

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

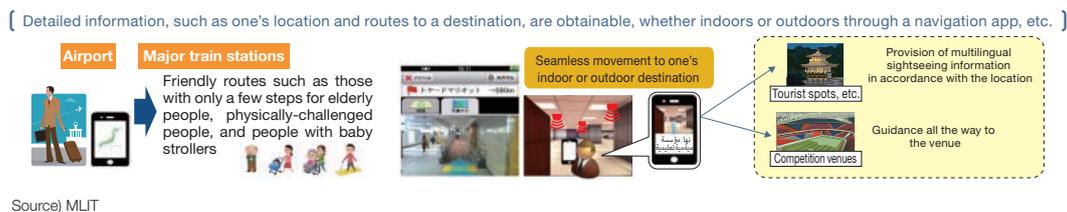
In order to respond to the demand for the transportation of disadvantaged such as the elderly and disabled to hospitals and other care facilities, the implementation of welfare taxis^{Note} is being promoted, and as of the end of FY2017, 22,129 vehicles were in operation. In addition, the Investment 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



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

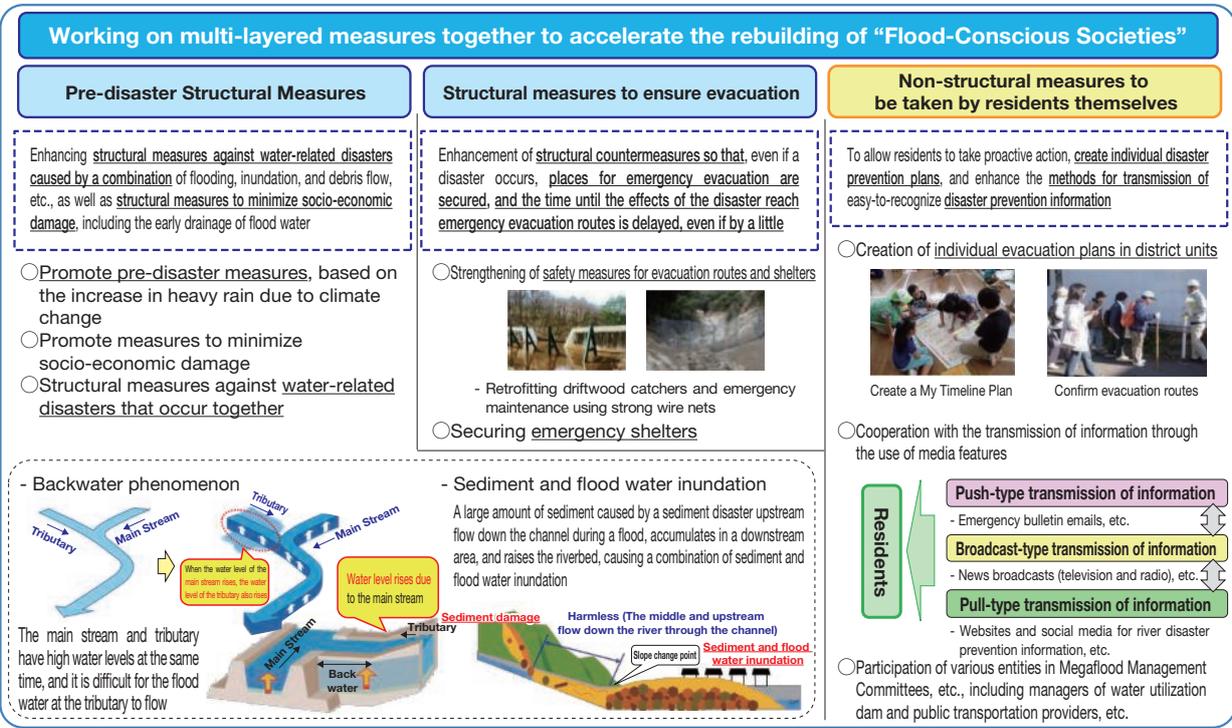


Figure II-7-2-2 “Flood and Sediment Disaster Hazard and Risk Information Sharing Project to Lead to Resident Action”

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>

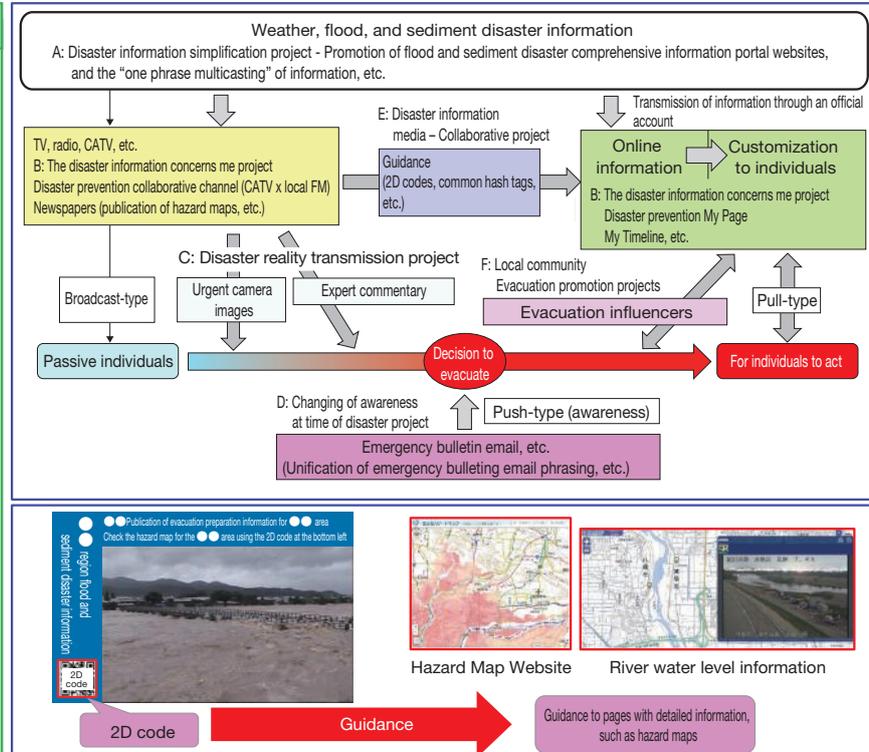
Mitsuke-shi, Niigata Prefecture

<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

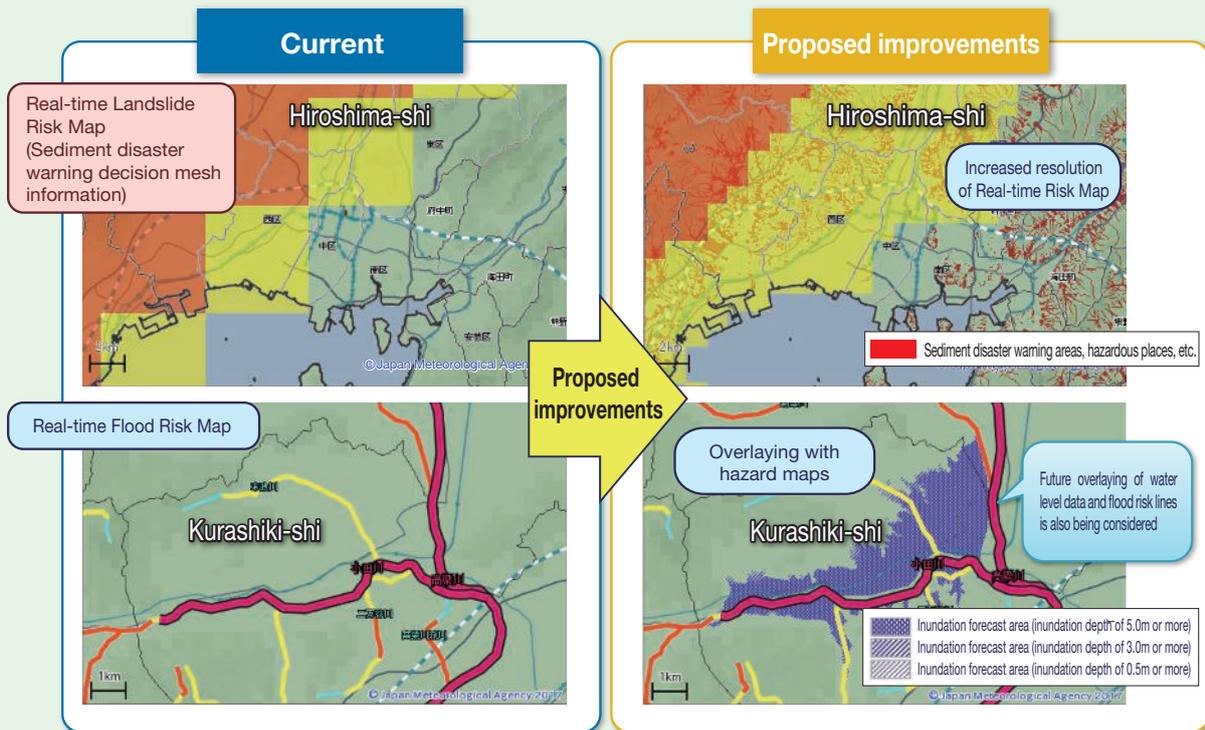
July 2018 heavy rain caused extensive and significant damage, including landslide and flood damage, in many parts of the country. At the time of this heavy rain disaster, although the Japan Meteorological Agency announced disaster prevention weather information, and local governments called for evacuations, 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 measure 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.

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.

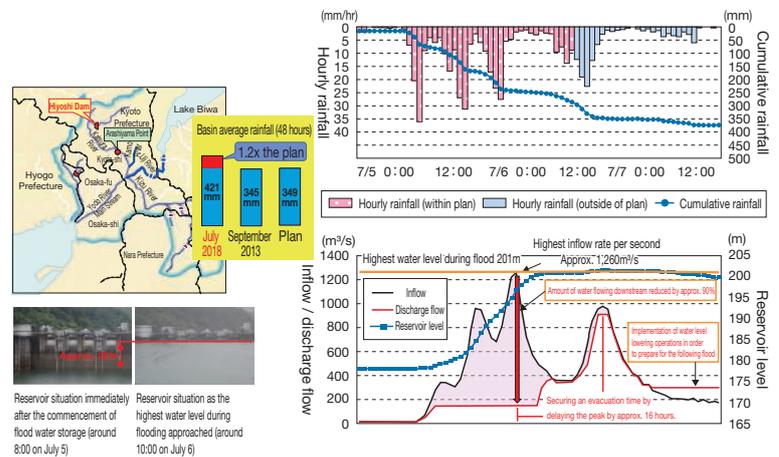
(i) Preventative water control measures implemented systematically

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.

Figure II-7-2-4

Flood Control of the Hiyoshi Dam at the Yodogawa Water System Katsura River (July 2018 heavy rain)



Column

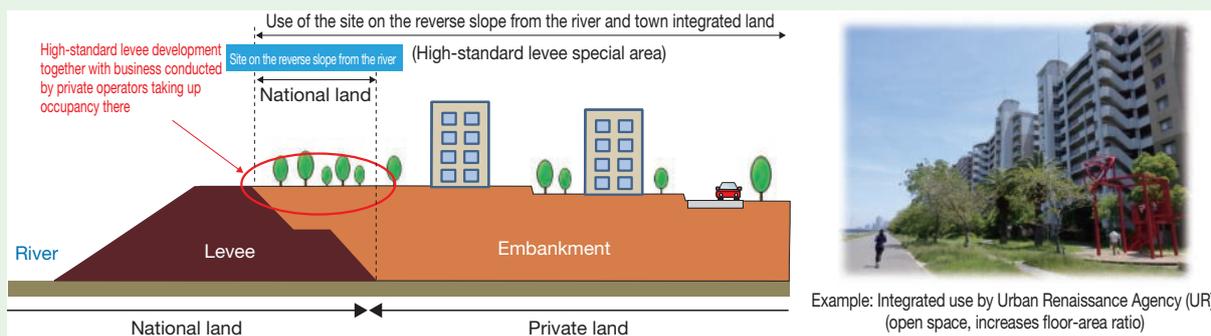
New Initiatives for Efficient High-Standard Levee Promotion

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.



[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.

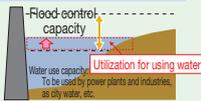
As one of the Productivity Innovation Projects, the MLIT is promoting dam regeneration, which makes effective use of existing dams in operation. Dam regeneration has various characteristics, such as the significant increase of dam storage capacity through the slight raising of levees, and produces an 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.

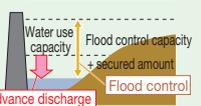
Wise, flexible operations (review of operational rules)

- Introduce a method for the flexible operation of dams in response to times of drought and flood, in accordance with improvements in the precision of rainfall forecasting.

<Utilization of flood control capacity for using water>
Flood control capacity will be partially used for using water in consideration of the needs of water users (strengthening of drought countermeasures).



<Utilization of water utilization capacity for flood control>
Water use-capacity shall be discharged in part before the occurrence of a flood, as a flood control measure.



<Operations to minimize the amount of water flowing downstream during a flood>
In cases where no further heavy rain or subsequent flooding is expected for a while, the amount of discharge will be reduced compared to regular times, to accumulate more water in the dam.

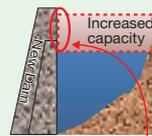
■ We are further promoting dam regeneration efforts in addition to this. (Example initiatives)

- Even during the period until progress was made on river improvements, in FY2019 we established a system for provisional utilization of water use-capacity for flood control, etc., in order to improve upstream flood control safety.
- For the more efficient implementation of dam projects, in FY2019 we established a system for compensating for the actual loss incurred due to the submergence of facilities that were not transferred or moved
- In order for the flood control function of the dam to be fully exhibited, we implemented river improvements in sections where there were restrictions on discharge from the dam due to insufficient downstream flow capacity
- To promote the introduction of hydropower, we began trial operations regarding the addition of power generation functions to existing dams, as well as concerning dams that could cater to the changes in operation, etc., based on the prescribed procedures

Wise development (dam regeneration projects)

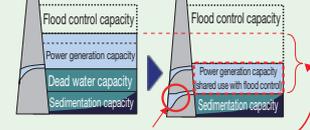
- Significantly increase the capacities of existing dams by constructing additional facilities for discharging water to the body of existing dams or heightening existing dams.

<Raising the dam body>



[Raising the dam body]
Raising the dam body even by a small amount would increase a dam's water storage capacity significantly and ensure industrial water, etc.

<Capacity expansion by constructing additional discharge facilities>



[Construction of additional discharge facilities]
The utilization of dead water capacity would increase flood control capacity.

Reduction of flood risks in production centers in river basins

(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

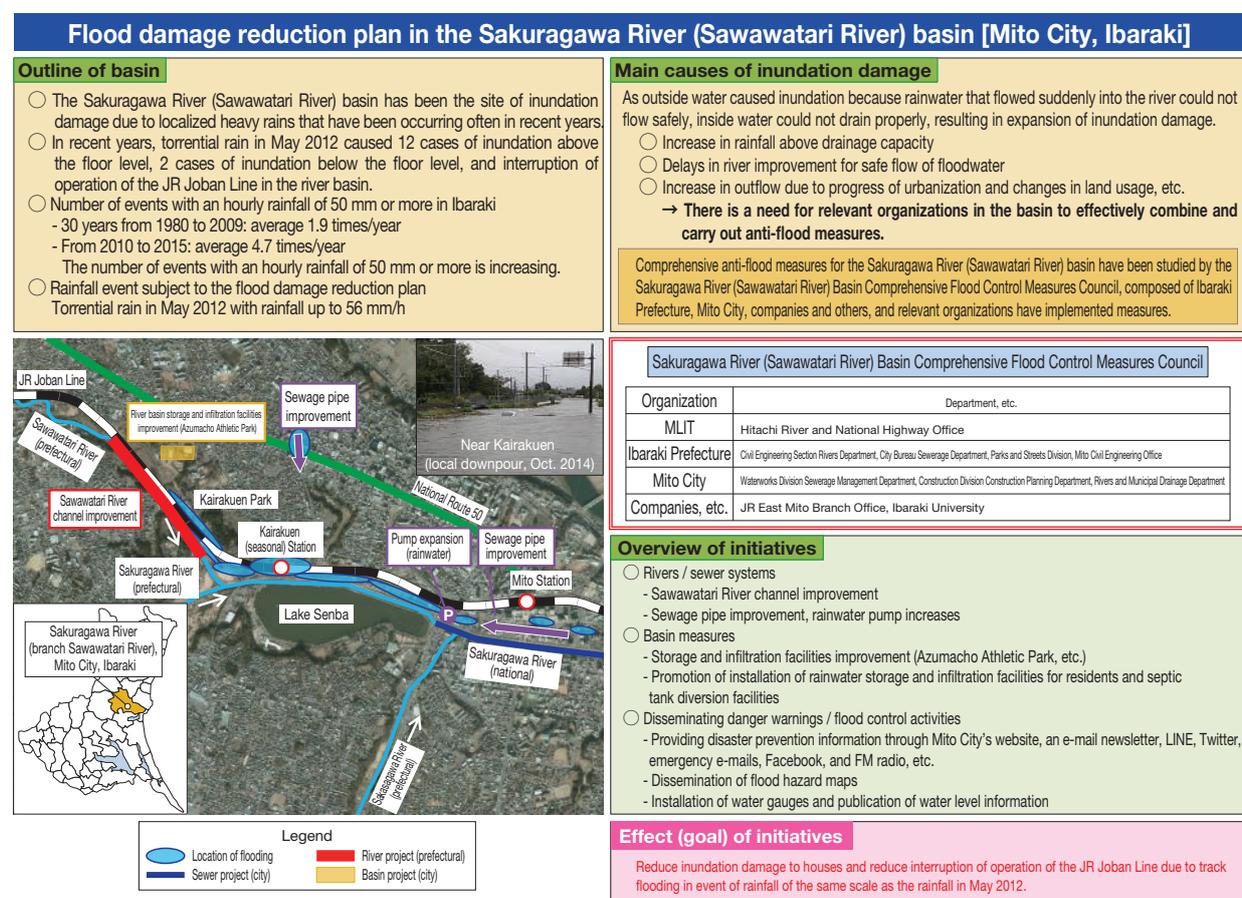
In order to cope with the increase in the impermeable land area following the development of areas around the basin, as well as the increased discharge from flooding rivers in conjunction with this and the increased frequency and intensity of heavy rains in recent years, it is important to carry out 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



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 studied 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

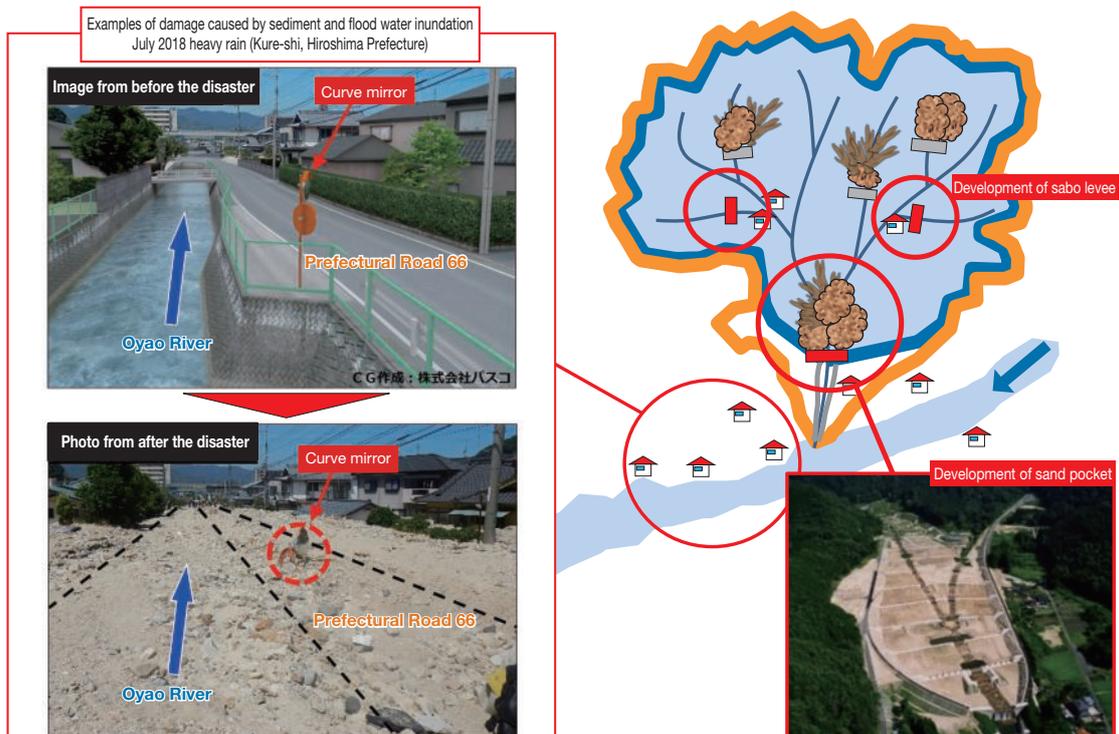
In recent years, heavy damage has been caused to urban areas and important community facilities such as roads and railways due to large-scale sediment discharge from heavy rain, etc. We are promoting the development of facilities to prevent sediment disasters in order to protect human life, property, 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

[Sediment and Flood Water Inundation Countermeasures]

In July 2018 heavy rain, enormous damage was caused by sediment and flood water inundation (sediment generated upstream flowing into the river channel, and sediment and flood water inundating the downstream area of the river).

Sediment and flood water inundation countermeasures, aimed at ensuring the safety of the entire basin, are being promoted, with sand pockets being used as the main facilities.



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.

(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.

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

Figure II-7-2-7

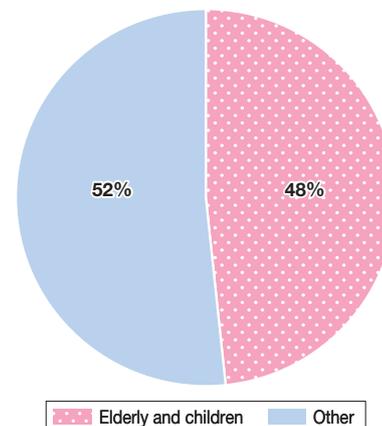
Examples of the effect created by emergency sediment disaster countermeasures (The Akaya River basin in the Chikugo River system)

At the Akaya River basin in the Chikugo River system, which suffered enormous damage due to the July 2017 heavy rain, urgent sabo construction work was conducted in order to prevent secondary disaster. The urgently installed sand pocket demonstrated its effect during the series of water discharges that occurred up to July 6, 2018, capturing approximately 14,000 m³ of sediment.



Figure II-7-2-8

Percentage of Elderly and Children among Sediment-related Disaster Dead and Missing (1999-2018)



Source) MLIT

(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.

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.

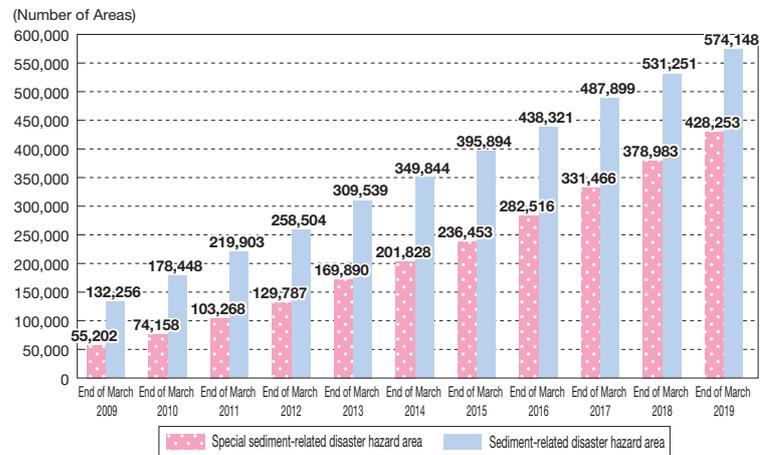
(viii) Countermeasures for large scale sediment disasters

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.

Figure II-7-2-9

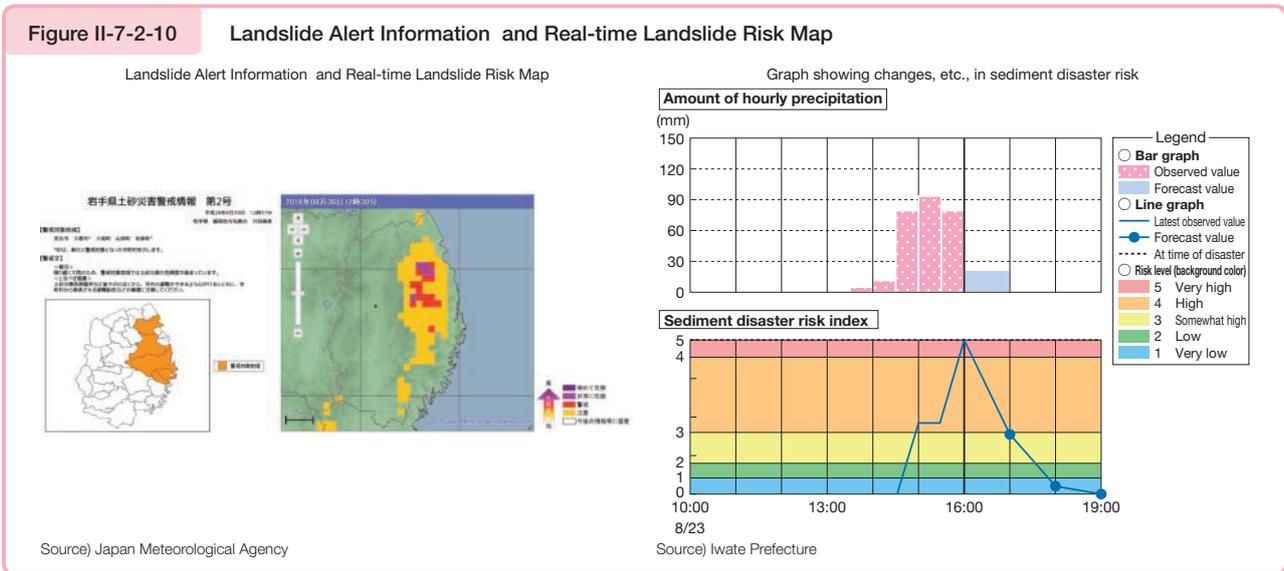
Designated Sediment-related Disaster Hazard Areas Nationwide (End of the March 31, 2019)



Source) MLIT

(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.

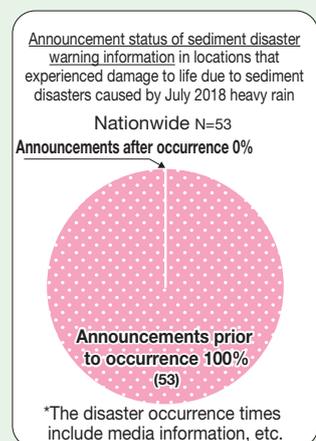


Column Enhancing Warning and Evacuation Systems to Secure Effective Evacuations

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.

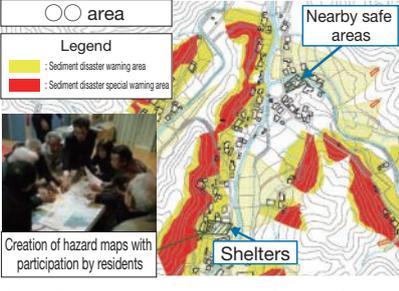
The examination conducted by this committee showed that although past efforts had generally been in the right direction, there was a possibility of residents not evacuating due to an insufficient understanding of the disaster risk, and that measures such as arranging assistants in advance to provide 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.



[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

○ In order for residents to prepare an evacuation plan and to ensure a secure evacuation, hazard maps were created for each region and case study books and manuals were developed for practical evacuation drills.



○ Creation of hazard maps with participation by residents

○ Concept of hazard map in area disaster prevention plan

○ We are promoting the installation of local signs, etc., so that the sediment disaster risk can be ascertained on a daily basis.

○ We have established a "Sediment Disaster Warning and Evacuation Working Group", which will conduct relative risk assessments in sediment disaster warning areas, etc.



○ 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.

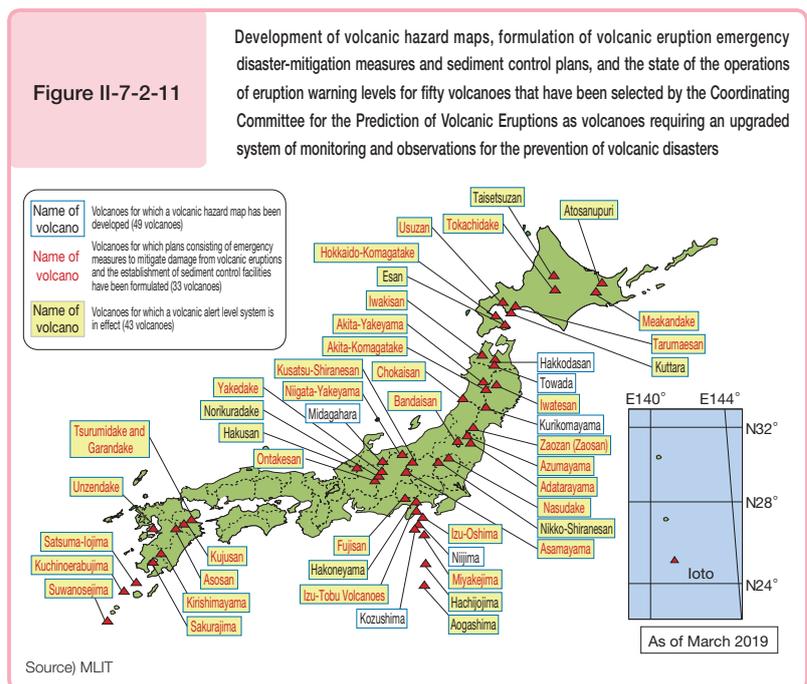
(3) Volcanic Disaster Countermeasures

(i) Countermeasures for sediment disasters following volcanic activity

In preparation for the volcanic mud-flow 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-



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 4km² and approximately 46km², 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”.

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

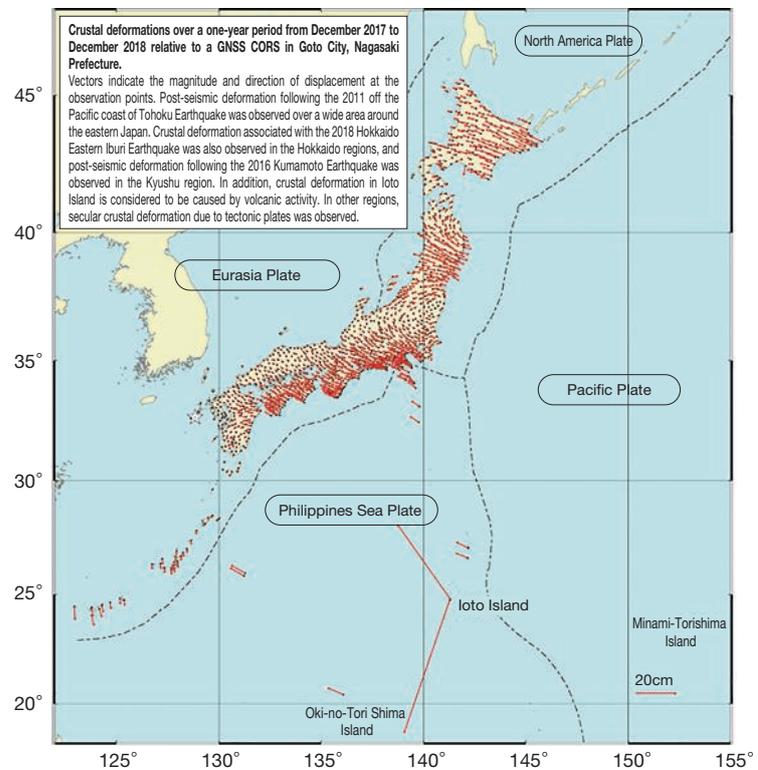
(i) Promoting storm surge and high wave measure

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.

Figure II-7-2-12

Movements of Japan Archipelago Captured by Continuous Observation with GNSS



Source) Geospatial Information Authority of Japan

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}.

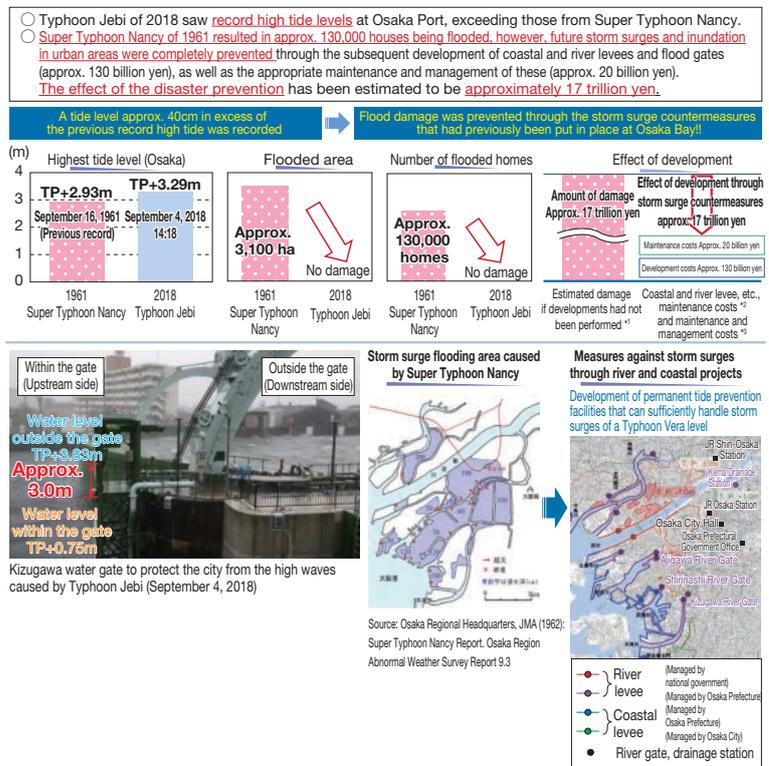
(iii) Providing disaster prevention information regarding storm surges

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



(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.

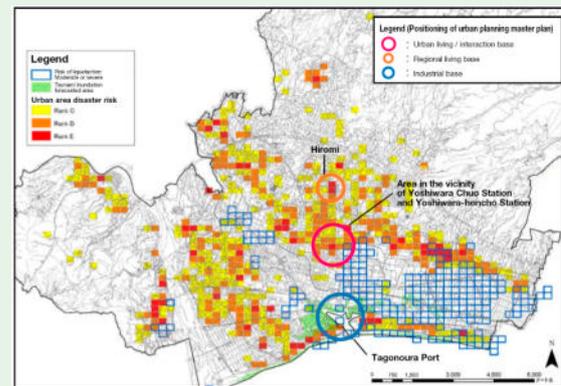
These guidelines prescribe the importance of five initiatives, namely prior examination of the reconstruction system, prior examination of reconstruction procedures, implementation of reconstruction training, prior development and analysis of fundamental data, and prior examination of reconstruction 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.

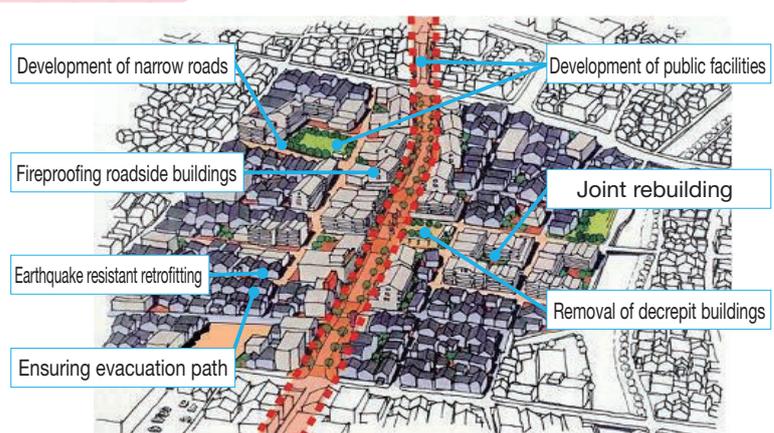
(iii) Implementing danger assessments for housing land in disaster-stricken areas

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.

(iv) Development to improve crowded areas

Development activity to rapidly improve crowded areas that are problem-

Figure II-7-2-14 Development Illustration of Densely Built-Up Areas



Source) MLIT

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 from 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 interplate 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 CORSSs (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

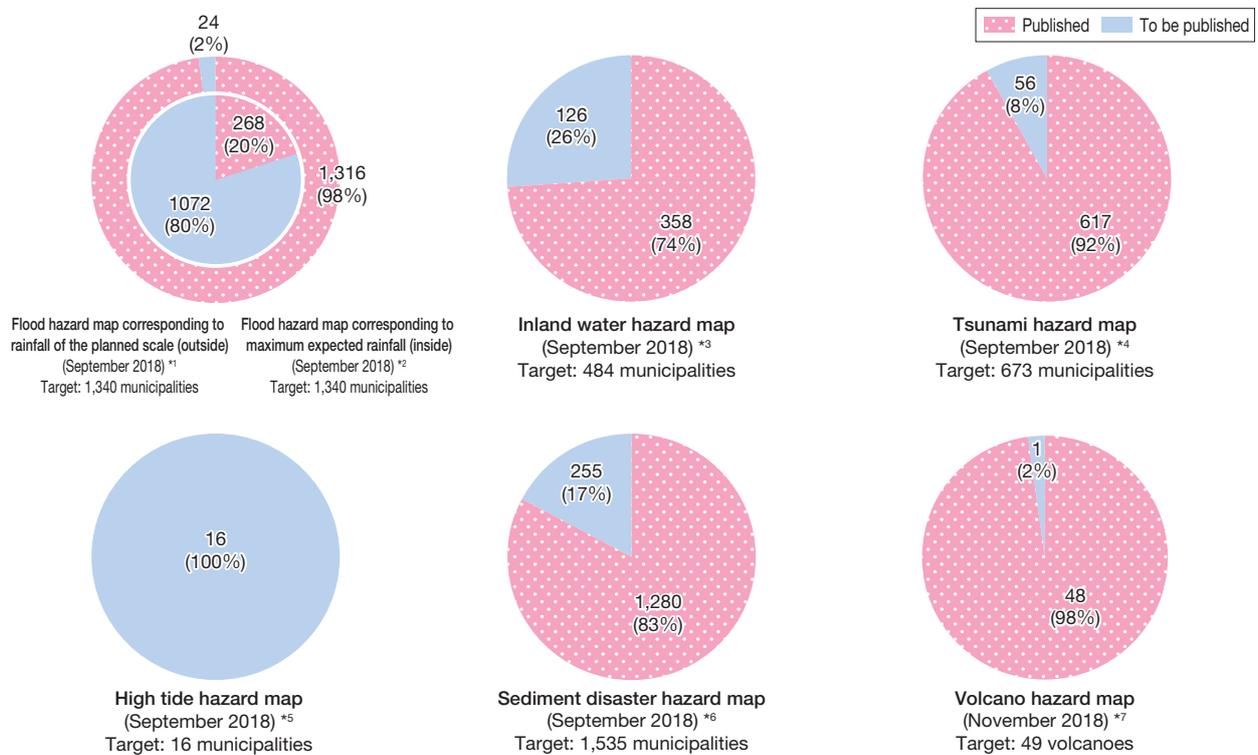
In Japan, 21,000 areas are prone to snow avalanche and the development of avalanche prevention facilities is being promoted to protect human lives from avalanche disasters in settlements.

(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 providing information through navigation warnings, as well as fire extinguishing activities.

Following the Hokkaido Eastern Iburu 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.

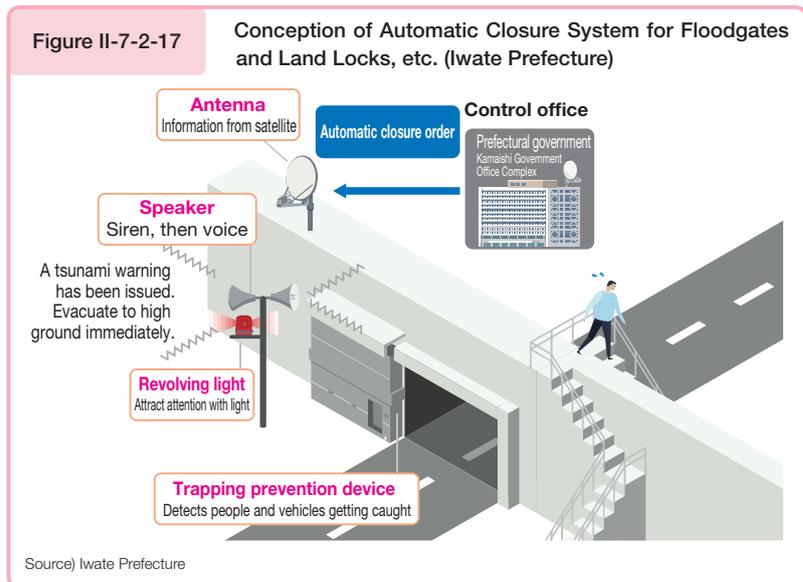
In addition, in order to safely, quickly, and reliably close floodgates and land locks in response to a disaster caused by a tsunami, we provide support through subsidies for disaster preparedness and safety by enabling automation and remote control of floodgates and land locks through the use of satellite 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 Iburu 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	JR Sanyo Line (Between Yanai and Kudamatsu) Resumed operation: End of September → September 9	JR Kure Line (Between Kure and Saka) Resumed operation: Mid-November → September 9
The parallel Prefectural Road No. 33 and the Numata River site were provided as a construction work yard, etc., for railway restoration work.	Of the four lanes of the parallel National Highway No. 188, two lanes were provided as a yard for railway restoration construction work.	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 have 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

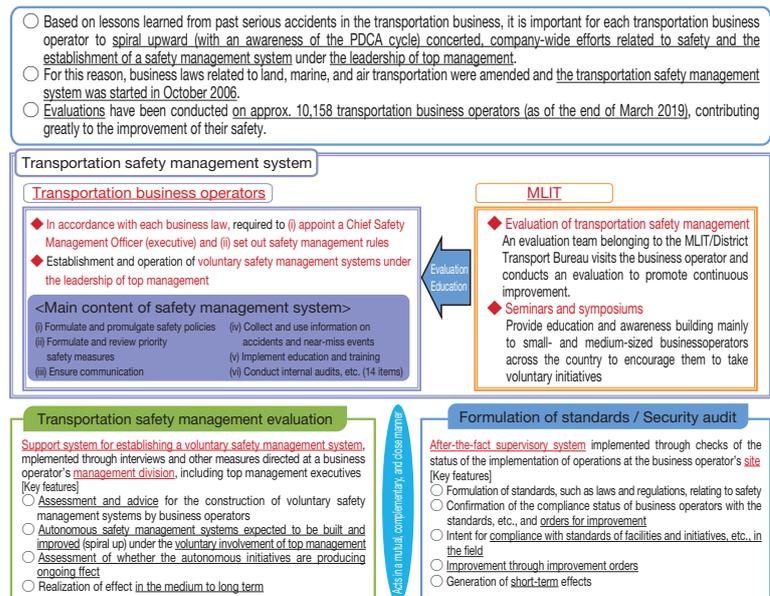
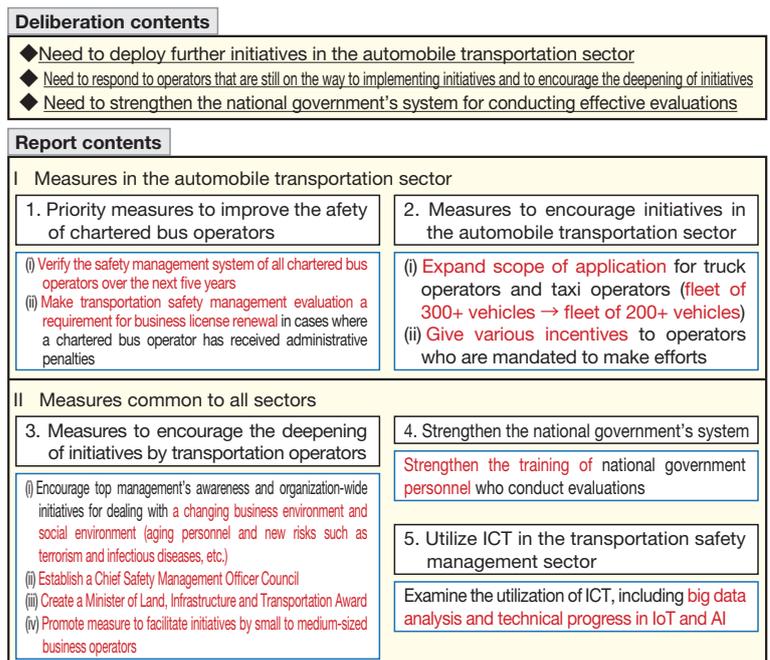


Figure II-7-4-2 How the Transportation Safety Management System Should be in the Future (Transport Council Report (July 2017))



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.

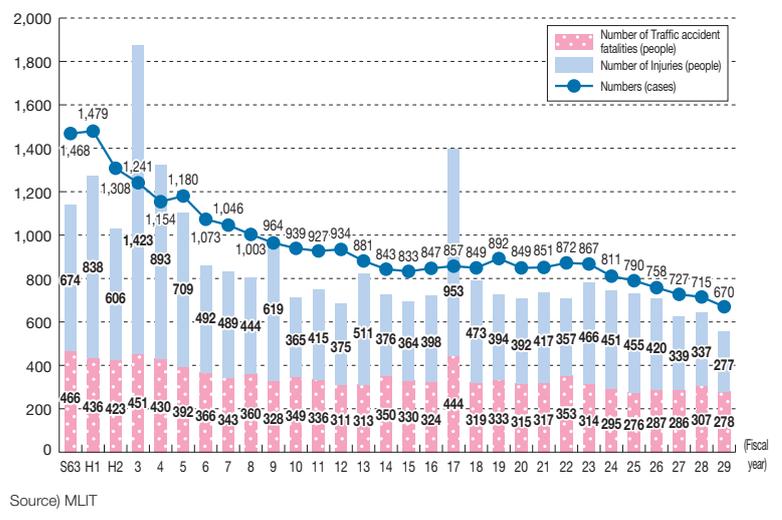
In addition to performing systematic safety audits for railway operators, we will endeavor to improve the such audits by making them more strategically timed and effective, and will add extraordinary safety audits in the case of a major accident or similar such issue, etc.

(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

Figure II-7-4-3 Transition in Number of Casualties and Number of Driving Accidents in Railways



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.

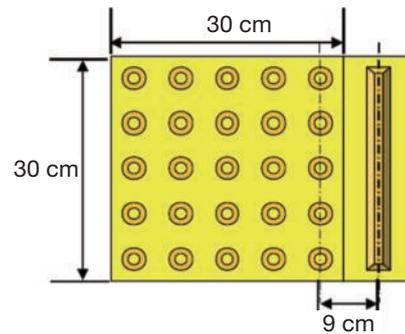
Furthermore, at the eighth meeting of the investigative commission, held in December 2018, as a venue for interim summaries, the status of railway operators' initiatives to improve platform safety were summarized and shared, and in addition, efforts were made to promote further initiatives by the relevant 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 occurred 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.

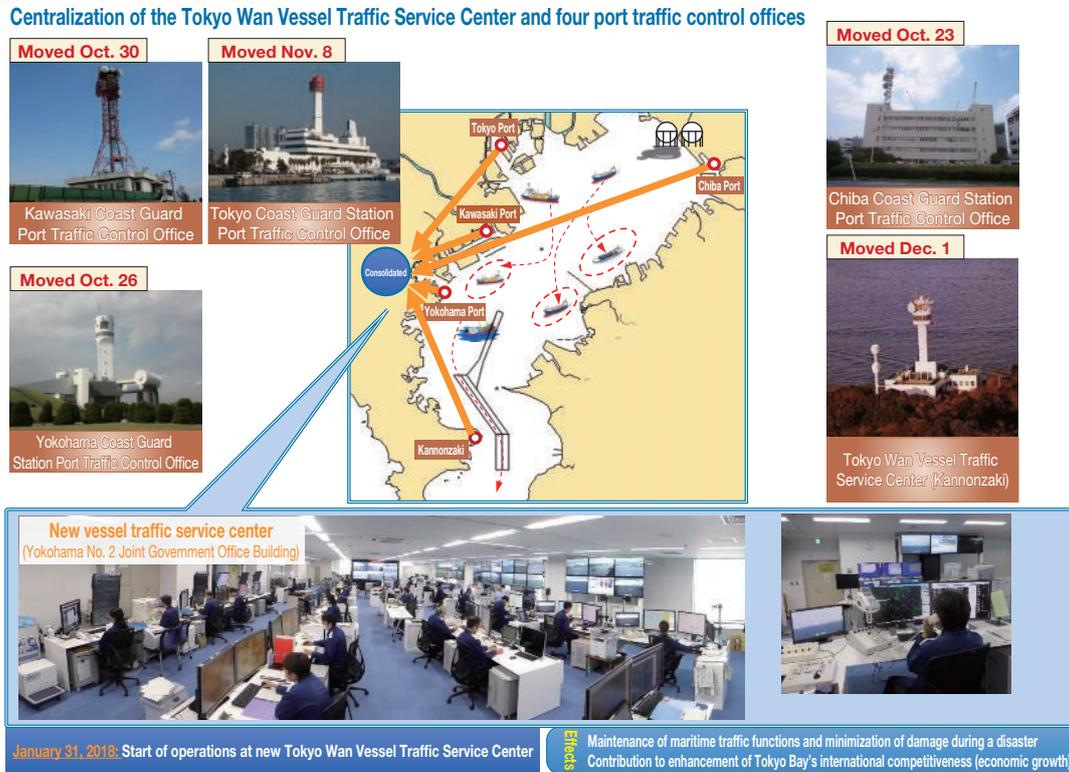
Regarding the navigational warnings and notices to mariners, visual information that constitutes valid information displayed on a map has been provided over the Internet, and accessibility by smartphone was launched on November 5, 2018. Furthermore, in addition to the navigational warnings and notices 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

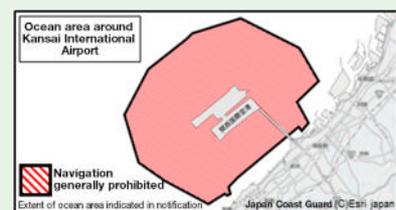
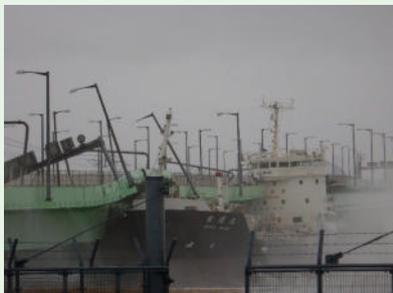
Initiatives to prevent recurrence based on the collision of a tanker with the Kansai International Airport Communication Bridge

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

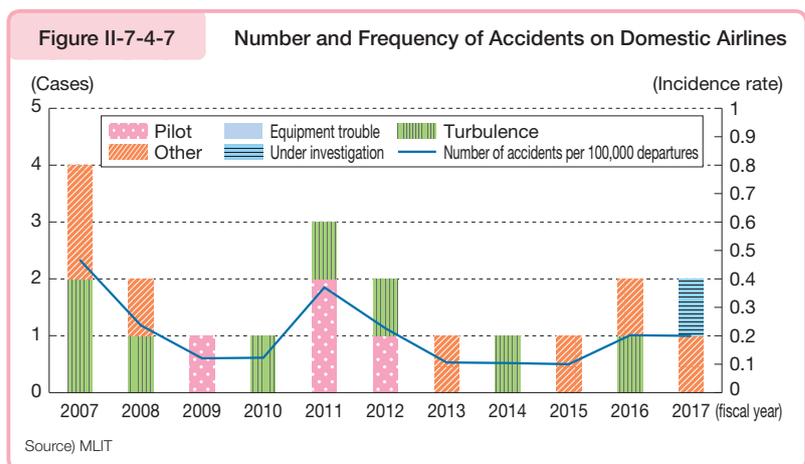
(1) Strengthening Aviation Safety Measures

(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.

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 were 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.

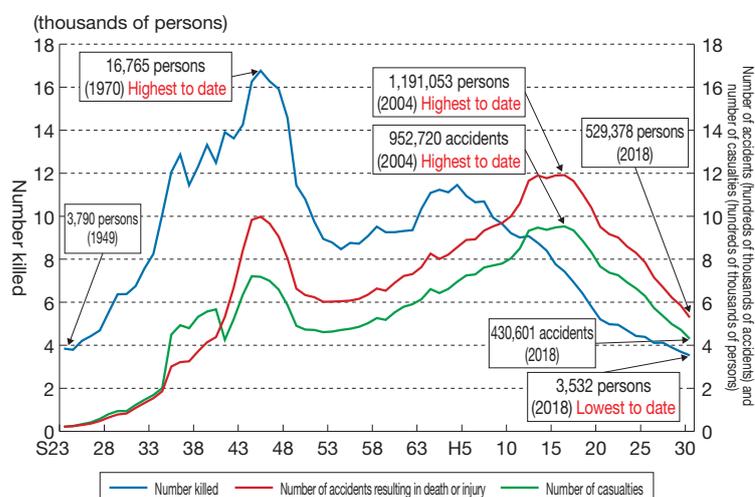
In response to the ski bus accident in Karuizawa, which occurred in January 2016, the MLIT continues to take action, including holding meetings to exchange opinions with an association for the bereaved.

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

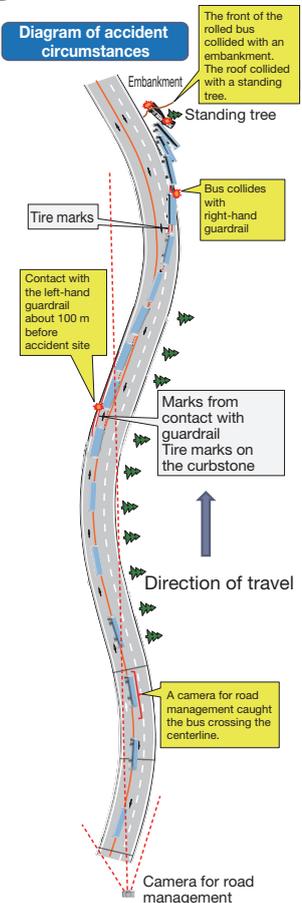


(Provided by Nagano Police)

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 braking 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

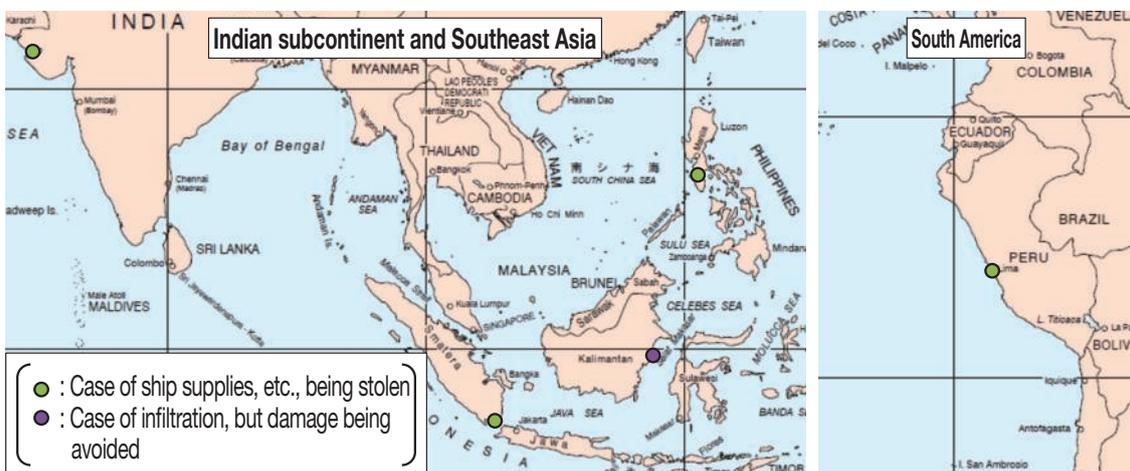
1 Promoting Crime and Terrorism Counter-measures

(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.

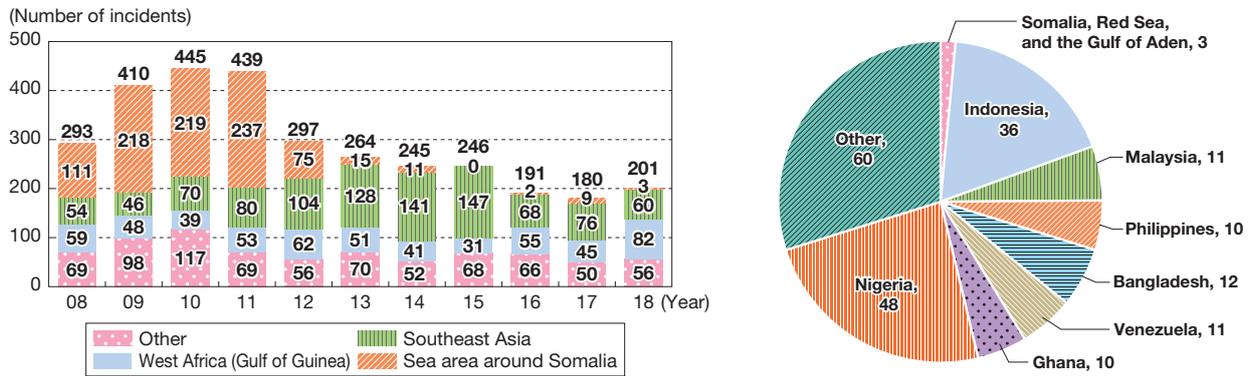
In order to deal with pirates off the coast of Somalia and in the Gulf of Aden, the Japan Coast Guard dispatches eight of its officers to Japan Maritime Self Defense Force destroyers to conduct judicial police activities in cases of piracy incidents. These Coast Guard officers are engaged in vigilance 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



(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

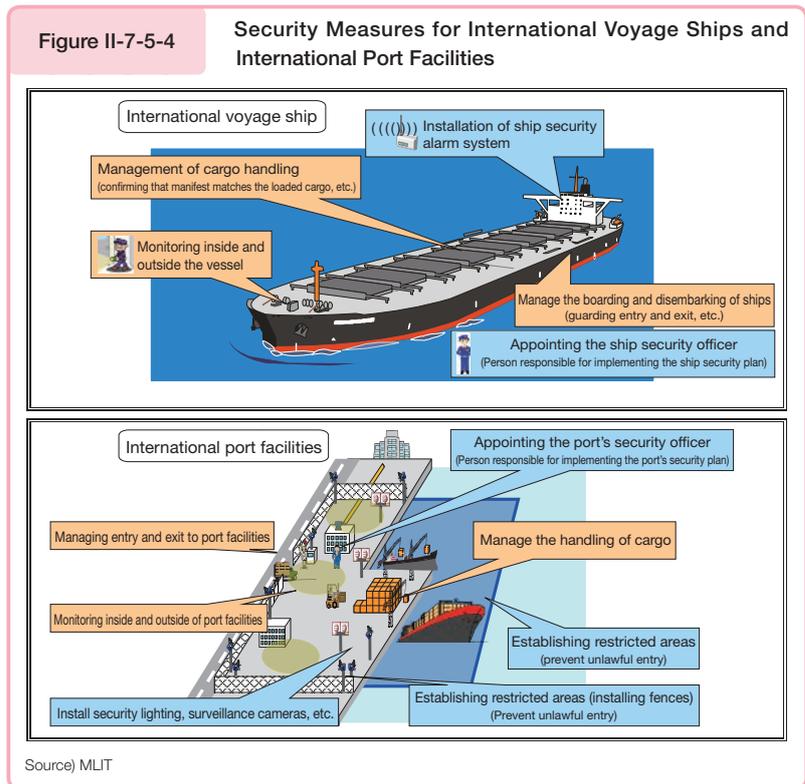
Rules on carrying blades clarified

- ✓ 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.



(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 benefit 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 Chiuchichi, 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.