the Earth by participating in the Global Geodetic Observing System (GGOS) through activities such as international observations using Very Long Baseline Interferometry (VLBI, a method of observation using radio waves from quasars) and Satellite Laser Ranging (SLR, a method of measure the distances to artificial satellites using lasers), tide observations, absolute gravity measurements, and continuous GNSS observations using GNSS CORSs, and through this, is promoting the establishment of a Global Geodetic Reference Frame (GGRF).

# Chapter 9 Strengthening Strategic International Development and International Contributions

## Section 1 Promoting the Overseas Development of Infrastructure Systems

### 1 General Government Policy

The government established the "Management Council for Infrastructure Strategy" in March 2013 and compiled the "Export Strategy for Infrastructure Systems" in May of the same year, based on deliberations on government policies carried out by ministers involved, including the Minister of Land, Infrastructure, Transport and Tourism. A revised version of this strategy was formulated in June 2018 with the aim of Japanese companies securing orders for overseas infrastructure systems totaling up to approximately JPY 30 trillion in 2020 (approximately JPY 10 trillion in 2010). The active promotion of the overseas development of infrastructure systems is also stated in "Growth Strategy 2018" (approved by the Cabinet in June 2017).

In May 2015, a Partnership for Quality Infrastructure incorporating the provision of approximately 110 billion dollars of Japan's Quality Infrastructure Investment in the Asian region over the ensuing five-year period was announced by Prime Minister Abe. Through this partnership, the government aims to further mobilize private-sector funds and expertise to realize infrastructure investments that are sufficient in terms of both quality and quantity. In November of the same year, the Prime Minister announced that systemic improvements of yen loans and overseas investments and loans and other more specific measures for the Partnership for Quality Infrastructure would be carried out.

Prior to the G7 Ise-Shima Summit in May 2016, the Expanded Partnership for Quality Infrastructure Initiative announced by Prime Minister Abe set out policies to expand the target area from Asia to the entire world, and to provide USD 200 billion of investments over the ensuing five-year period. The participants of the G7 Summit reached a consensus regarding the importance of the global community sharing a common understanding of the basic elements of Quality Infrastructure Investment, and agreed upon the G7 Ise-Shima Principles for Promoting Quality Infrastructure Investment.

### 2 Initiatives at the Ministry of Land, Infrastructure, Transport and Tourism

Japan is strengthening government-wide efforts in order to realize the high-quality infrastructure partnerships announced by Prime Minister Abe. These include overhauling expansions to the systems targeted at receiving orders. The role of the MLIT is incredibly important in the overseas development of infrastructure by Japan, and it is necessary to embark on new initiatives in accordance with current changes in the situation, such as making maximum use of the expanded system, while continuing and improving current efforts. The MLIT formulated Action Plan 2018 for Overseas Development of Japanese Infrastructure in March 2018, and has been strategically promoting overseas development of infrastructure systems based on this plan. Specifically, as described below, we are promoting three pillars of the applicable measures: (i) "upstream" planning and information sharing, (ii) mitigation of business risks, and (iii) overseas development of soft infrastructure.

Furthermore, Action Plan 2019 for Overseas Development of Japanese Infrastructure was formulated in March 2019, in which cross-sectional perspectives were organized toward the overseas development of infrastructure systems, and in addition, a review was conducted on key projects that should be focused on over the next three to four years. In addition to the specific initiatives for each sector formulated in the 2018 Action Plan, including for railways, ports, airports, urban development, real estate development, and construction, specific new initiatives were formulated for the water, disaster prevention, and road fields.

### (1) 'Upstream' planning and information sharing

In order to promote participation from the concept stage of each project (upstream), Japan will appeal its technology to foreign countries, especially how it provides safety, reliability, and superior cost-effectiveness in the long run, including with respect to the operations stage. Japan will share these information by utilizing trade promotion activities carried out through joint efforts by leaders in the public and private sectors, organizing city tours for foreign ambassadors in Japan, and taking advantage of opportunities at international conferences. In addition, the Act on the Promotion of the Participation of Japanese Businesses in Overseas Social Capital Projects, which has enabled the creation of a friendly environment for the participation of Japanese companies in overseas infrastructure projects through the use of the neutrality and negotiating power of public agencies such as independent administrative bodies, as well as the use of technology and know-how accumulated through domestic projects, was put into place in August 2018, and support is being provided from upstream to downstream by taking advantage of Japanese know-how.

#### (i) Top Sales Promotion

In FY2018, Keiichi Ishii, the Minister of Land, Infrastructure, Transport and Tourism, visited six countries including Philippines, Singapore, Indonesia and China, and engaged in top sales of Japanese infrastructure systems by holding discussions and exchanging opinions with top officials and cabinet ministers authorized in the same sectors in these countries. In addition, the State Ministers and Parliamentary Vice-Ministers of the MLIT visited a total of 25 countries including South Africa, Colombia and Nigeria, and promoted Japan's infrastructure systems to countries with potential infrastructure demands. Additionally, visits to Japan by foreign ministers and dignitaries, the hosting of seminars, and other such opportunities were actively used to send messages of the superiority of Japanese infrastructure systems.

## Column

### Vigorous Promotion of Top Sales

Over the course of FY2018, the MLIT minister, deputy minister, and the parliamentary vice-ministers performed top sales of Japanese infrastructure systems to government officials in partner countries.

(1) Official Trips to Philippines and Singapore by Minister Ishii

MLIT Minister Ishii visited the Philippines and Singapore from April to May 2018, and held meetings with key people in these countries.

In Philippines, he held meetings with Secretary of Transport Arthur Tugade and Secretary of Public Works and Highways Mark Villar. During the meetings, broad exchanges of opinions were held concerning cooperation in railway projects such as for the Metro Manila Subway and the North-South Commuter Railway, road projects such as for the Manila Ring Road No. 3 road construction projects, and underground drainage projects, such as for the Parañaque underground drainage route project. After the meeting with Public Works and Highways Secretary Villar, a Memorandum on Technical Cooperation for the Development of Social Capital was executed with the Department of Public Works and Highways, and it was confirmed that in the future, further enhancements will be made to the cooperative relationship between the countries based

Meeting with Secretary Villar

Source) MLIT

on this memorandum. In addition, the minister attended the completion ceremony for the Pasig-Marikina River Channel Improvement Project (Phase 3), the completion ceremony for the Plaridel Bypass Construction Project (Phase 2), and the groundbreaking ceremony for the Plaridel Bypass Construction Project (Phase 3).

In Singapore, he held a meeting with Coordinating Minister for Infrastructure and Minister for Transport Khaw Boon Wan. At the meeting, there was a broad exchange of opinions regarding cooperation in the port and aviation sectors, with a focus on the project for a high-speed railway between Singapore and Kuala Lumpur.

(2) Official Trip to South Africa by MLIT Parliamentary Vice-Minister Takahashi

In May 2018, MLIT Parliamentary Vice-Minister Takahashi visited South Africa along with members of the Japan-Africa Infrastructure Development Association (JAIDA), launched in September 2016, and participated in the Japan-Africa Public-Private Economic Forum. Aside from the forum, a side event entitled the High Quality Infrastructure for Africa Meeting was hosted, at which the significance and necessity of high-quality infrastructure, as well as information on Japanese technology, was provided, and in addition, looking toward the TICAD7, for the promotion of the joint development of high-quality infrastructure, policies were shared for the further deepening of the cooperative relationship through the further sharing of knowledge and experience.

At a meeting with Mozambique's Minister of Transport and Communication Mesquita, who participated in the forum, top sales were conducted for the construction and operation of the Port of Nacala. At a meeting with Republic of Uganda Minister for Transport Bagiire, requests for support and cooperation were made toward the completion of the Nile Bridge (Jinja Bridge), and Minister Bagiire stated his hopes for ongoing cooperation in infrastructure.

The Japan-Africa Public-Private Economic Forum

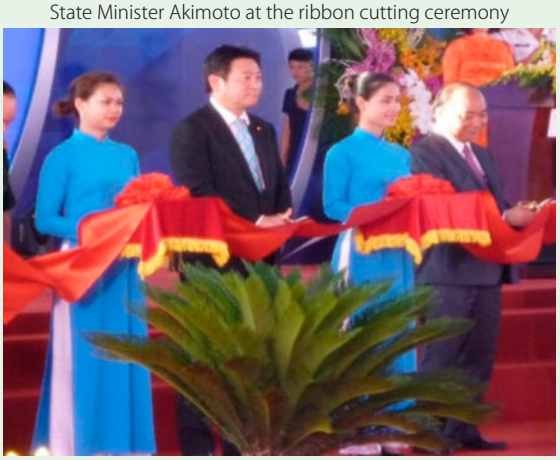
Source) MLIT

(3) Official Trip of State Minister Akimoto to Vietnam

State Minister Akimoto attended the Grand Opening of Hai Phone International Container Terminal held in Hai Phong, Vietnam, in May 2018. At the ceremony, State Minister Akimoto stated his expectations that this would lead to further development between the countries thanks to the port now being able to accept large container ships. The port was developed through specialized technology created by a Japanese company, a technology that provides rapid construction and advanced ground improvements. Furthermore, prior to the ceremony, a meeting was held with Prime Minister Phuc, who attended as the representative for Vietnam, and it was agreed to further strengthen the cooperative relationship between the countries through transportation infrastructure projects in Vietnam.

A meeting was also held with Vice Minister of Transport Cong and Vice Minister of Construction Linh, at

State Minister Akimoto at the ribbon cutting ceremony



Source) MLIT

which there was an exchange of opinions concerning the railways, aviation, roads, and urban development fields, and at which moves were made toward the smooth and steady implementation of projects through mutual cooperation by the countries.

(4) Official trip to Vietnam and Indonesia by Minister Ishii

In December 2018, MLIT Minister Ishii visited Vietnam and Indonesia, and held meetings with key people in the countries. In Vietnam, he held meetings with Deputy Prime Minister Dung and Minister of Transport The, which included discussions focused on railways, aviation, ports, roads, and disaster prevention, a request for an early resolution to the issue of non-payment for the Ho Chi Minh City Urban Railway Construction Project (Line 1), and a response from Deputy Prime Minister Dung and Minister of Transport The, that the procedures for payment would be started promptly. In addition, after the meeting with Minister The, a Memorandum of Cooperation on Fostering Maritime Relationship and a Memorandum of Understanding on Collaboration on Aircraft Noise Countermeasures at Airports in Vietnam were executed between the MLIT and the Ministry of Transport, and it was confirmed that the cooperative relationship between the countries will be further strengthened in the future, based on these memoranda.

In addition, in Indonesia, a meeting was held with Minister of Transportation Budi and Minister of Public Works and Public Housing Ir. Mochamad Basuki Hadimoeljono, at which there were discussions toward the restoration and recovery from the earthquake and tsunami that had occurred in Indonesia, the confirmation of the situation and resolution of issues concerning cooperative projects between the countries in the railway, port, and road fields, as well as an agreement to continue to promote cooperation.

Meeting with Minister of Transportation Budi

Source) MLIT

(5) Official Trip to Turkey of MLIT Parliamentary Vice-Minister Adachi

MLIT Parliamentary Vice-Minister Adachi visited Turkey in December 2018 to hold policy talks in the infrastructure, disaster prevention, and tourism fields, and attended the Japan-Turkey Disaster Prevention Seminar.

At the policy talks, the intent to further strengthen the cooperative relationship between the countries in the disaster prevention field was confirmed with Turkish government officials, and furthermore, top sales were conducted regarding earthquake disaster prevention and bridge technology held by Japanese companies. A request was also made for attendance at the G20 Tourism Ministers' Meeting to be held in October 2019.

The Japan-Turkey Disaster Prevention Seminar, which was held jointly by both countries' national governments, was attended by 245 government officials and private companies of both countries that are engaged in the disaster prevention field. At the opening

Public-Private Infrastructure Meeting


Source) MLIT

ceremony, Parliamentary Vice-Minister Adachi stated his hope for the further development of the cooperative relationship between the countries in the disaster prevention field.

(6) Official Trip to Tanzania and Kenya of MLIT State Minister Otsuka

In January 2019, MLIT State Minister Otsuka visited Tanzania, together with member companies of the Japan-Africa Infrastructure Development Association (JAIDA) launched in September 2016, and took part in a Public-Private Infrastructure Meeting held by the national governments of both countries. At the meeting, an overview of plans was confirmed for the Dar es Salaam Urban Transport Master Plan, the formulation of which JICA is providing support, as well as the City Master Plan in the capital city Dodoma, which is currently being formulated by Tanzania. In addition, there was an exchange of opinions between the public and private sector participants of both countries. Furthermore, the participants from Turkey were introduced to construction technology and efforts were made to promote the understanding of the host Tanzanian Government and private companies concerning high-quality Japanese infrastructure technology and an effective partnership between Japan and Turkey. In addition, a meeting was held with Minister of Works, Transport, and Communications Kamwelwe, at which top sales were conducted regarding road repair projects, and at which Minister Kamwelwe voiced his hopes for the development of local human resources and the strengthening of capacity buildings through support from Japan.

Opening ceremony of the Japan-Turkey Disaster Prevention Seminar


Source) MLIT

In Kenya, top sales were conducted for road and bridge projects in the vicinity of Mombasa Port through a meeting with Kenya Deputy Minister of Transport, Infrastructure, Housing and Urban Development and Public Works Obure. In addition, an infrastructure seminar was held between Kenyan and Turkish companies interested in infrastructure development projects and Japanese companies, at which there was an active exchange of information and building of relationships through business matching opportunities.

### (ii) Establishment of a System for the Promotion of Infrastructure System Export

Although demand for infrastructure is strong in emerging countries, infrastructure development and maintenance are strongly influenced by local governments. During negotiations, official creditworthiness is also required on the Japan side, and in the past, private companies have been limited in their ability to handle upstream stages of project formation. In addition, private companies lack the know-how to formulate large scale urban development master plans and water resource development project plans, to develop high-speed rail, to develop, maintain, and manage facilities for water resource development, as well as sewers and roads, and to operate airports and ports. Furthermore, the absence of a coordinating role among specialized Japanese companies has also been an issue.

In this situation, in order to strongly promote the export of infrastructure systems with both public and private sectors working in unison, it is necessary for public agencies such as incorporated administrative agencies to have neutrality and negotiating power, and furthermore, to create an environment in which Japanese companies can easily participate in overseas infrastructure projects using the technology and know-how cultivated by such public agencies over the course of domestic projects. Therefore, for the involvement of independent administrative corporations under the jurisdiction of the MLIT in the necessary overseas projects, and with the additional objective of promoting the collaboration and cooperation of independent administrative corporations and private companies, as well as other stakeholders, the Act for Promotion of the Participation of Japanese Business in Overseas Infrastructure Projects was enacted in August 2018. As an example of an investment under this Act, in December 2018, Kobe-Osaka International Port Corporation acquired

some of the shares of Cambodian company Port Authority of Sihanoukville (PAS). Upstream to downstream support was promoted by the use of Japanese know-how through the involvement of the company in the operation of Sihanoukville Port. This was a successful case of the public and private sectors working together, and has further promoted the expansion of infrastructure system exports.

### (2) Mitigation of Business Risks

The global infrastructure market is forecast to expand even further, and in particular, there is a strong demand for public-private partnership (PPP) systems in which private sector funds are used. However, transportation and urban development projects require long-term maintenance, demand risk at the operation stage, and the influence of the local government. In some cases, it has been difficult for the private sector to participate alone.

In order to mitigate the business risk of companies entering transportation and urban development sector projects downstream (management and operation), Japan Overseas Infrastructure Investment Corporation for Transport & Urban Development (JOIN), which integrates investment and project participation, made decisions over the course of FY2018 to support eight projects in the port, urban development, aviation, and logistics fields (approved by the MLIT). In FY2019, 123.1 billion yen (60.6 billion yen for industrial investment, 62.5 billion yen for government guarantees) has been recorded in the Fiscal Investment and Loan Program plan, and JOIN will continue to be actively used.

Other initiatives are also being used to provide multifaceted support for infrastructure system overseas development by Japanese companies, including the use of the Overseas Construction and Safety Measures Hotline, which was established in order to support the resolution of issues faced by companies engaged in projects overseas, as well as support for the Overseas Safety Measures Seminar for providing the latest information on regional conditions and crisis management measures, the release of up-to-date information on the construction and real estate markets in foreign countries through the use of overseas construction and real estate market databases, and for expansion into third countries in cooperation with partner countries.

### (3) Overseas development of soft infrastructure

Various efforts are underway to create an environment ideal for Japanese companies to participate in projects, including international standardization of Japanese technologies and systems, becoming the “de facto standard” of partner countries, supporting for institutional development of partner countries to improve the business environment for Japanese companies, and supporting for training engineers and skilled workers that contribute to sustaining administration and maintenance of infrastructure in partner countries. For example, we have implemented a pilot project for the introduction of a land appraisal system in Hai Phong, Vietnam.

### (4) Initiatives in Different Countries and Regions

In addition to the aforementioned initiatives, public-private partnership-based infrastructure conferences and bilateral dialogues are being continued to promote greater understanding of high-quality infrastructure investments advocated by Japan as a way to create opportunities to advance the overseas development of infrastructure systems through public-private partnerships. Overseas public-private partnership councils have also been established in different fields of infrastructure — namely “eco-cities”, water, roads, disaster prevention, rail, ports and harbours, and aviation — to facilitate sharing information on Japanese infrastructure.

For example, in developing Talks for Cooperation in Disaster Prevention in the pursuit of solutions for an emerging country dealing with disaster-prevention issues in collaboration with academic, business, and government circles in both countries, Japanese technologies would be introduced and proposed to the government of the other country through a partnership with the Japan Disaster Prevention Platform, an organization building a cooperative framework among academic, business, and government circles established in June 2014. In order to promote such projects as those involving participation in the development and operations of ports and harbours in Myanmar, Indonesia, Kenya, Mozambique and elsewhere, the introduction of port EDI system in Myanmar and Cambodia, and the introduction of national technical standards for port and harbour facilities in Vietnam, the development of human resources is being enriched, and information sharing, exchanges of views and other efforts through the Overseas Port and Logistics Project Council are being implemented. In addition, public-private partnership initiatives are being carried out through the Japan Conference on Overseas Development of Eco-Cities and other such bodies tasked with promoting urban development overseas, and

support was provided for Japan to have an exhibition booth at MIPIM, an international real estate show for professionals (held in Cannes, France in March 2018).

Initiatives taken by the Japan Association of Small and Medium-Sized Enterprises for Overseas Construction (JASMOC), which was launched in June 2017 for the purpose of promoting development into the international market by small and medium-sized Japanese construction companies, have included those to host seminars in Japan, and to dispatch missions and make other efforts to help those companies sell their unique technologies and make connections with key people in foreign countries.

Discussions, collaborations, and other initiatives promoting the overseas development of infrastructure systems undertaken with different regions and countries in FY2018 are outlined below.

### (i) ASEAN region

In the ASEAN Economic Community (AEC), which was launched at the end of 2015 in pursuit of the realization of a giant single market, emphasis on economic development through the reinforcement of regional connectivity and other efforts have produced expectations of increased activity in the movement of people, goods and other items in the future.

Amidst a growing number of requests for system development support from developing countries and other ASEAN member states, and to promote the development of human resources capable of spreading the development of systems related to land and construction, in September 2018, continuing on from last year, the MLIT brought government workers from the ASEAN member states together in one place to implement a construction policy program comprising courses on relevant systems and on-site inspection tours.

#### (a) Indonesia

The 9th Vice-Ministerial Level Meeting in the Transport Sector between Indonesia and Japan was held in Indonesia in November 2018, at which, with regard to the railway, port, and aviation fields, which are important cooperation projects between the countries in the transportation field, an exchange of opinions was held concerning how to resolve issues and the direction of future cooperation. In addition, the two sides confirmed their intent to continue cooperating and collaborating closely on structural aspects, such as infrastructure construction, as well as non-structural aspects, such as system establishment and human resources development.

MLIT Minister Ishii visited Indonesia in December 2018, where he held discussions with Minister of Transportation Budi and Minister of Public Works and Housing Basuki. The current awareness and issues concerning bilateral cooperative projects in disaster prevention, sewerage, railways, ports, and roads, etc., were discussed, and it was agreed to continue to promote such cooperation.

In January 2019, the sixth meeting of the Japan-Indonesia Senior Construction Officials was held in Indonesia, at which infrastructure development issues and experiences in the countries in the fields of water, disaster prevention, roads, sewage systems, housing and construction were shared, and it was agreed to continue to promote the cooperation of the companies.

In February 2019, Regional Development Bureau personnel were dispatched to Indonesia, where they conducted bridge inspections jointly with the Indonesian Ministry of Public Works and Housing. The bilateral cooperation of the countries was promoted through the use of the technology of Regional Development Bureau personnel in overseas road maintenance and management sites.

#### (b) Thailand

In April and October 2018, MLIT Minister Ishii met with Minister of Transport Arkhom during his visits to Japan, where they discussed policy issues in fields such as railways, urban development, ports, and roads.

In December 2018, JOIN decided to support (approved by the MLIT) a complex development project at Thailand's largest industrial park (Amata Nakorn).

In January 2019, with the objective of broadening understanding of the high quality of Japanese maintenance technology, a Corporate Technology Seminar was held to introduce the Japanese-related systems and technology of private companies.

(c) Vietnam

On May 31, 2018, memoranda were concluded with the Ministry of Construction and the Ministry of Natural Resources and Environment. In conjunction with the Japan-Vietnam summit meeting, and with the leaders of both countries in attendance, a signature and exchange ceremony was held between MLIT Minister Ishii, Minister of Construction Ha, and Vice Minister of Natural Resources and Development Thanh.

State Minister Akimoto visited Vietnam in May and August 2018, at which time he held meetings with government officials concerning policy issues in areas such as railways, roads, aviation, urban development, housing, and sewage systems. In addition, during his visit to Vietnam in May, he attended the Grand Opening of Hai Phong International Container Terminal.

In December 2018, Minister Ishii visited Vietnam, where he discussed concerning policy issues in areas such as railways, aviation, ports, roads, and disaster prevention with Deputy Prime Minister Dung and Minister of Transport The, and where Memoranda of Cooperation in the Maritime and Aviation Fields was concluded with the Ministry of Transport.

A pilot project for the introduction of a Japanese land evaluation system was conducted in Hai Phong, based on the Memorandum on Cooperation in Land-related Fields concluded in December 2017 with the Ministry of Natural Resources and the Environment.

In addition, from the perspective of constructing a network in Vietnam and developing and securing human resources that will contribute to the expansion into Vietnam, joint job fairs targeted at Vietnamese technical college students were held in Ho Chi Minh in September and Hanoi in November 2018. Besides, the 7th Japan-Vietnam Construction Conference was held in November of that year, with the aim of promoting the understanding High Quality Infrastructure Development, etc., advocated by Japan.

The Vietnam Expressway Seminar and Pavement Research Group was held in March 2019 in order to promote technical cooperation in the pavement field; experts from the industrial, government, and academia sectors of Japan and Vietnam attended and exchanged opinions. In November of that year, the 12th Intergovernmental Meeting and Seminar was held regarding the sewer system field, based on the Memorandum on Cooperation in the Sewer System Field concluded with the Ministry of Construction (renewed in April 2017). In August 2018, JOIN decided to support (approved by MLIT) the Water Point Urban Development Project for the development of detached houses and public facilities, etc., in the suburbs of Ho Chi Minh City.

In March 2019, the 3rd Japan-Vietnam Vice-Ministry of Construction Level Meeting was held in Tokyo, where the issues and experiences of the countries in construction fields including specified technical intern trainees, construction cost calculation, construction quality and safety management, PPP, and construction standards were shared, and where it was agreed to further promote the cooperation between the countries.

(d) Philippines

MLIT Minister Ishii visited Philippines from April to May 2018, at which time he met with Secretary of Transportation Tugade and Secretary of Public Works and Highways Villar, and performed top sales in the fields of railway, flood control, and roads. In addition, a Memorandum on Cooperation on Social Capital Development was concluded with the Department of Public Works, and the future intent to further strengthen the bilateral cooperation between the countries based on this memorandum was confirmed.

In August 2018, with the objectives of the promotion of mutual understanding and increasing the presence of Japanese companies in the real estate field, the Japan-Philippines Real Estate Development Investment Seminar was held, at which business matching was performed between real estate companies of both countries. In addition, during policy discussions between Parliamentary Vice-Minister of Land, Infrastructure, Transport and Tourism (at that time) Takahashi and Housing and Urban Development Coordinating Council (HUDCC) Chair Del Rosario, top sales were performed concerning high quality real estate development through technology and know-how unique to Japanese real estate companies, and an exchange of opinions was conducted concerning cooperation in the real estate field.

In November 2017, based on the Memorandum of Understanding on the Training of Construction Personnel concluded with the Department of Trade and Industry, a pilot project was developed with the objective of training local construction personnel toward the promotion of the overseas expansion of Japanese small and medium-sized construction companies.

(e) Malaysia

Parliamentary Vice-Minister of Land, Infrastructure, Transport and Tourism Takahashi visited Malaysia in August 2018, where he conducted top sales concerning Japanese technology in dam reclamation and flood preliminary warning systems, advanced technology and products held by Japanese companies in the infrastructure maintenance field, and expressway toll collection systems that Japanese companies had been working on in Malaysia, and in addition, there was an exchange of opinions concerning cooperation in the water disaster prevention, road, and disaster prevention fields. In conjunction with this, the Japan-Malaysia Road Maintenance and Management and Disaster Prevention Technology Seminar was held with the objective of introducing Malaysian government agencies and university stakeholders, etc., to the status of measures and technology for road maintenance and management and water disaster prevention measures in Japan.

(f) Singapore

MLIT Minister Ishii visited Singapore in May 2018, where he held discussions with Coordinating Minister for Infrastructure and Minister for Transport Khaw, and a broad exchange of opinions was held regarding cooperation in the port and aviation fields, with a focus on the project for a high-speed railway between Singapore and Kuala Lumpur.

The 2nd Japan-Singapore Vice-Ministerial Transport Consultations was held in Tokyo in March 2019, at which an exchange of opinions was conducted regarding the current status of initiatives in the railway, port, and aviation transportation sectors of the countries, as well as on the direction of future cooperation, and at which the intent was confirmed for the two countries to continue close cooperation in these sectors in the future.

(g) Myanmar

State Minister Akimoto visited Myanmar in April 2018, where he attended the System Go-Live Ceremony for the Project for Port EDI for Port Modernization, which electronically integrates port-related administrative procedures, and engaged in an exchange of opinions with government officials concerning policy issues in the infrastructure and transportation sectors.

Vice-Minister for International Affairs Shinohara visited Myanmar in December 2018, where he discussed policy for cooperative projects in the aviation, railway, automobile, and port transportation sectors at the 5th Japan-Myanmar Vice-Ministerial Level Meeting in the Transport Sector, and attended the completion ceremony of the Thilawa Port.

Engineer-in-Chief Kikuchi visited Myanmar in February 2019, where he deepened cooperation between the countries in the road, construction industry, housing construction, and urban development sectors at the 6th Meeting of Myanmar-Japan Senior Construction Officials and attended the opening ceremony for the construction of the Bago Bridge.

In the National Graduate Institute for Policy Studies policy research program, in order to support the development and dissemination of land-related systems, lectures concerning land policy were held for two years from FY2017, and support was provided for research in the land policy sector conducted by Myanmar government officials.

(h) Cambodia

Based on the Memorandum of Cooperation concluded with the Ministry of Land Management, Urban Planning and Construction signed in January 2017, support was provided for the drafting of construction laws and related ordinances by dispatching experts on four separate occasions.

The 4th Intergovernmental Meeting on Sewerage was held in February 2019, based on the Memorandum of Cooperation in the Sewer Sector concluded with the Ministry of Land Management, Urban Planning and Construction (signed in February 2017).

In February 2019, with the objective of creating a friendly business environment for conducting business locally, the Cambodia Urban Development and Real Estate Development Platform was established with the Cambodian Ministry of Land Management, Urban Planning & Construction, and the platform's inaugural meeting was held.

## Column

### Establishment and Inaugural Meeting of the Japan-Cambodia Urban Development and Real Estate Development Platform

The MLIT, with a focus on the ASEAN region, aims to establish bilateral platforms through public-private partnerships with countries that are facing various issues concerning urban development and real estate development.

As the first step, a memorandum on the establishment of the Japan-Cambodia Urban Development and Real Estate Development Platform was concluded with the Cambodian Ministry of Land Management, Urban Planning & Construction (hereinafter "Ministry of Land"), and the platform's inaugural meeting was held (a summary is provided below).

(Conclusion of Memorandum)

On February 26, 2019, with the objective of promoting the development of a business environment for Japanese companies involved in the Cambodian urban development sector, a Memorandum of Cooperation to establish a platform comprised of public and private sectors of the two countries (to meet once per year) was established by the Ministry of Land.

(Inaugural Meeting)

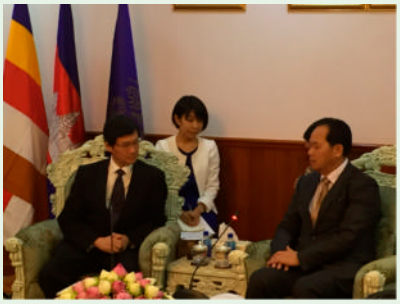
On February 27, 2019, at the Hotel Cambodiana, with Deputy Prime Minister and Minister of Land Chea Sopara in attendance, the inaugural meeting was held as a vice-ministerial level meeting, and a total of 250 people from the government and private sectors of both countries participated.

In the opening speech, the MLIT provided an explanation of the objectives for establishing the Platform, as well as past cases of urban development in Japan. Deputy Prime Minister and Minister of Land Chea Sopara explained that the three cities of Phnom Penh, Siem Reap, and Battambang had been selected, that smart cities were being promoted, and said that he had high expectations and appreciation of the Platform.

During the meeting, presentations were given by various practitioners, the Cambodia side discussed its issues in the urban development sector and its hope for support in the development of a legal framework, and the Japan side gave presentations on its history, experience, and know-how in urban development through representatives of the Urban Renaissance Agency and the Japan Sewage Works Agency.

In addition, business matching was performed between Japanese companies and Cambodian companies.

Discussion with the Deputy Prime Minister



Source) MLIT

Conclusion of the memorandum

Source) MLIT

Government officials from the two countries who attended the meeting

Source) MLIT

### (ii) South Asia

#### (a) India

MLIT State Minister Akimoto visited India in May 2018, where he met with government officials and others, and exchanged opinions concerning cooperation in the infrastructure and transportation sectors, including railway projects, such as for high-speed railways, and the development of areas around high-speed railway stations.

Furthermore, at the Japan-India Summit Meeting held in October 2018, letters were exchanged concerning an ODA loan (second phase, 150 billion yen) for the Mumbai - Ahmedabad High-Speed Rail Project.

The 5th Japan-India Joint Working Group on Road and Road Transport was held in November 2018, at which time there was an exchange of opinions concerning high-speed railway operation and maintenance and management, and measures against the aging of mountain roads and bridges.

In March 2019, a seminar on the development of areas around stations was held for government officials, with the objective of accelerating the examination into the development of areas around stations in India.

#### (b) Bangladesh

The 2nd Japan-Bangladesh Joint PPP Platform Meeting was held with the PPP Authority in Tokyo in June 2018, and the 3rd meeting was held in Bangladesh in March 2019; exchanging opinions at these meetings toward the formation of each PPP project to be implemented under the governmental cooperation between two countries.

### (iii) United States

Japan-US relationship has strengthened in various areas, including Japan-US Economic Dialogue launched in April 2017, and in addition, an agreement to begin negotiations for a Japan-US Trade Agreement at the Japan-US summit meeting held in September 2018.

In the infrastructure field, in particular, there was collaboration toward the actualization of the Dallas-Houston High-Speed Rail Project, -a project symbolic of Japan-US cooperation, and the joint research on the two countries on housing for elderly people. In addition, based on the memorandum of cooperation with the US Department of Transportation signed in October 2017, Japan Infrastructure Investment Forum 2018 was held in Washington D.C., US, in January 2018. Furthermore, in November 2018, the 2nd Japan Infrastructure Investment Forum was held in Indiana, US, and a place for matching for the formation of specific projects was provided. At the forum, the Japan side introduced the knowledge and know-how held by Japanese companies, and explained how this could contribute to the promotion of US infrastructure projects. The US side gave an explanation on Indiana's PPP system and projects planned in the future, and in addition, indicated its expectations for Japan.

### (iv) Middle East

#### (a) Saudi Arabia

In August 2018, a Memorandum of Cooperation in the Transportation Field was concluded between the MLIT and the Ministry of Transport with the objective of encouraging the participation of Japanese companies in public transport infrastructure development in Saudi Arabia.

#### (b) Turkey

In December 2018, MLIT Vice-Minister Adachi visited Turkey, confirmed that the cooperative relationship between the countries in the disaster prevention field would be further strengthened, and in addition, conducted top sales on the earthquake disaster prevention and bridge technology held by Japanese companies, and requested attendance at the G20 Tourism Ministers Meeting to be held in October 2019. Furthermore, partnerships between Japan and Turkey in the earthquake countermeasure and disaster prevention fields were further deepened, and with the objective of boosting the expansion of the seismic isolation and earthquake proofing technology of Japanese companies into Turkey, the Japan-Turkey Disaster Prevention Seminar was held.

Based on the Memorandum of Cooperation in the Construction Field in Third Countries concluded with the Ministry of Economy (at that time) in March 2018, in January 2019, at the 2nd Japan-Tanzania Public-Private Infrastructure Conference held in Tanzania and the High Quality Infrastructure Seminar held in Kenya, the Turkish government and Turkish construction companies joined the governments and private companies of Japan and the host country participating in

these events, at which the effective partnership between Japan and Turkey was introduced, and efforts were made to build relationships between companies.

(c) Qatar

In January 2019, during the visit of Qatari Emir Tamim bin Hamad al Thani to Japan, a Memorandum of Cooperation in the Transportation Sector was concluded with the MLIT and the Ministry of Transport and Communications with the objective of promoting the involvement of Japanese companies in public transport infrastructure development in Qatar.

### (v) Russia

The MLIT is promoting cooperation in the urban environment, transportation, and tourism sectors based on the Cooperation Plan for Russia Living Environment Superpower, Industrial/Economic Reform, which is a comprehensive policy of the Russian government. At the Eastern Economic Forum in September 2018, the heads of state from both countries agreed to promote the further specification of the Cooperation Plan, and to develop a mutually beneficial economic relationship between Japan and Russia. In the Russian urban environment sector, of the eight items in the Cooperation Plan, cooperation was promoted for the specification of creating comfortable, clean cities that are easy to live and move about in, through the Japan-Russia Working Group on Environmental Issues. A Memorandum on Cooperation for the Formation of Smart Cities was signed in May of that year, and the ninth and tenth general meetings were held in May and August, respectively. In November of that year, with the objective of deepening efforts in Voronezh and Vladivostok, which are model cities, and further promoting cooperation between Japan and Russia, the Japan Smart City Forum was held in Moscow.

The fourth senior officials' meeting of the Japan-Russia Working Group on Transportation was held in August 2017, and the participants exchanged opinions about railways, ports, air transport, and other sectors. Furthermore, experts exchanged opinions at the second meeting of Japanese and Russian port authorities in April 2017 and the fourth meeting of Japanese and Russian railway experts in August 2017. In addition, the fifth senior officials' meeting of the Japan-Russia Working Group on Transportation was held in April 2018, and the participants exchanged opinions about railways, ports, air transport, and other sectors, and experts exchanged opinions at the third meeting of Japanese and Russian port authorities and the fifth meeting of Japanese and Russian railway experts in April 2018.

### (vi) Central Asia

As a follow-up to Prime Minister Abe's visit to the Central Asia region in October 2015, and in order to promote the formation of projects using Japanese technology and know-how, a visit was made to Uzbekistan in February 2019, at which time organizations and business operators concerned exchanged opinions.

### (vii) Latin America

In August 2018, Parliamentary Vice-Minister of Land, Infrastructure, Transport and Tourism Yana visited Panama and Mexico, held meetings with government officials, participated in a Visit Japan tourism PR event being held in Mexico, and exchanged opinions with local Association of Nikkei & Japanese Abroad members.

In October 2018, Minister Ishii received a courtesy call from Peruvian Minister of Transport and Communications Trujillo, during which he conducted top sales for the Peruvian urban transport sector, and in order to promote the participation of Japanese companies in public transportation infrastructure projects in Peru, a Memorandum of Cooperation in the Transportation Sector was concluded with the MLIT and the Ministry of Transport and Communications.

In March 2019, at the request of Peru, a JICA study team provided information and exchanged opinions concerning urban transportation plans and earthquake-proof standards.

### (viii) Africa

We used the Japan-Africa Infrastructure Development Association (JAIDA), which was founded based on the ministerial declaration adopted at the Japan-Africa Public-Private Infrastructure Conference held in August 2016 in Kenya to coincide with TICAD VI, to proactively disseminate information to the nations of Africa regarding Japanese technology and experience in supporting Quality Infrastructure, and to promote the establishment of relationships with both public and private entities and partner countries.

In FY2018, in order to continue the positive relationships established at Private-Public Infrastructure Conferences (Ministerial level) previously held in 11 African countries (Kenya, Ethiopia, Mozambique, Tanzania, Ivory Coast, Nigeria, Uganda, Zambia, Ghana, Madagascar, and Senegal), we hosted the 2nd Japan-Tanzania Public-Private Infrastructure Conference in Tanzania.

Furthermore, in May 2018, MLIT Parliamentary Vice-Minister Takahashi visited South Africa, where he participated in the Japan-Africa Public-Private Economic Forum, and conducted top sales in the infrastructure sector on government officials from the various African countries that participated in the forum.

In September 2018, MLIT State Minister Akimoto visited Nigeria and concluded a memorandum of cooperation in the promotion of High Quality Infrastructure Investment with Nigerian government officials.

#### (ix) East Asia

Parliamentary Vice-Minister Akimoto participated in the 7th China-Japan-Korea Ministerial Conference on Logistics held in Korea in July 2018, where an agreement was reached for the promotion of cooperation of the three countries in the logistics sector, including the expansion of the mutual passing of chassis, the expansion of ports in Japan, China, and Korea subject to the Northeast Asia Logistics Information Service Network (NEAL-NET), and examination toward its expansion into ASEAN countries.

With regard to China, there were calls toward movement for third-country cooperation in relation to infrastructure development between Japan and China; the Committee for the Promotion of Japan-China Business Cooperation in Third Countries was held in September 2018, and the Japan-China Forum on Third Country Business Cooperation was held in October 2018. Japan-China cooperation in third countries is being worked on based on such actions.

## Section 2 Promotion of International Cooperation and Negotiations

### 1 Initiatives in the Field of Economic Partnerships

#### (1) Trans-Pacific Strategic Economic Partnership (TPP) Agreement

The TPP Agreement constitutes an economic partnership agreement forming the basis of rules governing trade and economic activities in the Asia-Pacific region, as well as being a pillar for a Japanese growth strategy to help the Asia-Pacific region grow. Japan participated in negotiations with 11 countries from July 2013 onward, namely Australia, Brunei, Canada, Chile, Malaysia, Mexico, New Zealand, Singapore, Peru, the United States, and Vietnam. The parties of the partnership reached an agreement in principle in October 2015. Japan signed the agreement in February 2016, and the National Diet approved it in December of that year. Although the USA withdrew from the agreement in January 2017, 11 countries reached an agreement in principle for a new TPP Agreement (the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP)) in November of that year. Japan signed the agreement in March 2018, and the National Diet approved it again in June of that year. In October of that year, six countries, including Japan, completed domestic procedures and notified New Zealand, the deposit country. As a result of this, the TPP Agreement entered into effect on December 30, 2018. In the government procurement sector, general competitive bidding will be newly mandated in Malaysia, Vietnam and elsewhere, a change that is expected to lead to the promotion of overseas development of Japanese infrastructure systems.

#### (2) Japan-EU EPA, RCEP and Other Economic Partnership Agreements and Free Trade Agreements (EPA/FTA)

Japan is strategically promoting economic partnerships with the Asia-Pacific region, the East Asia region, Europe, and elsewhere. As of March 2019, EPAs with 17 countries and regions have been put into effect, signed, or are otherwise under negotiations with a view to eventually being concluded, an example of which is the Regional Comprehensive Economic Partnership for the East Asia region (RCEP). These arrangements will serve to strengthen the international competitiveness of Japan's transport, construction, and other industries, promote international development and the opening of the service sector in partner countries, including by way of the abolition or deregulation of foreign capital restrictions, and promote the expansion of participation opportunities relating to government procurement.

The decision was made to start negotiations for the Japan-EU EPA in March 2013. Both parties reached an agreement

in principle in July 2017, and finalized the agreement in December of that year. The agreement was signed in July 2018, and approved by the Diet in December of that year. In December 2018, upon passing through the approval and decision of the European Parliament and Council, both Japan and the EU notified the other party to state that the domestic procedures had been completed. As a result of this, the Japan-EU EPA entered into effect on February 1, 2019. As for the main content of the agreement related to the MLIT, the agreement calls for efforts to improve market access in both Japan and the EU in the railway sector of government procurement. The agreement also includes provisions for cooperation between Japan and the EU toward promoting the international harmonization of standards and certification systems in the United Nations for automobile environmental and safety standards.

Sixteen countries, including the ASEAN countries, China, South Korea, and Australia, are participating in the RCEP negotiations. These negotiations began in May 2013 and twenty-five negotiation sessions have been held as of March 2019.

### (3) World Trade Organization (WTO)

Discussions among interested countries and regions, including Japan, have been undertaken with a view to enacting a new Trade in Services Agreement (TiSA) in order to further liberalize trade in service sectors. Negotiations began in June 2013.

## 2 Contributions to and the Strategic Use of International Organizations

### (1) Asia Pacific Economic Cooperation (APEC)

APEC is a framework for economic cooperation through which activities to promote trade and investment liberalization, business facilitation, economic and technical cooperation, and other such objectives are carried out to promote the sustainable growth and prosperity of the Asia-Pacific region. The MLIT is proactively involved in ministers' meetings and working groups that pertain to APEC's transportation and tourism sectors.

In the transportation sector, meetings of the transportation ministers to facilitate the flow of goods and people and support trade and investment within the given area are held.

At the 10th APEC Transport Ministers' Meeting in Papua New Guinea in October 2017, discussions were held on the topic of regional connectedness through robust, sustainable transportation and innovation, and Japan gave a presentation on the topic of promoting PPP in infrastructure projects; these discussions were summarized in the joint ministerial declaration.

In addition, the 46th meeting of the APEC Transportation Working Group, which deals with the transport sectors of APEC members, was held in Peru in October 2018. Liberalization, streamlining, security, safety and other factors of the transport sectors in APEC regions were discussed at this meeting.

Domestically, in light of the G7 Ise-Shima Principles for Promoting Japan's Quality Infrastructure Investment adopted at the G7 Ise-Shima Summit in May 2016, the ministries in charge of infrastructure in APEC member countries and regions were invited to the APEC Tokyo Conference on Quality Infrastructure in March 2019 in an effort to foster understanding and promote smart cities and the international standardization of Japan's Quality Infrastructure Investment in APEC member nations. This contributed to the overseas dissemination of quality infrastructure, as well as the promotion of smart cities within the APEC region.

### (2) Cooperation with Association of Southeast Asian Nations (ASEAN)

In an effort to further promote Quality Transportation in ASEAN, the MLIT is implementing various cooperation projects for overland, maritime and air transport under the ASEAN-Japan Transport Partnership, a cooperative framework for the transportation sectors in Japan and ASEAN established in 2003. The projects include joint research on paving technologies and overload management technologies in support of global road networks, joint research regarding port and harbour technology, re-surveying of channels and improvement of nautical charts for the Singapore Strait and Strait of Malacca, training of VTS controllers at regional training centers in ASEAN, and support for air transport security systems. The "ASEAN and Japan Transport Ministers Meeting" is held every year to monitor the progress of current projects and to discuss new projects and future direction.

At the 16th ASEAN and Japan Transport Ministers Meeting held in Bangkok, Thailand, in November 2018, the ASE-

AN-Japan Transport Partnership Work Plan for 2018-2019, which is a specific implementation plan of the ASEAN-Japan Transport Partnership, was approved, as well as two new cooperation projects: the Road Traffic Safety Project and the Mobile Big Data Utilization Project. In addition, the ASEAN-Japan Green Logistics Best Practices Collection, the ASEAN-Japan Cold Chain Logistics Guidelines, the Road Pavement Technical Materials for ASEAN International Arterial Roads, and the ASEAN-Japan Regional Action Plan for Aviation Security (RRMAS) were approved as project outcomes.

At the ASEAN-Japan Summit Meeting held in Singapore in November 2018, the holding of the ASEAN Smart City Network (ASCN) High Level Tokyo Meeting in partnership with Singapore in 2019 was mentioned in the meeting chair's speech, and the cooperation of Japan toward the realization of initiatives related to smart cities in ASEAN was confirmed.

### (3) Organization for Economic Co-operation and Development (OECD)

The MLIT participates in the activities of multiple OECD organizations, including the International Transport Forum (ITF), the Transport Research Centre (TRC), the Shipbuilding Committee, the Regional Development Policy Committee (RDPC), and the Tourism Committee.

The ITF hosts annual ITF Transport Ministers' Meetings, at which transport ministers from 59 countries play a central role in annual meetings to facilitate high-level and open discussions with world-renowned experts and businesspeople regarding transport policy. Previous topics discussed include climate change in the transport sector, autonomous driving, and infrastructure financing. At a ministers' meeting in May 2018, discussions based on a theme of safety and security of transportation were held, with an exploration of various perspectives. Participants discussed matters such as response and cooperation with climate change countermeasures in the transport sectors in light of COP23 and the progression of digitalization.

The TRC conducts surveys and researches on policy issues commonly applicable to member countries. Japan also participates in a working group focused on smart use of roads proposed by Japan and which have been adopted. A workshop was held in Tokyo in October 2018, at which discussions were held from various perspectives concerning pinpoint measures based on big data analysis and traffic management for the optimization of road networks.

The Council Working Party on Shipbuilding (WP6) is the only multilateral forum for shipbuilding and plays an important role in the policy coordination regarding the international shipbuilding market. At present, the shipbuilding industry is facing the problem of global excess capacity, and the WP6 has discussed ways to address this problem and to establish a new Shipbuilding Instrument to eliminate distorting public measures.

The RDPC proactively conducts reviews of the policies of member countries with respect to land and regional policies, as well as studies on the improvement of productivity in cities and regions. In March 2019, MLIT Councilor Yuki attended a ministerial meeting, and participated in discussions concerning the methodology of regional and urban policies based on global medium- to long-term changes (megatrends).

### (4) United Nations (UN)

#### (i) International Maritime Organization (IMO)

IMO is a specialized agency of the United Nations that establishes international rules on the safety of ships and marine environment protection. Japan actively participates in the activities of this organization as a major shipping and shipbuilding country, and the chairs of the committee for the adoption of environmental treaties and the sub-committee for deliberating requirements related to ship equipment are both Japanese. In FY2018, Japan actively contributed to the discussion about international rules such as safety standards for Maritime Autonomous Surface Ships (MASS), the formulation of measures for the enhancement of fire safety on passenger ships, and the adoption of the Initial IMO Strategy on Reduction of GHG Emissions from Ships, including the long-term target of phasing out GHG emissions from international shipping as soon as possible in this century.

#### (ii) International Civil Aviation Organization (ICAO)

ICAO is a specialized agency of the United Nations that has set forth certain rules and other stipulations for the safe and orderly development of international civil aviation and the sound and economic operations of international air transportation. Japan's financial contributions are third among member states FY2018 and Japan, as a Governing Council state under PART I (States of chief importance in air transport), actively participates in various ICAO activities and contributes to the development of international civil aviation.

#### (iii) UN-Habitat

UN-Habitat is a UN funding and planning agency specializing in human settlement issues. Japan has been an active council participant since the foundation of UN-Habitat, and has taken advantage of its knowledge and record of accomplishment on improving land, regional, and residential environments to contribute to improving human settlement issues worldwide, with particular focus on the population explosion and rapid urbanization in Asia.

In the period from July to August 2018, UN-Habitat, Fukuoka City, and the MLIT worked together to hold three meetings related to national land and urban policy in Fukuoka, including the International Symposium on Urban and Territorial Planning, under the title of Global Action 2018 - Sustainable Urbanization Week. During this period, various stakeholders in territorial and urban planning from around the world, including government and local government officials, international organizations, and experts, met together and held discussions toward the achievement of the Sustainable Development Goals (SDGs) at a national and city level, and Japan also expressed its intent to make a contribution through SPP initiatives.

#### (iv) UN efforts regarding water and disaster prevention

The MLIT participated in the 11th and 12th meetings of the High-Level Experts and Leaders Panel on Water and Disasters (HELP) and the International Symposium on Water and Disasters, where we discussed the efforts of the global community to increase global awareness of water-related disasters, shared experiences and knowledge, and advanced policies in each country. In addition, the UN Special Thematic Session on Water and Disasters, which is supported by Japan, was mentioned for the first time in the interim evaluation resolution entitled UN International Decade for Action on Water adopted by the UN in November 2018. In this, attention will be devoted by UN member countries as an important international initiative for water-related disasters.

#### (v) Sustainable development goals (SDGs)

Given the adoption of sustainable development goals (SDGs) at the UN Summit in September 2015, the Japanese Sustainable Development Goals Promotion Headquarters, which is chaired by Prime Minister Abe, determined indicators for implementing SDGs in Japan (SDG implementation indicators) in December 2016, and in December 2018 announced the SDGs Action Plan 2019. To realize sustainable development inside and outside Japan, the MLIT will also implement efforts toward the achievement of SDGs through related measures such as the promotion of Quality Infrastructure Investment.

#### (vi) UN efforts regarding geospatial information

Japan participates in the United Nations Initiative on Global Geospatial Information Management (UN-GGIM), which is a part of the United Nations Economic and Social Council, and uses its experience to contribute to the establishment of the Global Geodetic Reference Frame (GGRF) and other efforts. In addition, Japan is the Vice President of the Regional Committee of United Nations Global Geospatial Information Management for Asia and the Pacific (UN-GGIM-AP), as well as the Chair of its Working Group for Geodetic Reference Frame, and has contributed to the UN's work regarding geospatial information.

### (5) World Bank (WB)

At international events held in November 2018 and January and February 2019 by the World Bank for key people involved in urban development in various countries, the MLIT introduced Japanese knowledge of urban development in order to effectively share information about Japan's Quality Infrastructure Investment with infrastructure officials in other countries.

### (6) Conference on African Development (TICAD)

In August 2016 at TICAD VI, the first TICAD conference held in Africa, the Nairobi Declaration, which mentioned the importance of Quality Infrastructure Investment, was adopted. In light of this declaration and the Leaders' Statement for the Promotion of Japan's Quality Infrastructure Investment adopted by Cabinet ministers from Japan and various African countries at the Japan-Africa Public-Private Infrastructure Conference held to coincide with TICAD VI, we are promoting efforts such as these public-private infrastructure conferences to promote Japan's Quality Infrastructure Investment in

Africa. To prepare for TICAD VII, which is scheduled to be held in Japan in 2019, we will accelerate efforts to promote understanding of Japan's Quality Infrastructure Investment.

## 3 Multilateral and Bilateral International Negotiations and Collaborative Initiatives in Different Sectors

### (1) National Land Policy Sector

In FY2018, in light of international agreements from Habitat III regarding the strategic promotion of a national land policy, we established The Spatial Planning Platform involving the networking of Asian nations, government officials, international organizations, and other stakeholders, in which knowledge is shared and issues are resolved in relation to the national land and regional policy through meetings and website, in order to proactively promote the overseas deployment of Japanese national spatial planning and regional policy.

### (2) Urban Sector

In May 2018, policy discussions were held with the EU regarding urban policy.

In response to a request from the Myanmar Ministry of Construction, we provided support for the development of a law for urban and regional development planning legislation, conducted a study on the improvement of urban function through the use of public land in the city of Yangon, in the Yankin Region, and also implemented technical cooperation through the dispatch of JICA experts.

In addition, in response to a request from the Thai Ministry of Transportation, we implemented technical cooperation through the dispatch of JICA experts to Thailand, with the objective of realizing the Ban Su Development Plan.

### (3) Water Sector

Based on the common understanding of water problems as global-scale problems, discussions toward the resolution of these problems are taking place at international conferences and other venues. MLIT Parliamentary Vice-Minister Akimoto took part as a panelist in the Environmental and Water Leaders Forum held in Singapore in July 2018. At the forum, where the environmental economy was being newly advocated for the management of natural resources in tight supply, as an example of practice in the water sector, information was provided using examples of efforts in Japan toward the securing of a sound water cycle. In addition, the 13th Japan-US Flood Control and Flood Resources Management Meeting was held in the US (Washington) in May 2018, and new water resource policies were introduced and discussed under the premise of risks, including critical droughts and major disasters, caused by climate change, as well as the aging of facilities, etc. At the International Water Association (IWA) World Conference held in Japan (Tokyo) in September 2018, MLIT Minister Ishii stated that, in areas where water environment problems were appearing, it was necessary to engage not only in the structural maintenance of sewer equipment, but also to conduct non-structural maintenance in the form of human resource development and the legal system, etc. The 28th Japan-China River and Water Resources Exchange Meeting was held in Japan in December 2018, and discussions were held concerning the latest initiatives related to water resources and water circulation, the flow of funds for dams, construction projects, and the use of rainwater.

In addition, in water resources sector, "Council for Activation of Expand Overseas of Japanese Business Operators in Water Resources Sector", consist of related industry groups and government agencies, was established with "Japan Water Agency"(JWA) as secretariat. Furthermore, the JWA also conducted survey for project development in water resources sector in partnership with related organizations. Besides that, it has contributed to dissemination and promotion of "Integrated Water Resources Management" (IWRM) in partnership with "Network of Asian River Basin Organizations" (NARBO). In addition to this, the Asia Wastewater Management Partnership (AWaP) was established with the objective of increasing awareness of sewage management in Asia, and a cooperative relationship has been built between relevant organizations, including participating countries, international organizations, and the Japan Sewage Works Agency, in order to contribute to the achievement of the SDG targets (Target 6.3 "Halving the proportion of untreated wastewater") adopted at the United Nations summit.

### (4) Disaster Management Sector

To reduce the damage of water disasters around the world, the MLIT disseminated Japan's experiences and technology and made efforts to establish international solidarity regarding the strengthening of water disaster prevention in order to build a consensus that disaster prevention is the key to sustainable development. We engaged in coordination between industry, academia and government between Japan and Indonesia, Vietnam, Myanmar and other countries dealing with disaster-related issues to deploy efforts toward Disaster Prevention Collaboration Dialogues in each country to strengthen cooperative relations in the disaster prevention sector during normal times. We are currently moving ahead with the formulation of projects that use Japanese technology in the fields of dam rehabilitation, which makes effective use of existing dams, and crisis management water level gauges. Japan held bilateral meetings with the United States and China on the river and disaster prevention sector, during which the countries shared issues they were facing, and exchanged opinions on the resolution of these. The International Center for Water Hazard and Risk Management (ICHARM) has provided technical cooperation and international assistance to countries and regions vulnerable to water-related disasters through various efforts such as developing an integrated flood analysis system (IFAS) and rainfall-runoff-inundation (RRI) model, researching risk management, implementing human resource development programs, including doctoral and masters courses, participating in UNESCO, Asian Development Bank, and World Bank projects, and acting as the secretariat of the International Flood Initiative (IFI).

In addition, in the sediment control sector, we have hosted bilateral conferences regarding sediment control technology with Italy, South Korea, Switzerland and Austria, and have implemented technical cooperation through the dispatch of JICA experts, training, and other efforts for warnings and evacuations from landslide disasters, land-use regulations, and the like.

### (5) Road Sector

Japan continues to participate in various technical committees of the World Road Association (PIARC), and is endeavoring to actively disseminate information and make an international contribution. We held the PIARC Annual Council Meeting in Yokohama in October 2018 as the host country, where over 140 road administration officials from 47 countries around the world gathered to exchange opinions. At the meeting, on the topic of the Utilization of Innovative Technology for Road Maintenance, the latest trends in each country were reported and an exchange of opinions was held, including on new initiatives utilizing ICT, big data, and AI, as well as preventive measures based on scientific verification, from a traditional ex-post approach. In addition, under the framework of the Japan-ASEAN transportation partnership, "Technical Reference for Road Pavement Technologies in ASEAN International Corridors" was approved at the 16th Japan-ASEAN Transport Ministers Meeting held in November 2018, with the results of the joint research into pavement technology and overload countermeasures conducted with the objective of the development of an international road network as high quality infrastructure in the ASEAN region.

### (6) Housing and Building Sector

Japan attended the world conference of the Inter-Jurisdictional Regulatory Collaboration Committee (IRCC), and made other efforts to exchange information with relevant countries concerning global trends in building codes and the like.

We holded bilateral meetings with Germany and China at which we exchanged information about housing market trends, housing policy, and energy-efficient construction.

Broad technical cooperation was provided to Myanmar, Kazakhstan, and Cambodia by dispatching JICA experts and holding seminars.

### (7) Railway Sector

In FY2018 as well, we took part in initiatives for bilateral cooperation, including holding the Joint Committee on the Indian High-Speed Railway and the Japan-UK Railway Cooperation Meeting, as well as through technical cooperation involving the dispatch of JICA experts.

In addition, we actively took part in initiatives to introduce the strength of Japanese railway technology, such as by holding international forums and seminars by the Japan Railway Technical Service (JARTS) and the International High-Speed Rail Association (IHRA).

### (8) Automotive Sector

Based on the ASEAN-Japan New Cooperative Program on Comprehensive Vehicle Safety and Environment Measures Including Development of Technical Regulations and Establishment of a Type Approval System for Vehicles endorsed at the 13th ASEAN-Japan Transport Ministers' Meeting in 2015, in December 2018, we hosted a Public-Private Joint Forum for the Asian region, at which we exchanged information about activities for global harmonization and mutual recognition in the Asia region. In addition, continuing from 2017 and based on the program, we implemented and exchanged pertinent information and opinions regarding a program in ASEAN to improve their automobile transportation safety and environmental conservation policy formulation process.

### (9) Maritime Sector

In the maritime sector, in addition to responding to the IMO global agenda, Japan has also responded to the bilateral agenda through Director-General-level conferences. In FY2018, Japan held Director-General-level conferences with China and India in August and January respectively, at which information was shared and views were exchanged toward the resolution of various issues in the maritime sector. In addition, the Memorandum of Cooperation on Fostering Maritime Relationship was concluded in December 2018 between the MLIT and the Viet Nam Ministry of Transport.

In addition, a field survey for the joint hydrographic survey of the Straits of Malacca and Singapore began in March 2018. Furthermore, based on the ASEAN-Japan Cruise Promotion Strategy approved at the ASEAN-Japan Transport Ministers Meeting, seminars for local travel agencies were held in Indonesia, and as part of the project for encouraging the use of environmentally friendly ships in ASEAN, the second meeting of "Expert Group on Green Ships (EGGS)" for the development of the ASEAN Green Ship Strategy was held in Malaysia in August 2018.

### (10) Ports Sector

The MLIT exchanges information about port policy promotes cruise industry and engages in other activities at meetings such as the Northeast Asia Port Director-General Meeting and meetings of APEC Transportation Working Group. We also emphasize collaboration with the World Association for Waterborne Transport Infrastructure (PIANC) and the International Association of Ports and Harbors (IAPH) - the Japanese government is a member of both - and engage in exchange with key government officials from other countries and proactively participate in the activities of various research committees. We are particularly proactive in PIANC with efforts toward the overseas deployment and international standardization of Japanese technical standards.

In October 2018, the General Authority for Suez Canal Economic Zone joined the Memorandum of Understanding in Relation to the Cooperation on the Development of LNG as a Marine Fuel (signed by eight port authorities in seven countries in October 2016; three authorities from three countries later signed the memorandum in July 2017), comprising 12 port authorities from 11 countries, the international network of LNG bunkering ports was further strengthened.

### (11) Aviation Sector

In October 2018, the 55th Conference of Director-Generals of Asia-Pacific Civil Aviation was held in Fiji. At the conference, we exchanged opinions about efforts by countries in the Asia-Pacific region toward aviation safety, aviation security, air traffic control and other general aviation matters.

In addition, in February 2019, the fourth meeting of the Japan-France Cooperative Working Group was held in Paris -Toulouse in accordance with a memorandum of understanding concerning technical cooperation in the civil aviation sector that has been concluded with France, and it was decided to advance cooperation including regular meetings to be held in the future.

### (12) Logistics Sector

The 7th China-Japan-Korea Ministerial Conference on Transport and Logistics was held in Korea in July 2018, where the three countries agreed to promote trilateral cooperation in the logistics sector, including the expansion of mutual chassis, increase in the number of ports participating in the Northeast Asia Logistics Information Service Network (NEAL- NET) among the three countries, and research toward the expansion of its application to other partners such as ASEAN countries.

Discussions on enhancing the logistics environment are also being carried out in the context of bilateral logistics pol-

icy dialogue under the framework of the ASEAN-Japan Transport Partnership; discussions on logistics policy were held with Vietnam in September 2018 and Cambodia in January 2019. In addition, in May 2018, for the securing of human resources on logistics sector in Laos, a logistics human resources development project was held for university students majoring in logistics human resource development and for government officials from the Ministry of Public Works and Transport, and a logistics human resources development project was held for university students majoring in logistics operation and networking in Vietnam in July 2018.

Furthermore, to promote the use of the Trans-Siberian Railway as the third means of transport after marine and air, pilot transport project of cargo by the Trans- Siberian Railway was conducted jointly with the Russian government during the period from August to December 2018.

### (13) Geospatial Information Sector

The MLIT provides support to ASEAN member states and others for the introduction of the Global Geodetic Reference Frame and the comprehensive operation of a network of GNSS CORSs. In Thailand, in light of the cooperative agreement that resulted from the Japan-Thailand Summit Meeting held in 2015, the MLIT has provided support for the development of a network of GNSS CORSs by sharing knowledge on the utilization of GNSS CORSs and by dispatching experts. In Myanmar, we are participating in the Yangon Mapping Project, which aims to establish GNSS CORSs and create topographic maps of the precincts of Yangon, and in September 2018, we conducted technical training on GNSS CORSs at the Geospatial Information Authority of Japan. Furthermore, we held cooperative conference about surveying and mapping with South Korea, and exchanged information about surveying technology and projects.

### (14) Meteorological and Earthquake/Tsunami Sector

Under the framework of the World Meteorological Organization (WMO), Japan has provided the world meteorological community with various information including tropical cyclone forecasts taking advantage of its advanced technologies as well as exchanged meteorological data and technical information. Also, under the framework of the United Nations Educational, Scientific and Cultural Organization (UNESCO) Intergovernmental Oceanographic Commission (IOC), Japan has provided the Northwest Pacific Tsunami Advisory to various countries in the region to contribute to tsunami disaster mitigation.

### (15) Coast Guard Sector

Coordination and cooperation among coast guard agencies in various fields — including search and rescue as well as maritime security measures — are being actively promoted through partnership of the North Pacific Coast Guard Forum (formed by six countries consisting of Japan, Canada, China, South Korea, Russia, and the United States), the Heads of Asian Coast Guard Agencies Meeting (21 Asian countries and one region), and bilateral top-level meetings, as well as joint exercises.

The Japan Coast Guard is also proactively participating in various international organizations by formulating standards concerning the production of nautical charts through committees of the International Hydrographic Organization (IHO), coordinating for the Northwest Pacific Ocean region through the Cospas-Sarsat Programme, conducting investigations into VDES[Note] development through committees of the International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA), and dispatching staff members from the Japan Coast Guard to the Information Sharing Center based on the Regional Cooperation Agreement on Combating Piracy and Armed Robbery against Ships in Asia (ReCAAP). In addition, international contributions are being made through different initiatives, such as those that help improve the capabilities of the coast guard sector in developing countries.

In addition to this, to support the improvement in capabilities for the security, rescue, environmental disaster prevention, maritime traffic safety, and nautical chart creation sectors of countries along the Indo-Pacific coast, experts in Japan Coast Guard with specialist knowledge have been dispatched to each country, personnel of coast guard agencies in each country have been invited to Japan, and support has been provided to improve capabilities through initiatives conducted by the Japan International Cooperation Agency (JICA) and the Nippon Foundation.

Furthermore, through such efforts as promoting interaction and fostering mutual understanding among coast guard

**Note** Short for VHF Data Exchange System

organizations throughout Asia, and in order to create a common awareness of the importance of collaboration and cooperation between countries toward ensuring safety at sea and advancing the concept of "maritime order governed by law and rules and not by coercion", we have accepted young senior officials from coast guard organizations throughout Asia into the Maritime Safety and Security Policy Program, a master's degree program for maritime safety and security policy established in October 2015.

Figure II-9-2-1 Maritime law enforcement training for the Philippine Coast Guard, using high-speed small boats, etc.

Source) MLIT

In addition, in recent years more and more maritime security organizations have been established, and as there is demand for the improved quality and increased quantity of technical guidance support, the Japan Coast Guard established the Japan Coast Guard Mobile Cooperation Team: MCT in October 2017 as a dedicated department for the provision of support to improve capabilities. The team consists of ten members and is managed by the Japan Coast Guard International Cooperation Promotion Officer; as of the present, MCT personnel have been dispatched 21 times to nine countries. In the future, we will continue to provide support to improve ability in accordance with requests from the coast guard agencies of each country.

## Section 3 Initiatives for International Standardization

### (1) Efforts for International Standardization

To promote high safety and environmental performance automobiles early and cost efficiently, Japan is actively participating in activities of the World Forum for Harmonization of Vehicle Regulations (WP29) to promote the international harmonization of safety and environmental regulations, and is also promoting the international spread of Japanese automobiles with superior safety, and environmental features, and new technology through participation in these activities. In order to promote such activities, the "Action Plan for the Internationalization of the Regulation and Certification System" with its four pillars of: 1) Strategic international standardization of Japanese technology and regulations, 2) Realization of international whole vehicle type approval system (IWVTA), 3) Promoting participation of Asian countries in international harmonization of regulations, and 4) Establishing a framework to handle globalization of regulations and certification, is being steadily realized to promote the internationalization of automobile regulation and certification systems.

### (2) International Standardization and Other Initiatives in the Railway Sector

As Europe actively promotes the international standardization of European standards, the possibility of significant obstacles arising in the overseas expansion of railway systems is increased if Japan's superior technology is excluded from the scope of international standards. Because this will affect global competitiveness in the railway sector, it is important to actively promote international standards in railway technology. For this reason, the Railway Technical Research Institute's Railway International Standards Center, which is the centralized organization that handles railway-related international standards, works proactively to further advance railway safety and the expansion of the railway industry.

As a result, Japan has played a central role in contributing to the proposals of individual standards and committee and working group activities in the Technical Committee for Railway Applications (TC269) of the International Organization for Standardization (ISO), as well as the Technical Committee for Electrical equipment and systems for railways (TC9) of the International Electrotechnical Commission (IEC), and has secured successful results. As Japan's presence in these international conferences continues to rise, we are working on promoting international standardization with respect to railway technology.

The National Traffic Safety and Environment Laboratory of the National Agency for Automobile and Land Transport Technology (Independent Administrative Institution), the first domestic certification body of international standards in the railway sector, has acquired solid certification experience following the establishment of the Railways Certification Office, and contributes to the overseas expansion of Japan's railway systems. On May 16, 2018, in regard to the RAMS

Standard, which is a major international standard for the overseas development of railway systems, we were accredited as a third-party certification body by the National Institute of Technology and Evaluation Accreditation Center (NITE) (Independent Administrative Agency).

### (3) International Standards Regarding Ships and Seafarers

In order to aim to reduce the environmental impact and improve the safety of shipping and help disseminate excellent Japanese energy-efficiency technologies, Japan has spearheaded discussions in the context of the formulation of standards under the SOLAS Convention[Note 1], MARPOL Convention[Note 2], and STCW Convention[Note 3], all of which have been adopted under the auspices of the International Maritime Organization (IMO).

Moreover, the Japan Coast Guard has participated in discussions on international standards applicable to nautical charts, nautical publications, and navigational warnings as hosted by working groups established under the International Hydrographic Organization (IHO). Furthermore, in order to ensure the safety of vessel traffic and increase the operating efficiency of vessels, we are leading the discussion in the International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA) e-Navigation Committee regarding the international standardization of VDES, a new maritime data communication system.

### (4) International Harmonization of Standards and Certification Systems in the Civil Engineering and Building Sectors

In the civil engineering, building, and housing sectors, we are working to promote the international harmonization of standards and certification systems by operating programs for certifying imported building materials in terms of performance and for approving rating agencies, obtaining technical cooperation from organizations like JICA, and participating in the establishment of ISO standards for design and construction technology. Likewise, as part of the efforts to incorporate Japan's accumulated technology in international standards, discussions are in progress to develop and revise domestic technical standards by taking into account trends in the creation of international standards.

### (5) International Standardization of Intelligent Transportation Systems (ITS)

In order to promote the development of efficient applications, international contributions, and the development of related industries in Japan, the international standardization of ITS technology is progressing within international standardization bodies, including ISO and the International Telecommunication Union (ITU).

In particular, we are participating in the Technical Committee on International Standardization of the ITS (ISO/TC204) and have been engaged in standardization activities concerning the use of probe data gathered with the ETC2.0 service. In addition, Japan has spearheaded discussions as co-chair or deputy chair of various subcommittees of the United Nations' World Forum for Harmonization of Vehicle Regulations (WP29), regarding standards for automated driving, etc. In regard to automatic steering, which is the key technology for automatic driving, lane change standards entered into effect in October 2018, and we have earnestly promoted the formulation of international standards, including beginning studies on the formulation of standards for lane maintenance while in auto drive mode.

### (6) Standardization of Geographic Information

For the purpose of ensuring compatibility for the interoperability between different Geographic Information Systems (GIS) dealing with geospatial information, Japan is actively participating in the formulation of international standards by the ISO Technical Committee for Geographic information/Geomatics (ISO/TC211). Likewise, we are working on standardizing domestic geographic information.

### (7) Mutual Recognition of International Technical Qualifications

Within the APEC Architect Project and the APEC Engineer Project, we have conferred mutual designations on people qualified to produce architectural designs and qualified engineers within APEC who have satisfied certain requirements. Within the APEC Architect Project, we are promoting the mobility of persons qualified to produce architectural designs

Note 1 International Convention for the Safety of Life at Sea.
Note 2 International Convention for the Prevention of Pollution from Ships.
Note 3 International Convention on Standards of Training, Certification and Watchkeeping for Seafarers.

through our signing of bilateral memorandums of understanding for mutual acceptance with Australia and New Zealand, and efforts such as our participation in the APEC Architect Central Council.

### (8) Sewage Sector

Presently, our proactive and leading participation in the Technical Committee on the Water-reuse (ISO/TC282), Technical Committee on Sludge Recovery, Recycling, Treatment, and Disposal (ISO/TC275), and Working Group on Stormwater Management (ISO/TC224/WG11) represents efforts to promote the deployment of high-quality Japanese sewage technology overseas.

### (9) Promotion of the International Standardization of Logistics Systems

We are promoting the standardization and international standardization of Japanese logistics systems, thereby contributing to improved logistics environments in Asian distribution networks and strengthening the international competitiveness of Japanese logistics companies, based on the services and know-how those companies have, which is of the world's highest level, including cold chain and delivery services. Under the framework of the Japan-ASEAN Transport Cooperation, the Japan-ASEAN Cold Chain Logistics Guidelines were approved at the Japan-ASEAN Transport Ministers' Meeting held in November 2018 as one of the results of the Japan-ASEAN Cold Chain Logistics Project, which was started in 2017.

# Chapter 10 Utilizing ICT and Promoting Technology Research and Development

## Section 1 Promoting Innovation in the Fields of Land, Infrastructure, Transport, and Tourism Through the Use of ICT

Information technology initiatives in the fields of land, infrastructure, transport and tourism within the Declaration to be the World's Most Advanced IT Nation - Basic Plan for the Advancement of Public and Private Sector Data Utilization (endorsed on June 15, 2018) are being promoted in coordination with the IT Strategic Headquarters (Strategic Headquarters for the Promotion of an Advanced Information and Telecommunications Network Society) as headed by the Prime Minister.

### 1 Promoting ITS

Intelligent Transport Systems (ITS), a system created through the integration of people, roads, and vehicles using the latest Information and Communications Technology (ICT), enables advanced road use, the safety of drivers and pedestrians, the dramatic improvement of transport efficiency and comfort, solves various social problems such as traffic accidents and congestion, environmental and energy problems, and is leading to the creation of new markets in the related fields of the automotive industry, information technology industry, and others.

We are also proactively promoting initiatives pertaining to the collection and distribution of road traffic information that will work effectively for safety enhancement, congestion mitigation, and disaster preparedness in accordance with our aim to realize the world's safest, most environmentally friendly and economical road traffic society based on our Declaration to be the World's Most Advanced IT Nation: Basic Plan for the Advancement of Public and Private Sector Data Utilization, which was endorsed by the Cabinet in May 2018, and on our Public-Private Partnership-Based ITS Concept and Roadmap, which was endorsed by IT Strategic Headquarters in June 2014 and revised in June 2015, May 2016, May 2017, and June 2018.

#### (i) The spread of ITS in society and its effect

##### a. Promotion of ETC and its effects

Electronic Toll Collection (ETC) is now available on all national expressways, as well as most of the toll roads in Japan. The total number of new setup onboard units is roughly 62.05 million as of March 2019 and its usage rate on all national expressways is roughly 91.9% as of January 2019. Congestion at tollgates, which used to account for roughly 30% of the cause for expressway congestion, has been mostly alleviated and has contributed to reductions in $CO_2$ emissions and environmental burdens. Additionally, measures utilizing ETC are being implemented, such as the introduction of Smart IC dedicated to ETC interchange and discounts for ETC vehicles. In addition to such toll road uses, it is also possible to use ETC for parking payments and boarding procedures for ferries, showing the spread and diversification of services utilizing ETC.

##### b. Improvement of providing road traffic information and its effects

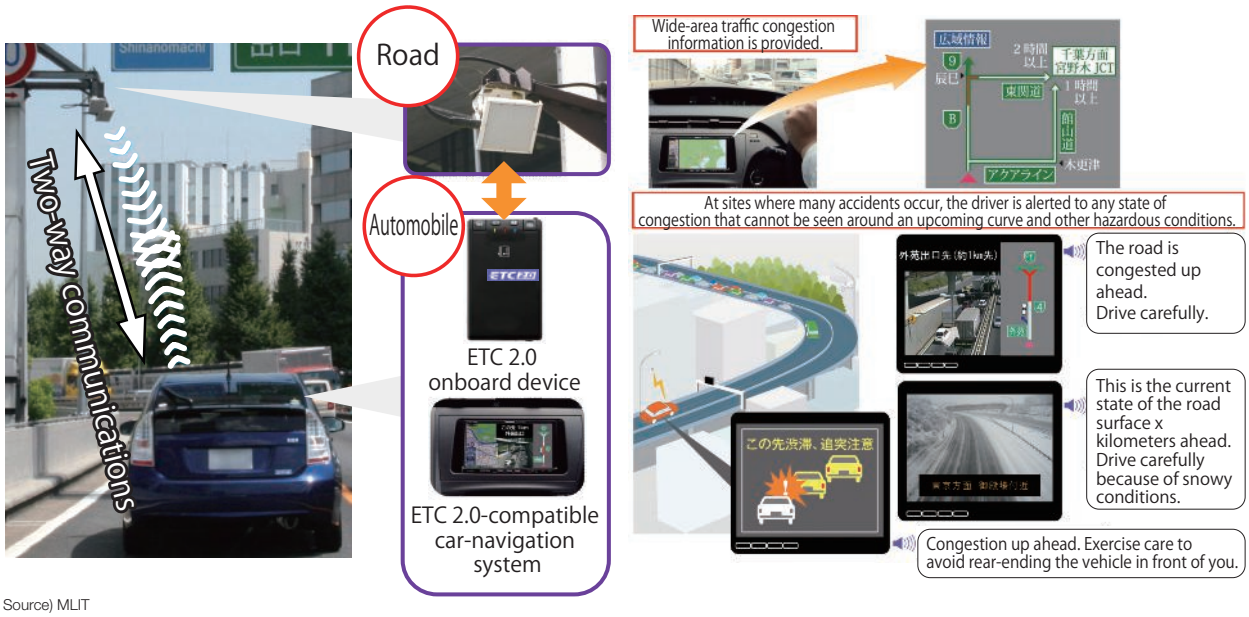
Vehicle Information and Communication System (VICS)-compatible onboard units aim to advance travel route guidance and, as of the end of December 2018, roughly 62.20 million units have been shipped. By providing road traffic information such as travel time, congestion conditions, and traffic restrictions in real-time through VICS, drivers' convenience is improved. This ultimately contributes to better mileage and reduces environmental burdens, including the reduction of $CO_2$ emissions.

### (ii) Technological development and the popularization of new ITS services

#### a. Popularization and utilizing ETC 2.0

ETC 2.0 onboard units came onto the market in full force in August 2015, and as of March 2019, roughly 3.71 million units had been set up. Using ETC 2.0, we are making efforts to enhance the provision of information on support for traffic congestion prevention and for safe driving, and are advancing efforts aimed at smooth and safe traffic, utilizing about roadside ETC 2.0 units at 1,700 locations on highways across Japan. We are also promoting efforts for smart road use through pinpoint countermeasures for traffic congestion, countermeasures for traffic accidents, productive and smart logistics management, etc., by utilizing a wide variety of extremely detailed big data, including data on speed, routes used, and sudden braking.

**Figure II-10-1-1** Wide-area Traffic Congestion Information is Provided by ETC 2.0.




Source) MLIT

#### b. Promotion of the Advanced Safety Vehicle (ASV) Project

Based on the Advanced Safety Vehicles (ASV) promotion plan, efforts are underway for the development, commercialization, and widespread adoption of Advanced Safety Vehicles (ASV) that assist drivers to drive safely using advanced technology. In FY2017, discussions were held regarding the development of practical ASV technology and other technologies, namely advanced systems that pull vehicles over to the shoulder and take other emergency measures when the driver is driving abnormally.

**Figure II-10-1-2** Illustration of a Telecom Use-Type Safe Driving Support System (Advanced Safety Vehicle (ASV))


Source) MLIT

## 2 Realizing Autonomous Driving

The Autonomous Driving Strategic Headquarters, led by the Minister of Land, Infrastructure Transport and Tourism, has verified important matters concerning autonomous driving, and published its future initiatives in December 2018, based on the following three perspectives: the development of an environment for realizing autonomous driving, the promotion of the development and dissemination of autonomous driving technology, and demonstration experiments and social implementation aimed at realizing autonomous driving.

Regarding the development of an environment for realizing autonomous driving, Japan has been spearheading discussions as joint chair or vice-chair of the subcommittees involved in the verification of standards for automated driving under the UN World Forum for Harmonization of Vehicle Regulations (WP29). With regard to automated steering, which is a key technology for automated driving, the standards for lane changes entered into effect in October 2018, and we have been earnestly promoting the formulation of international standards, such as by beginning studies on the formulation of standards for lane maintenance while in auto drive mode. Domestically as well, we conducted studies based on the development outline for automated driving formulated in April 2018. We are also working on the necessary system development for the Cabinet decision on the Draft Law to Partially Amend the Road Transport Vehicle Act, and the submission of this to the Diet, based on the Transport Policy Council Report on how to establish the systems required to ensure comprehensive safety from the design and manufacturing process to the running of automated vehicles, compiled in January 2019.

Regarding the development and dissemination of autonomous driving technology, we are making efforts for dissemination, awareness raising, and promotion of introduction for the Safety Support Car (Safety Support Car S), which is equipped with certain functions to support safe driving, including brakes to reduce damage from impact, through efforts such as confirmation by the government that brakes to reduce damage from impact have a certain level of performance, and creation of the Performance Certification System, which publishes the results of these checks, in March 2018. We are also working toward support for autonomous driving through information provision at merge lanes of expressways and toward the enhancement of snow-removal vehicles, for which autonomous driving is being considered.

With respect to demonstration experiments and social implementation aimed at realizing autonomous driving, in addition to conducting demonstrations on public roads of transport services using autonomous driving for the "last mile," we have begun implementing long-term (one to two months) demonstration experiments of automated driving services based at Michi-no-eki (roadside stations) in hilled rural areas, starting in November 2018, as well as demonstration experiments of autonomous driving services in New Towns beginning in February 2019. In addition, we have been implementing demonstrations of (manned) convoy driving toward realizing self-driving truck convoys on the Shin-Tomei Expressway since January 2019.

## 3 Realizing a Society that Utilizes Geospatial Information in an Advanced Manner

We are promoting efforts toward advancing the use and application of geospatial information[Note 1] using ICT and other technologies based on the Basic Plan for the Advancement of the Utilizing of Geospatial Information, which was adopted by a Cabinet decision in March 2017, in pursuit of the realization of a G-Spatial Society (an Advanced Geospatial Information Utilization Society) where anyone can utilize the geospatial information they need anywhere and anytime.

### (1) Developing and Updating Geospatial Information as the Foundation of Society

We are coordinating with relevant administrative organizations to promote the rapid development and updating of Fundamental Geospatial Data[Note 2], which can serve as the common basis for positioning on digital maps, and the Digital Japan Basic Map[Note 3], which is a basic map of Japan that includes information required for national land management and other efforts. Various types of information regarding national land are being developed, such as aerial photographs, geographical name information, National Land Numerical Information, continuous monitoring of crustal movements with GNSS CORSs, and preparation of guidelines for the use and provision of data obtained from city planning basic surveys. In addition, a system is being constructed that enables prompt assessment and provision of information on national infrastructure, such as development of information on the topographical classification used as the basic material for developing hazard maps prepared for future disasters, and taking aerial photographs urgently during disasters.

### (2) Initiatives to Promote the Utilization of Geospatial Information

We are driving forward with efforts to further promote the sharing and mutual use of geospatial information throughout society; our efforts include the promotion of distribution of geospatial information centered on G-Spatial Information Center, which collects and provides various geospatial information developed by each entity, and the improvement of GSI Maps[Note 4] that enables users to overlay various geospatial information on the web. Furthermore, in response to the increased frequency and intensity of natural disasters over recent years, since geospatial information provided through GSI Maps, such as topography, low-lying wetland data from the Meiji era and topographic classification maps, are incredibly useful for ascertaining the risk of natural disasters in each region, we have been conducting dissemination activities of GSI Maps with the objective of increasing the ability to use geospatial information that will lead to the realization of disaster prevention and mitigation. Specifically, we have supported on-site classes and teacher training conducted by the Geospatial Information Authority of Japan's Regional Survey Department, as well as briefings for textbook publishers, a summer school, and other activities. In addition, we are promoting the G-Spatial Project for the use in society of technologies that utilize geospatial information, and have engaged in efforts for further promotion and the cultivation of human resources by holding the Geospatial EXPO 2018 (November 2018) in collaborations among industry, academia, and government.

**Note 1** Information that represents the position of a specific point or area in geospace (including temporal information pertaining to said information) as well as any information associated with this information. Also called G-spatial information (Geospatial Information).

**Note 2** Serves as the basis for the position determined for geospatial information on the digital map such as positional information for the geodetic control points, coastlines, boundaries of public facilities, and administrative boundaries. Criteria and standards are defined by ministerial ordinances of MLIT. The Geospatial Information Authority of Japan completed the preliminary development in FY2011, and it is currently being updated along with the Digital Japan Basic Map.

**Note 3** Electronically compiled maps that serve as Japan's basic maps instead of the traditional paper maps, including the 1:25,000 scale topographic maps. In addition to depicting Japan's territory appropriately, it serves as the most fundamental information of the nation's land conditions with geospatial information developed by the Geospatial Information Authority of Japan.

**Note 4** Web maps operated by the Geospatial Information Authority of Japan (https://maps.gsi.go.jp/). Centrally delivers the geospatial information for topographic maps, photographs, altitude, terrain classifications, and disaster information developed by the Geospatial Information Authority of Japan.

## Column

### Airborne Gravity Surveys Make a Drastic Change to Elevation System!

In the Edo era, the Tamagawa-Josui Aqueduct, which installed from current Hamura City, Tokyo to Yotsuya, Shinjuku Ward, flowed through a distance of approximately 43 km with a height difference that was only around 92 m[Note], equal to a gradient of 2 cm per 10 m. In this way, even a little water flows, in accordance with the laws of gravity, from a place where the elevation is high to a place where the elevation is low.

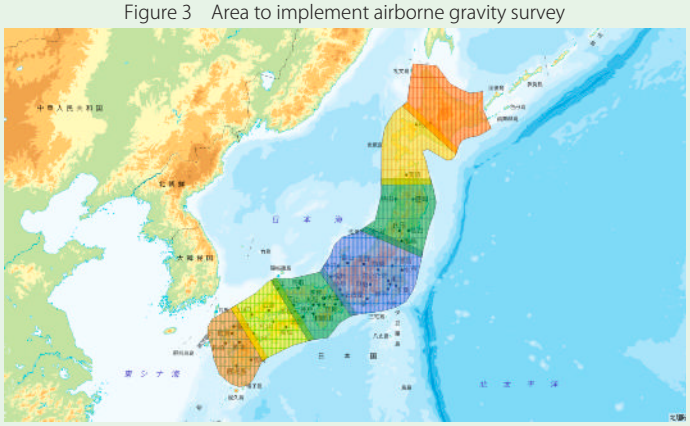
The elevation system in Japan is based on the mean sea level of Tokyo Bay, and has been maintained and managed since the Meiji era through leveling survey performed by the Geospatial Information Authority of Japan by determining elevations of bench marks installed at intervals of approximately 2 km along the main national highways nationwide. However, while leveling is highly accurate, it requires a large amount of time and money, therefore, there are problems with nationwide surveys taking 10 years or longer, and of a certain amount of time being needed to revise the elevations as required for restoration and reconstruction after the occurrence of earthquakes, etc.

Figure 1 Leveling routes in Japan

Figure 2 Leveling (performed by a team of four while walking)

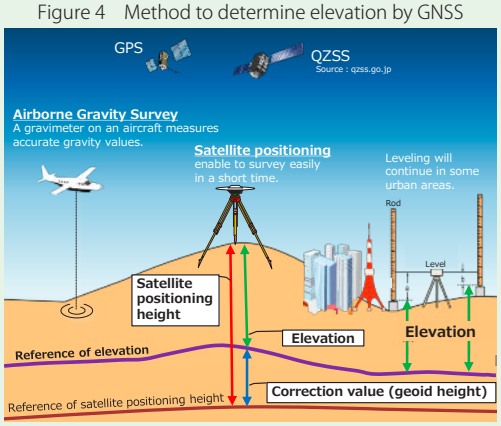
In order to overcome these problems, the Geospatial Information Authority of Japan began efforts in FY2018 to develop an environment for determining elevation by utilizing Global Navigation Satellite Systems (GNSS), such as GPS and Quasi-Zenith Satellite System, in addition to leveling. The key to this is “airborne gravity survey”. In order to determine elevation by GNSS, corrections must be made in consideration of the gravity associated with the flow of water. In airborne gravity surveys, uniform gravity data from across Japan is measured over the course of four years by the use of a gravimeter installed on an aircraft, and correction data (geoid model) is developed for determining elevation by GNSS. With this correction data, anybody can immediately determine the elevation anytime and anywhere, utilizing the features of GNSS, and it is expected that this will lead to the improved efficiency of survey work, which will contribute to prompt restoration and reconstruction after the occurrence of disasters, as well as the creation of new services, such as automated driving and drone delivery, making the best use of highly accurate three-dimensional positioning information including elevation. It should be noted that conventional leveling will continue to be used in areas where sky visibility condition is poor and GNSS does not work, and for applications that require highly precise elevation information. We are aiming to introduce this new elevation system by FY2024.

Figure 3 Area to implement airborne gravity survey



(Implemented by dividing the entire country into some blocks)

Figure 4 Method to determine elevation by GNSS




(Elevation = Satellite positioning height - Correction value)

**Note** From the website of the Tokyo Waterworks Historical Museum http://www.suidorekishi.jp/images/about/s_history/s_history_3.pdf

## 4 Realizing an Electronic Government

We are making efforts toward realizing an electronic government, based on our Declaration to be the World's Most Advanced Digital Nation: Basic Plan for the Advancement of Public and Private Sector Data Utilization. In particular, with regard to policies aimed at improving the convenience of citizens and businesses through digitization across the whole government - both national and regional - and other policies aimed at increasing convenience for citizens and businesses, we are actively promoting efforts that the government as a whole should take, based on the Implementation Plan for Digital Government (endorsed at an e-Government ministerial meeting on January 16, 2018). In addition, the MLIT formulated the MLIT Digital Government Medium- to Long-Term Plan (June 2018), and has been strongly promoting initiatives.

Regarding automobile ownership procedures, a "One-Stop Service (OSS)" that allows for the execution of various procedures, such as inspection, registration, automobile parking space certification, and payment of various vehicle taxes online and at the same time, is being promoted through the cooperation of various ministries. We began a service for the new registration procedures for new vehicles in 2005, and in April 2017, we expanded the scope of these procedures to include continuous inspections, changes to registration, and registrations of transfers, etc., and also expanded the subject regions for the registration of new vehicles to 38 prefectures.

In addition, at Future Investment Strategy 2018, in order to enhance and expand the conversion to a one-stop process for the various procedures related to car ownership, we promoted the digitization of automobile inspection certificates, established the Working Group on the Digitization of Automobile Inspection Certificates in September 2018, and conducted studies toward the digitization of vehicle inspection certificates in order to eliminate the need to visit a transportation office in order to receive the vehicle inspection certificate required to file an online application for an ongoing inspection, etc.; we published an interim report on this in January 2019. We will continue to promote the digitization of automobile inspection certificates based on this interim report.

## 5 Development and Opening of Optical Fiber for the Management of Public Facilities and Its Housing Space

The development and opening of optical fiber for the public facilities management and its housing space is being promoted in rivers, roads, ports, and sewage, as a response to the "e-Japan Priority Policy Program." As of March 2018, the total extent of the optical fiber controlled by the government for river and road management was about 38,000 km, and of this a portion of core cable roughly 18,000 km that does not interfere with the facilities management was opened to private sector business, and applications for additional use have been received.

## 6 Sophisticated Water Management and Water Disaster Prevention Utilizing ICT

In light of the new developments in information technology of recent years, new technology is being applied in the field to further the sophistication of water management and water disaster prevention.

Regarding the monitoring of river flooding and river basins, XRAIN (eXtended RAdar Information Network), a high-resolution, high-frequency system used to accurately and in real time understand concentrated heavy rainfall and localized heavy rainfall, is being harnessed for rainfall observation, and its distribution area is being gradually extended across Japan. In addition, we are promoting the technical development of low-cost crisis management-type water level meters that specialize in conducting measurements at the time of flooding; the installation of simple river monitoring cameras that wirelessly transmit still images; and unmanned, labor-saving flow rate monitoring equipment, through the use of the latest IoT and ICT technology.

In addition, in pursuit of advancing river management and disaster response, we are promoting efforts to acquire drones equipped with green lasers that can take measurements below water surfaces and to install small, passive water gauges that do not require long-term maintenance.

Also, for sediment-related disasters caused by heavy rains and other factors, unusual conditions are always monitored through such means as a radar rain gauge that can observe the rainfall situation over a large area with a high degree of accuracy, volcano monitoring cameras, and landslide monitoring systems. Additionally, in preparation for the occurrence of a deep-seated catastrophic landslide, the measures that detect the location and scale of such an occurrence at an early stage are being promoted for rapid emergency restoration measures as well as the prevention and mitigation of damage through appropriate warnings and evacuations.

To ascertain the inundation range and sediment landslide disaster areas at the time of a disaster, we are promoting initiatives to make emergency observations through the SAR satellite (Daichi 2), based on the Agreement to Cooperate in Provision of Disaster Information Using Satellites, concluded between the Ministry of Land, Infrastructure and Transport and JAXA in May 2017.

As for the sewage sector, in an effort to reduce flood damage from localized heavy rainfall and the like, we are driving forward with the verification of technology to support the promotion of self-help and mutual aid among regional residents, and efficient operation through the optimal use of the capacity of existing facilities through the use of water levels inside pipes, rainfall, inundation and other observational data provided by sensors, radars and the like.

## 7 Promoting Open Data

Efforts to address open data are being actively promoted within the national government and local public entities, as part of developing environment aimed at utilizing public and private sector data as stated in the Declaration to be the World's Most Advanced Digital Nation - Basic Plan for the Advancement of Public and Private Sector Data Utilization. One of those efforts is to have discussions toward making the data held by the Ministry of Land, Infrastructure, Transport and Tourism open data, while ascertaining in detail the needs of private enterprises, through the Public-Private Round-tables on Open Data (an opportunity for direct discussion between enterprises in the private sector wishing to utilize data and administrative institutions that hold data), hosted by the Cabinet Secretariat from January 2018.

Under these circumstances, regarding data held by public transportation business operators, we set up the Review Meeting for Promoting Open Data in the Field of Public Transportation in March 2017, with the aim of creating opportunities to promote open data in that field. Interested parties from the public and private sectors participated and discussed relevant issues, and an interim report was released in May 2017. Since FY2018, we have been working on public-private verifications and experiments on the provision of information through the use of open data, in order to enhance the provision of operating information, etc., at public transport organizations based on 1) demonstration experiments through public-private sector coordination, 2) discussions about transforming operation status information (positioning information, etc.) and information that would help people with limited mobility to travel into open data, and 3) promoting open data in local regions.

## 8 The Use of Big Data

### (1) Promotion of Economic Strategies for Local Roads Using IT/Big Data

In an effort to support growth and flexibility and robustly promote progress on issues involving regional economies and societies, we are promoting a new road policy that uses and applies ICT technology and big data to the fullest.

Due to the full-scale introduction of ETC 2.0 in August 2015, and the establishment of systems for collecting big data on road transportation speeds and the like, the amount of other transportation, economic and other big data and other information distributed has increased nine-fold over the past nine years. In light of these circumstances, and to resolve regional transportation issues, in December 2015, academic and government entities collaborated to establish institutes in 10 locations in Japan for researching economic strategies for local roads, and are promoting discussions about the implementation of road policies and pilot programs using a wide array of big data, including ETC 2.0, that account for issues in each region.

For example, in order to prevent traffic accidents involving rental cars driven by foreign tourists, the number of which is rapidly increasing, efforts are being implemented for pinpoint accident countermeasures, including the designation of characteristically dangerous spots for foreign tourists by utilizing data on sudden braking recorded by ETC 2.0 in rental cars departing from areas around airports used often by foreign tourists, and installing multi-language signs calling for attention and providing warnings in multi-language pamphlets.

In addition, sharing data owned both by the public and by the private sectors has been promoted by applying a wide range of measures.

### (2) New Town Development Using Transportation-related Big Data

We are advancing the development of smart planning, which is a planning method for considering facilities distribution, formation of spaces, and transport policies through simulation of the movement of people and estimation of the effects of policy implementation based on activity data at the individual level extracted from transport-related big data.

In FY2018, we endeavored to make improvements in sophisticated systems through verification in multiple cities, and to enhance performance indicators and measures that can be evaluated. In the Guidebook for Practicing Smart Planning [Second Edition], published in September 2018, we made improvements to the models presented in the first edition, added case studies, and added a glossary. We are also making efforts to disseminate analysis methods, including working with the Smart Planning Research Subcommittee, set up under the Japan Society for Civil Engineers, to host a seminar targeted at business, government, and academic practitioners for the acquisition of the skills required in order to propose Smart Planning survey plans.

### (3) Revision of Topographic Maps Through the Use of Big Data

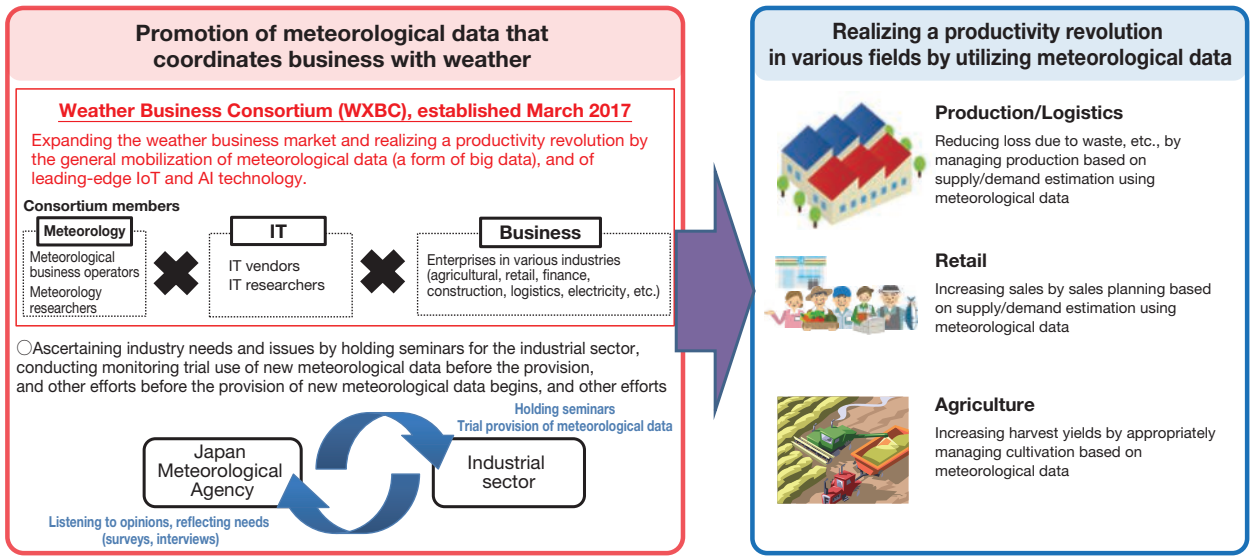
Topographic maps are used by mountaineers and hikers as the basic maps of national land, and are also used as the basis for various maps. In order to display mountain paths in these topographic maps more accurately, we are promoting efforts to correct topographic maps through the use of route information obtained by mountain climbers through the use of smartphones (big data). In FY2018, we revised the mountain trails of popular mountains across Japan through the use of big data provided under cooperation agreements with private business operators.

## 9 Efforts for Increasing Productivity in Business Utilizing Meteorological Data

By combining ICT technologies, in which IoT and AI have rapidly developed, with meteorological data (a form of big data), increases in work efficiency and sales, and improvements in safety are expected in a wide range of industries, including agriculture, retail, transportation, and tourism. Therefore, the Japan Meteorological Agency has been ascertaining the industrial sector's needs and related issues through the Weather Business Consortium (WXBC; established in March 2017), an industry-academia-government collaboration, and has been promoting the utilization of meteorological data by providing new meteorological data in response to those needs.

The specific results of these efforts include advances in the utilization of observation data from the Himawari 8 weather satellite and solar radiation estimation data. For example, a demonstration experiment of efficient harvesting of dry, high-quality pasturage made possible by the very detailed water vapor forecast is planned to be held in Hokkaido in FY2019.

Figure II-10-1-3 Increasing Productivity in Various Fields by Promoting Meteorological Data Utilization




Source) Japan Meteorological Agency

## 10 Promotion of Smart Cities

In August 2018, we incorporated new technologies, such as AI and IoT, and public-private big data into town development, and with the objective of further promoting efforts related to smart cities that aim to solve problems facing urban areas, created and published For the Realization of Smart Cities [Interim Report].

In addition, in that same month, toward the realization of Society 5.0-era smart cities, we confirmed an intent for ongoing partnership and cooperation with the Japan Business Federation. With the cooperation of the JBF, from December 2018 to January 2019 we solicited proposals from companies and local governments for seeds (technology), needs, and town planning ideas for the realization of smart cities; we received 398 technical proposals from 146 organizations, as well as 271 needs proposals from 61 organizations.

Based on the results of these proposals, and for the implementation of a model project in FY2019, we began public bidding for model projects in March 2019, and will select the winning bidders in May.

Furthermore, in the period from October 2018 to February 2019, we conducted demonstration experiments on the topic of health in Sapporo, Hokkaido, and on the topic of bustle in Toshima-ku, Tokyo.

# Section 2 Promoting Technological Research and Development

## 1 The Position of Technological Research and Development in Technology Policies and Comprehensive Promotion

In light of the policies of the government as a whole, including the Science and Technology Basic Plan (adapted by a Cabinet decision on January 22, 2016), the MLIT developed the Fourth MLIT Technology Basic Plan in March 2017. This policy has conveyed the direction of the MLIT's policies on technology, and through this, promotes technology research and development with efficient and effective collaboration among business, academia, and government, the results of which will be actively reflected in public utilities and the construction and transportation industries, etc. In addition, as part of the follow-up to this plan, in FY2018 we established the Roundtable for the Basic Policy of the National Land Transportation Technology Administration under the MLIT Panel on Infrastructure Development and Traffic Policy Council Technology Committee, at which the direction of future technology policy is discussed.

### (1) Initiatives in Facilities and Other Organs, Extraordinary Organs, External Bureaus, and National Research and Development Agencies

Key initiatives undertaken by facilities and other organs, extraordinary organs, external bureaus, and national research and development agencies under the jurisdiction of MLIT are as outlined in the figure. National research and development agencies selectively and efficiently conduct research according to social and administrative needs for the purpose of securing maximum results from research and development for the sound growth of our national economy through improvements in the level of science and technology in Japan and other benefits.

Figure II-10-2-1 Main initiatives during FY2018 at institutions, special institutions, and overseas bureaus

| Organizations, etc. | Content |
|---|---|
| Geospatial Information Authority of Japan | At the Geography & Crustal Dynamics Research Center, research and development has been conducted to contribute to the realization of an advanced geospatial information society, as well as disaster prevention and the environment through activities including Research on the Surface Detection of Temporal Changes of National Land Deformation through Interferometric SAR Time Series Analysis, Research on the Construction of a Height Reference System Based on Precise Gravity Geoids, Research on Crustal Deformation Analysis in Consideration of Topography and Underground Structure, Research on the Construction of a Prompt and Highly Precise GNSS Steady State Analysis System, Research on Real Time Inundation Monitoring, and Research on Automatic Feature Extraction through the Use of AI, etc. |
| Policy Research Institute for Land, Infrastructure, Transport and Tourism | Investigations and research have been conducted in areas including Life Support for Contributing to Aging in Place, the Effective Maintenance and Management of Regional Infrastructure through Area Management, the Functional Integration of Urban Life Services through the Effective Use of Sponged Urban Spaces, Methods for Verifying Local Public Transport Maintenance Measures, Sustainable Tourism Policy, Seamless Mobility as a Service (MaaS) using the Mobility Cloud, and the Organizational Safety Management of Transportation Companies, etc. |
| National Institute for Land and Infrastructure Management (NILIM) | Promoting research for the building of a safer, more secure, energetic, and attractive society, with an emphasis on four research areas: research on disaster prevention, disaster mitigation, and crisis management, including the Flood Risk Visualization Project, the Prompt Ascertaining of Large-scale Sediment Disaster through the Use of Remote Sensor Technology, and the Ascertaining of Surge Risk through the Use of Technology to Forecast Waves and Tide Levels, research relating to the maintenance and management of infrastructure, including Technical Development and Revision of Inspection Procedures Towards a Road and Structure Maintenance Second Stage, and the Realization of the Accurate Maintenance and Management of Airport Civil Engineering Facilities, research on productivity revolution, including the Improvement of Efficiency through the Use of 3D Models, Etc., and Support for the Realization of Automated Driving, and research for regional revitalization and the improvement of living conditions, such as the Appropriate Management of Vacate Houses Based on Local Conditions. |
| Meteorological Research Institute | Conducted research on understanding the phenomena of weather, climate, earthquake volcanoes, and the ocean as well as predictions to contribute to "strengthening measures for typhoons and torrential rains," "strengthening measures for earthquake, volcano, and tsunami disasters," and "strengthening of measures related to climate change and global environment." |
| Japan Coast Guard | Conducted testing and research for equipment and materials used for Coast Guard duties, testing and research for forensic science at sea, and conducted researches to improve the seafloor geodetic observation technique. |

Figure II-10-2-2 Key initiatives undertaken by national research and development agencies under the jurisdiction of MLIT in FY2018

| National research and development agency | Summary |
|---|---|
| Public Works Research Institute* | Conducted research and development to contribute to the realization of a safe, secure society; the strategic maintenance and improvement of social infrastructure; and the realization of a sustainable, active society for the purpose of helping to the efficient creation of quality social infrastructure and the development of Hokkaido. |
| Building Research Institute* | Conducted research and development on technologies related to housing, buildings and urban planning including developing technology to ensure the structural safety of buildings to contribute to the prevention of damage and destruction due to giant earthquakes and other natural disasters; developing technology to realize the efficient use of resources and energy in harmony with the natural environment in housing, buildings and urban areas to contribute to the reduction of greenhouse gas emissions; and conducted training related to earthquake engineering. |
| National Traffic Safety and Environment Laboratory | Conducted test research related to the safety assurance of land transport and environment preservation, technical standards conformity assessment of automobiles, and technical evaluations related to recalls, including "Promoting the development and commercialization of next generation heavy vehicles" and "Survey on the requirement for communication between a pedestrian and a vehicle." |
| National Institute of Maritime, Port and Aviation Technology* | Cross-Sectoral Research<br>Conducted cross-sectoral research and development on the issues of promoting the use of seas and strengthening global competitiveness, including research and development regarding sea floor observation and exploration, underwater construction, transportation and communications between offshore platforms and the sea floor, transportation and navigation assistance from land to offshore platforms and other next-generation technologies for surveying marine resources, and research and development regarding the improvement of the safety and maintenance efficiency of runway and other airport infrastructure in terms of enhancing the functions of metropolitan-area airports.<br><br>National Maritime Research Institute<br>Conducted research and development regarding the assurance of safety in maritime transportation, the conservation of the marine environment, marine development and the advancement of marine transportation, including research and development regarding the systematization of pioneering methods of evaluating vessel safety and more efficient safety regulations; research and development regarding innovative technology to contribute to the realization of green innovation for ships, and methods of evaluating operation performance in actual ocean zones; research and development regarding the establishment of fundamental technology and safety evaluation methods for marine renewable energy production systems; and research and development regarding technology to contribute to technical innovations in human resource development that underpin the development of maritime industries.<br><br>Port and Airport Research Institute<br>Conducted research and development regarding the reduction of and recovery from disasters in coastal areas, the formulation of stock to support industry and national life, the preservation of maritime rights and interests and the use and application of the seas, and the formulation and use of aquatic environments, including research and development regarding the reduction of and recovery from earthquake damage; research and development regarding the enhancement of port, harbor and airport functions for ensuring global competitiveness; research and development regarding the development and use of the seas through such efforts as developing ports and harbors on remote islands and securing effective marine energy; and research and development regarding the conservation and use of coastal ecosystems.<br><br>Electronic Navigation Research Institute<br>Conducted research and development that strives to improve safety of air traffic while contributing to the air traffic expansion, the improvement of the convenience of air traffic, the improvement of the efficiency of aircraft operations, and the reduction of the aircraft environmental effects, including the enhancement of air traffic management by trajectory based operations; the enhancement of airport operations: the optimization of air traffic using on-board information; and the enhancement of information sharing and communication systems. |

*National research and development agency

### (2) Initiatives of Regional Development Bureaus

Technical and Engineering Offices as well as Port and Airport Technology Investigation Offices coordinate with relevant offices in their jurisdiction for tests and research of civil works material and water quality, hydraulic tests and design for the effective and efficient development of facilities, development of environmental monitoring systems, and other matters for technology development, as well as the utilization and promotion of new technology tailored to the region.

### (3) Promoting Research and Development Technologies of Construction, Traffic and Transportation Fields

Of the important research issues concerning construction technology, issues that are especially urgent and involve a wide range of fields are taken up with the governmental departments taking the lead with the coordination of industry, academia and government to comprehensively and organizationally implement research for the "comprehensive technology development projects," where in FY2018, research and development was conducted for a total of six issues, including Research on the Advancement of Construction Production Systems Through the Utilization of AI. Also, for the traffic and transportation fields, technological research and development that contributes to ensuring safety, improving convenience, and protecting the environment are being promoted efficiently and effectively with the coordination of industry, academia and government. In FY2018, we engaged in the development of technology that could be used for auto berthing and un-berthing systems utilizing high-precision positioning technology.

### (4) Supporting Private Sector Technological Research and Development

To promote private sector investments in research and development, we established a tax credit system for testing and research expenses.

### (5) Promoting Open-Type Research and Development

In order to promote technological innovation in the construction sector, an open call for the development of technologies to solve policy issues (targeted commercialization in two to three years) was made through the Construction Technology Research and Development Subsidy Program, which invites proposals concerning technological research and development to help upgrade and enhance the international competitiveness of construction technology under the purview of MLIT and further promote research and development carried out by MLIT. In FY2018, five new issues and seventeen ongoing issues were adopted.

In addition, in FY2018, two new projects and five ongoing projects were adopted under the Transportation Technology Development Promotion Competitive Funding Program, in which researches and developments were conducted toward the realization of a safe, secure, and comfortable transportation society, the reduction of environmental burdens, and the resolution of other policy issues in the traffic and transportation sectors. And "Traffic and Transportation Technology Forum" was held on October 17, 2018, to introduce the current state of researches and developments and present outcomes under the program, and to elicit a wide range of opinions.

## 2 Promoting the Utilization and Adoption of New Technology for Public Works

### (1) New Technology Utilization System for Public Works

In order to actively utilize promising new technology developed by private sector businesses, a "new technology utilization system for public works" that utilizes the New Technology Information System (NETIS) is under operation. In FY2018, one recommended technology and six runner-up recommended technologies were introduced as groundbreaking new technologies to further increase the level of technology related to public works, etc. In addition, we are promoting the introduction of new technologies to sites, as well as further technical development by setting technical topics based on site need, and by utilizing and evaluating the applied technologies on site.

### (2) Supporting the Utilization of New Technology

In order to promote the utilization of new technology in public works and other areas, utilization is evaluated at every design stage, and technology that provides great utilization benefits is designated by the ordering party when construction is contracted. In addition, we prepare and publish technology comparison charts for every type of construction and theme to serve as references for both orderers and builders in the process of selecting new technologies, with the objective of promoting the utilization of new technologies.

# Section 3 Improving Construction Management Technology

## 1 Improving Costing Technology for Public Works

For the purpose of promoting ensured quality in public works, and in order to accurately establish price estimates from the viewpoint of appropriately reflecting the mid- to long-term fostering and securing of workers and market conditions, efforts have been made to consider quantity survey standards and implement revisions when necessary.

Regarding public civil works, efforts have been made to make all construction processes fully appropriate. Such efforts include the revision of the Quantity Surveying Criteria for Civil Works Utilizing ICT, based on policies stated in the Expansion of Comprehensive ICT Utilization in i-Construction, for the purpose of promoting i-Construction, which is aimed at attractive construction sites, as well as the active implementation of works comprehensively utilizing ICT, including works for SMEs.

In addition, the overall quantity survey standards have been revised, in light of the latest status of enforcement and regional characteristics, by revising laws and design criteria and accurately reflecting labor, resource, and transaction costs in social economic trends and markets.

## 2 BIM and CIM Initiatives

Building / Construction Information Modeling/Management (BIM/CIM) endeavors to seamlessly connect processes at all stages of construction by linking and developing three-dimensional models from the survey, planning, and design stages to the construction and maintenance management stages and by promoting the sharing of information among concerned parties involved in the entire project. With trial operations having begun in FY2012, along with progress made in discussions toward the introduction and promotion of CIM from the perspectives of both system and technology through industry-academia-government coordination, the Guidelines to CIM Introduction (tentative name) was formulated in FY2016. The guidelines include information on making BIM/CIM models, utilization methods, etc., and also addresses the role played by BIM/CIM businesses that place orders with related parties coordinating widely with public utilities, and fundamental work methods and points for consideration. In March 2018, we expanded the (draft version) of the guidelines, formulated the 3D Model Notation Standard (tentative name) to prescribe the notation method in the case of 3D models being used as contract drawings, and aimed to expand the utilization of BIM/CIM by making the application of BIM/CIM standard in detailed design documents for large structures, etc.

In FY2010 to FY2012, the adoption of Building Information Modeling (BIM) for government building projects to help visualize design content and integrate and consolidate building information was made subject to trial operations to verify the effect of the adoption of BIM and any issues that might consequently arise. Guidelines for Development and Use of BIM Models for Government Buildings Projects, which indicates the basic concepts and points to note in the creation of BIM models, were created in March 2014 based on the results of this. The guidelines were revised in August 2018 so as to make BIM easier to use in the construction stage, and further utilization of BIM is being planned.

# Section 4 Technology Development for Construction Machinery and Mechanical Equipment

### (1) Development and Supply of Construction Machinery

In order to carry out the appropriate maintenance and management of rivers and roads managed by the national government and respond quickly to disaster recovery, initiatives are being carried out across the nation to implement machinery for maintenance and management, as well as machinery for disaster measures. In FY2018, an extra twenty-nine machines were added and 267 aging machines were updated.

Furthermore, in order to improve efficiency, conservation of labor, and safety of construction associated flood control projects and road development projects, studies as well as research and development for construction machinery and construction processes are being undertaken

### (2) Streamlining and Improving the Reliability of the Maintenance and Management of Machinery

For the protection of citizens' lives and properties from disasters, the construction of floodgate facilities, storage and drainage pump facilities, and road drainage facilities were furthered, starting around late 1965, and many of the facilities are becoming decrepit. As such mechanical equipment is required to function reliably during floods, we are proactively promoting the application of condition-based preventive maintenance in an effort to realize efficient, effective maintenance while ensuring the reliability of facilities.

### (3) Utilizing the Accomplishments of Construction Technology Development

In order to safely and swiftly carry out restoration activity at disaster sites where the danger of secondary disasters such as large-scale floods, sediment-related disasters, and slope collapses are high, a hydraulic shovel that can be remotely controlled, dismantled, and airlifted was developed and 11 units were deployed in FY2014. In FY2018, this was used in disaster recovery activities, including the dispatch to Kuramato-cho, Nakatsu City, Oita Prefecture, where four houses were damages by landslide.

### (4) Introduction of AI, Robotics, and Other Innovative Technologies to the Infrastructure Sector

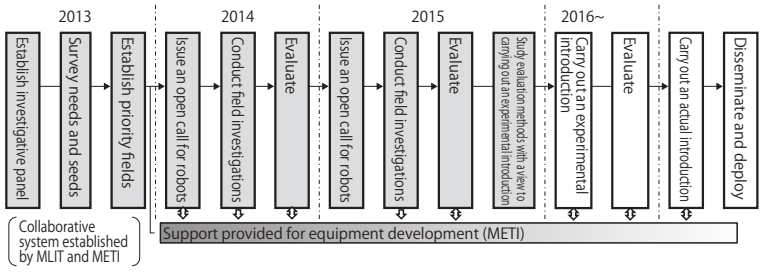
The social infrastructure of Japan is facing problems such as progression of aging, and the risk of earthquakes, storms and flood damage. Therefore, for the five important fields (Maintenance and management: Bridge, Tunnel, and Water; Disaster Response: Investigation and Emergency Restoration) that require the development and introduction of robots, we have engaged in initiatives for the maintenance and management of the social infrastructure and improvement of effect and efficiency during disaster by planning for the development and introduction of highly practical robots. In FY2014 and FY2015, we made a public appeal to private companies, universities and others for robots capable of addressing our five priority fields, and conducted testing and evaluations at actual sites. In the maintenance and management sector, we are trialing through actual inspection technologies that have been confirmed to reach a certain performance over the course of two-year site verifications. In the future, in addition to supporting "Human Work", support for "Human Judgment" will be key for improving productivity, and we will promote the implementation in society of artificial intelligence (AI) in the construction production process, maintenance and management, and disaster response sectors. For this, we will provide Teaching Data, consisting of the correct decisions of civil engineers that have been accumulated, will promote the development of private AI, and will develop an environment in which the results of technical developments can be used.

Figure II-10-4-1 Promotion of Robot Development and Introduction for Next Generation Social Infrastructure

Example of underwater maintenance and management technology

Example of technology used for conducting a disaster survey

Example of technology used for emergency restoration




Source) MLIT