Chapter

# Building a Safe and Comfortable Society

## Section 1 Realizing a Universal Society

## 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).

## (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 largescale 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, 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) busses, lift-equipped busses, welfare taxis, and other initiatives.

Figure II-7-1-1 Current Accessibility of Public Transportation							
Passenger Facilities (o	ver 3 000 n	ersons/day using on average)	(as of 3/ 31, 2013)				
	Total Facilities	Passenger Facilities Compliant with Accessibility Standards for Public Transportation (No Grade Barriers) (Note 1)	Share of Total				
Railway stations	3,457	2,829	81.8%				
Bus terminals	52	43	82.7%				
Passenger ship terminals	16	14	87.5%				
Airport passenger terminals	33	28	84.8% (100%) <sup>(Note 2)</sup>				

(Notes) 1 Regarding the "elimination of steps", it is calculated based on compliance with Article 4 ( covering the width of the travel path, ramps, elevators, escalators, etc.) of the " Accessibility Standards for Public Transportation " based on Act on Promotion of Smooth Transportation, etc. of Elderly Persons, Disabled Persons, etc..

2 Installation of elevators, escalators, and slopes that the disabled and others can use (practical relief of grade barriers).

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	Total Vehicles	Vehicles Compliant with Accessibility Standards for Public Transportation <sup>(Note)</sup>	Share of Total
Railway carriages	52,669	29,385	55.8%
Low-floor busses	45,495	18,672	41.0%
Lift-equipped busses	13,499	485	3.6%
Welfare taxis	-	13,856	-
Passenger ships	706	173	24.5%
Airplanes	537	479	89.2%

(Note) "Compliance with Accessibility of transport vehicles" is calculated based on each vehicle's compliance with the Accessibility Standards for Public Transportation. Source) MLIT

## (2) Accessibility of Living and Housing Environments

## a. Accessibility of Housing and Architecture

In order for those such as the elderly and disabled to be able to lead a secure, safe, and comfortable housing life within the region, the barrier-free reform is supported by measures such as lowering the financing interest of the Japan Housing Finance Agency's (Incorporated Administrative Agency) "Flat 35 S Loan" for obtaining housing that fulfills a certain

barrier-free level as well as support for barrier-free renovations; public housing and Urban Renaissance Agency rental housing are barrier-free by standard specification; and assistance and other options are available for the development of serviced housing for the elderly by private sector businesses and others.

Also for buildings structures used by the general public, including those such as the elderly and disabled, built to be over a certain scale are required to be accessible in accordance with the "Barrier-free Law" and approved specific buildings that meet certain requirements are eligible for support measures such as subsidy programs. For government buildings, to ensure that people can use the facility comfortably and smoothly, facilities that are used by unspecified but many users will achieve the development standards stipulated by the standards for encouraging smooth travel for buildings based on the "Barrier-Free Law" along with other criteria to promote development for more advanced barrier-free levels. In addition, initiatives are being carried out to reflect the opinions of facility users such as the elderly and disabled in facilities development.

Figure II-7-1-2 Approvals of building construction for Specified Designated Building 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
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
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	4,348	4,432	4,640	4,770	4,966
Source) MLIT																			

## b. A Universal Design of Pedestrian Spaces

In accordance with the "Barrier-Free Law", areas such as roads and stations squares that connect to facilities such as stations, government facilities, and hospitals must ensure that everyone including the elderly and disabled should be able to pass through comfortably by promoting the universal design of pedestrian spaces through measures such as creating wide sidewalks; lessening unevenness, slopes, and grades; eliminating utility poles; and guiding blocks for the visually impaired.

## c. 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, like eliminating grade disparities at entrances, exits, and passages as well as ensuring facilities such as restrooms are usable by those such as the elderly and disabled. Also, to ensure that anyone can enjoy natural spaces such as rivers and ports, there are supporting measures for waterfront development as an integral part of town planning and ensuring the accessibility of passenger ship terminals for ports.

# Creating an Environment that Supports Child-rearing Under an Low Birthrate Society

## (1) Supporting the Balance of Work and Child-rearing

## a. 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.

## b. Promotion Teleworking

Teleworking is a flexible work style that uses information communication technology for the freedom to work any place or time and promises to reduce the burden of commutes by combining work and living arrangements, realize

harmony of livelihood and living (work-life balance), and ensuring business continuity during disasters and other events among other benefits.

The "Declaration to be the World's Most Advanced IT Nation" decided by Cabinet on June 14, 2013, states, "To these ends, government will collaborate with industry to support employment models for teleworking from home that allow workers to spend at least one full workday per week at home targeting women engaged in child raising, who find it particularly difficult to continue working, as well as men participating in childcare, and caregivers. The target is full development and widespread adoption of such models by 2016 to encourage greater social participation by women, secure labor during a time of low birth rates and an again population, support greater participation by men in childcare, and achieve balance between work and care giving" and teleworking will be promoted even more through initiatives.

Relevant ministries and agencies are coordinating to promote the further adoption of teleworking through initiatives such as creating a facilitating environment and raising awareness in the belief that teleworking will create employment opportunities for people seeking alternative working arrangements and also vitalize regions among other effects.

The Ministry of Land, Infrastructure, Transport and Tourism evaluated policies (Promotion Teleworking) to realize diverse working arrangements that contribute to benefits including the assessment of the current situation of teleworking, quantitative assessment of the current teleworking population, productivity improvements through increased work efficiency and high value-added, strengthening of international competitiveness, and the improvement of business continuity in times of disaster.

## (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 Regarding Safety Requirements for Playground Equipment at Urban Parks (Revised)" and "Pool Safety Standards Guidelines" and programs such as the Social Capital Development Integrated Grant provide focused support to local governments for safety and comfort measures of park facilities.

## 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 2012 is implemented at 891 housing projects (23,813 housing units).

Also, promotion projects for the stabilization of elderly housing support include the development of serviced housing for seniors, pioneering living and town planning measures for the elderly as well as redeveloping public rental housing projects as the center of regional welfare among other measures. In addition to this public rental housing is being utilized to support coordination with group homes <sup>Note 1</sup>, welfare, caring, and other services.

## (2) Providing Transport Services that Meet the Needs of an Ageing Society

In order to respond to the demand for the transportation disadvantaged such as the elderly and disabled to use hospitals and other care facilities, the implementation of welfare taxis <sup>Note 2</sup> is being promoted and as of the end of fiscal year 2012, 16,025 vehicles are being operated. Also, 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 from fiscal year 2012, universal design taxis that are easy for the elderly and various people are granted preferential measures regarding motor vehicle tonnage tax and vehicle excise tax if the vehicle meets standard specifications and is certified by government. Also, under the revised "Road Transportation Act", to ensure transportation means necessary for the daily living of regional residents, if services by bus or taxi companies are deemed difficult to provide and the parties of the regional residents agree to the need for private fee-based passenger transport, prefectural governments can operate prefectural fee-based transport or NPOs and other organizations can provide fee-based welfare transport or

Note 1 Communal dwelling for those such as the elderly and disabled to live independently within regional society

Note 2 Taxi vehicles with lifts and other facilities so that those using wheelchairs or beds (stretchers) can board and disembark as is or taxi vehicles serviced by those with various qualifications such as home care worker.

fee-based transport to isolated areas based on registration and as of the end of fiscal year 2011, 2,959 organizations are implementing such services.



## Promoting the Support of Pedestrian Travel

To create an accessible environment where everyone including the elderly and disabled can readily take part in activities toward a universal society, it is important to promote things from the perspective of soft measures and study groups including outside experts are used to utilize Information and Communication Technology (ICT) that can be used for accessible routing assistance to promote the support of pedestrian travel.

For this reason, a draft guideline implementable by local governments is being prepared for issues such as the maintenance and renewal of services to support pedestrian travel and rules for the distribution of costs between the public and



private sector based on the knowledge gained from demonstration experiment projects carried out in five locations nationwide starting with Fukushima City, Fukushima Prefecture.

## Section 2 Natural Disaster Measures

Japan's national land is subject to severe conditions including climate, geography, and geology; almost every year natural disasters such as earthquakes, tsunamis, floods, and sediment disasters occur. Even in 2013, heavy disasters occurred due to Typhoon Man-yi, Wipha, and others leading to massive damages several locations. Also, the importance of natural disaster measures is more urgent in consideration of increase of external force due to climate change and the experience of the Great East Japan Earthquake, dilapidation measures and proactive disaster prevention and reduction measures must be fundamentally bolstered by appropriately combining soft measures to solidly further infrastructure development urgently needed to protect the lives and living. There is an urgent need for the Ministry of Land, Infrastructure, Transport and Tourism to compile actions to be implemented, especially for the great earthquake along the Nankai Trough and Tokyo metropolitan earthquake.

## Shaping National Land that is Safe and Resilient to Disasters, Enhancing and Strengthening the Framework of Preparedness for Emergency Management

## (1) Responding to the great earthquake along the Nankai Trough and Tokyo Metropolitan Direct Earthquake

It is predicted that as the result of the great earthquake along the Nankai Trough, a wide area from the Kanto region to Kyushu will experience strong shaking and a huge tsunami will attack the coastal area within a short period of time. Deaths will reach a maximum of 320,000 people and create a critical situation including the interruption of transport infrastructure and paralysis of urban functions along the coast. Also, the Tokyo Metropolitan Direct Earthquake is expected to cause strong shaking along the entirety of the Tokyo Metropolitan area. Buildings will collapse, fires will occur, and there will be great human casualties in dense urban areas and it will drastically effect citizen's lives and economic activities due to the central functions of politics, economics, and administration being struck by disaster. As the authority in charge of handling the disaster site, the Ministry of Land, Infrastructure, Transport and Tourism established the Ministry of Land, Infrastructure, Transport and Tokyo

Metropolitan Direct Earthquake Response task force in July 2013 to enable the ministry to make a concentrated effort to respond to such a situation and formulated the Tokyo Metropolitan Direct Earthquake Response Plan and the great earthquake along the Nankai Trough Response Plan. Also, regarding the great earthquake along the Nankai Trough, more specific and practical regional response plans were developed for each regional block.

## (2) Responding to Climate Change

Following the ongoing global warming, sea-level rise, increased frequency of heavy rains, and more strong typhoons are projected, and in addition to the increased frequency and intensified water, sediment and storm surge disasters, there are concerns about the increased frequency and severity of droughts due to an expanded range of variability in rainfall volume. Also, in recent years, disasters are occurring more frequently due to external forces that exceed the current safety level of flood control or planned scale. In response to such factors as the recent disasters with a diversity of disaster forms and new insights regarding global warming, the "Panel on Infrastructure Development River Subcommittee's Subcommission to Evaluate Flood Control Measures for Climate Change" deliberates on the nature of adaptive measures suitable for future initiatives in order for relevant authorities to coordinate and promote initiatives.

## (3) 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. Flood control measures such as expanding the river channel to safely flush away floods, embankments, development of discharge channels, dams to temporarily hold back floods, and artificial ponds have steadily improved the degree of flood control safety. However, water disasters in various locations have occurred such as the flooding of Yura River and Katsura River due to Typhoon Man-yi as well as disasters due to torrential rain in Yamaguchi Prefecture and Shimane Prefecture. In order to mitigate and reduce damage caused by torrential rains and other factors, preventative flood control measures as well as measures to prevent reoccurrence will continue to be promoted and the "Ministry of Land, Infrastructure, Transport and Tourism Water Disaster Prevention and Mitigation Task Force" will strengthen anti-inundation measures for underground malls and subways as well as flood defense systems, create timelines (disaster prevention action plans) to further advance disaster prevention and mitigation measures that appropriately combine hard and soft measures.



## a. Preventative Water Control Measures

The occurrence of large scale floods leads to human and economic losses, greatly affecting socioeconomic activities and because the recovery and reconstruction requires a great amount of time and resources, preventative water control measures are important to keep disaster from occurring. For this reason, water control facilities such as levees, excavating river channels, dams, and discharge channels are developed systematically. Also, existing facilities are being maximized with dam renovation technology such as the redevelopment of existing dams as well as restructuring the capacity of several existing dams as part of measures to effectively utilize existing facilities. In addition, existing levees that are not sufficiently safe from permeative destruction or erosion due to floods are being strengthened.

Additionally, for "areas with a high likelihood of grave human casualties due to levee collapses in densely populated areas", in coordination with town planning projects, a safe and pleasant living environment that protects the human lives of local

Figure II-7-2-2 International Comparison of Flood Control Safety								
Country	River Name	Flood Control Safety Goals (Note)1	Coverage (Note) 2					
United States of America	Mississippi River Downstream	Around 1/500 (Note) 3	Approximately 94% <sup>(Note)4</sup>					
United Kingdom	Thames River	1/1,000 <sup>(Note) 5</sup>	100% <sup>(Note) 5</sup>					
Nether- lands	The coast including the center of the nation	1/10,000 <sup>(Note) 6</sup>	Around 94% (Note) 7					
Japan	Arakawa River 1/200 Appr							
<ul> <li>(Notes) 1 Flood control safety goals: annual exceedance probability set as the development goal of the flood control facility</li> <li>2 Development coverage: percentage of levees developed compared to the levees deemed necessary based on river improvement plans</li> <li>3 "Sharing the Challenge: Floodplain Management into the 21st Century", Report of the Interagency Floodplain Management Review Committee to the Administration Floodplain Management Task Force, p. 60, 1993.</li> <li>4 "Report of the secretary of the army on civil works activities for FY 2008", Department of the Army</li> <li>5 "Strategic Environmental Assessment Environmental Report Summary", Environment Agency, p.2, 2009.4.</li> <li>6 "Flood Defence Act 1996" (http://www.safecoast.org/editor/databank/File/Flood%20 Defence%20Act%201996.pdf)</li> <li>7 "Water in Focus 2004 Annual report on water management in the Netherland", Ministry of Transport, Public Works and Water Management in co-operation with the partners of the National Administrative Consultation on Water.</li> </ul>								

residents will be formed and to increase the safety of areas away from rivers, the development of high-standard levees that do not collapse in the face of flooding that exceeds the planned capacity of facilities is being carried out.

## b. Preventing the Reoccurrence of Flood Disasters

In recent years, within regions that experienced flooding, river channels are excavated and levees are being built to improve the flow capacity of rivers, drainage pump stations are developed to prevent inside water flooding among other measures are being implemented intensively in a short time span to prevent or mitigate flooding.

## c. Flood Control Measures Tailored to River Basin Characteristics

For rivers that experience a significant decline in flood control safety due to river basin development or existing urban areas regularly subject to flood damages, it is important to ensure the water retention and flood dissipation functions of the river basin. Rivers such as these require the promotion of river basin measures and a variety of methods that taken into consideration regional characteristics to ensure safety and comfort.

## "Dam Regeneration" -Utilization through the Redevelopment of Existing Dams-

Dams fulfill their role in a variety of ways. From the viewpoint of effectively utilizing existing facilities, there is an increased demand for further utilizing existing dams and the Ministry of Land, Infrastructure, Transport and Tourism is promoting "dam regeneration". Dam regeneration involves the enhancement of existing dams such as expanding the dam's capacity, increasing discharge capacity,

improving operations, sedimentation measures, and water quality measures in order to better utilize existing dams.

As one example of dam regeneration, the Tsuruta Dam redevelopment project is reaching the mature stage. This project is to strengthen the flood control functions of the existing Tsuruta Dam following the torrential rain disaster that occurred in the

Sendaigawa basin in northern part of Kagoshima Prefecture during July 2006 by implementing the expansion of flood control capacity and enhancement of discharge capacity among others. To improve the flood control function, new discharge tube with a hole of diameter 6m would be opened on the dam body but there was a need to implement the construction while maintaining the existing dam's flood control and water utilization functions. This would involve measures such as performing underwater construction up to a maximum water depth of 65m, creating difficulties completely different from constructing a new dam. Drilling construction on a dam body at such a great depth over a long period is a first for Japan and currently the project is progressing in earnest for completion in fiscal 2017.

"Dam regeneration" holds great promise not only for dams in Japan but dams located overseas and it is being actively promoted for this. For example, at the International Commission on Large Dams Annual Meeting held in August 2013 in Seattle, US, a panel exhibition and other activities were carried out. Also, at the International Commission on Large Dams Annual Meeting to be held in Norway in 2015, Japan's proposal for a theme on the effective utilization of existing dams was incorporated into the agenda. Japan will continue to utilize its advanced technology to actively pursue international expansion.

Also, the Ministry of Land, Infrastructure, Transport and Tourism is working with private sector tour companies to incorporate dam inspections into sightseeing tours to promote "dam tourism". Such dam tours not only include dams under management but also dams such as the aforementioned Tsuruta Dam which is currently going through "dam regeneration" construction so that people can see the daily progress of concrete placement and other aspects that can only be seen at the current site and will be actively promoted for publicity.



Tsuruta Dam redevelopment (Sendaigawa water system)

## (a) Comprehensive Flood Control Measures

Source) MLIT

With factors such as the concentration of population following the development of urban areas and peripheral areas as well as increased discharge from flooding rivers, for urban rivers where flood control safety is significantly compromised 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 risk of disasters occurring, and establishing a precautionary evacuation framework. As part of these efforts, the development of rainwater harvesting facilities is being promoted through measures such as river basin storage and infiltration projects and tax breaks so that the relevant local authorities can cooperate to further suppress rainwater drainage and measures to reduce civil damages.

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 (Guerilla Rainstorm) Measures

In recent years, due to flood 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 "100mm/h safe plan" is registered and initiatives to promote mitigation measures against flood damages are being implemented in addition to the development of rivers and sewerage.

## (c) Integrating Land Use Measures with Flood Mitigation

In accordance with land use



conditions, if it is an area prone to flood disasters and more efficient and effective than developing a consecutive levee, integrated land use that combines the development of a circle levee <sup>Note</sup> and the regulation of land use through measures such as designation of disaster risk areas is combined in cooperation with local authorities to promote disaster mitigation measures.

## Flood Control Projects Demonstrate Effectiveness Against Floods Caused by Typhoon Man-yi

With the approach and passage of Typhoon Man-yi, a wide area from Hokkaido to Shikoku experienced record levels of heavy rain from September 15 to 16, 2013, resulting in disasters including inundation damages, river flooding, and sediment disasters causing six deaths and one missing person nationwide and also in a wide area from Hokkaido to Shikoku, there were over 10,000 housing units inundated, resulting in great damage.

On the other hand, the 174 dams nationwide under the Ministry of Land, Infrastructure, Transport and Tourism carried out flood control, demonstrating the effectiveness of flood control projects all over the nation.

## Preventing the Occurrence of Extensive Flood Damage in Kyoto Using a Dam's Flood Control

At the Katsura River of the Yodo River System in Kyoto Prefecture, a large-scale flood occurred and the Hiyoshi Dam experienced the greatest inflow recorded since operation but by using the dams flood control, the water volume released downstream was reduced by approximately 90 percent.

It is estimated that this flood control prevented the spread of damage to the Togetsukyo Bridge in the Arashiyama District in Kyoto City (near Togetsukyo) and also virtually halved the number of houses flooded.

In addition, near the Kamo River confluence in downstream Kyoto, the water level rose to the levee crest and there was overflow on the right bank side but thanks to the Hiyoshi Dam's flood control and flood fighting activities by flood control brigades and Japan Self-Defense Force, and others, a levee collapse was avoided. If the Hiyoshi Dam did not exist, and the levee broke near the right cost side, approximately 13,000 housing unites would be inundated and damages amounting to approximately 1.2 trillion yen are estimated to have occurred.

# Prevent Flooding Damages through Levee Development

The Itayanagi district on the right bank of Iwakigawa River in Aomori prefecture was an area without a levee but levee development and river channel dredging was started from 1999 and in March 2013 a levee with a total length of 8.1km was completed.

In the floods caused by Typhoon Man-yi, although the water level exceeded high water level, actions such as flood fighting activities prevented the levee from collapsing. Thanks to the levee's development, it is estimated that approximately 3,100 ha (approximately 5,900 units) were protected from flood damage.



## (d) Inner Water Measures

To prevent flooding through inner water inundation and strive for the healthy 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 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 make the risk of damage due to inner water inundation even greater. For this reason, measures such as integrated projects for the reduction of sewer flooding damages and integrated projects for inner water emergency measures are being utilized with the cooperation of relevant parties including regional authorities and affected residents to carry out hard measures such as providing rainfall information, land use regulations, and creation of inner 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 flood measures.

## d. Strengthening the Flood Prevention Framework

Coordination with prefectures and flood prevention administration bodies for joint inspections of levees before flooding season and training exercises for communicating information, seminars for flood prevention technology, and flood prevention drills are carried out to ensure that areas requiring special attention and flood prevention technology is mastered from the perspective of flood prevention to protect lives and assets, to assist the creation of a flood prevention framework that minimizes damages.

Aside from the increased frequency of heavy rainfall disasters throughout the country, the flood fighting readiness of local communities are weakening due to the decrease in flood defense personnel among other factors, so to strengthen regional flood fighting capabilities through the participation of various entities, the "Flood Control Act" was revised in June 2013 to: 1) strengthen the coordination of river administrator and flood fighting, 2) promote initiatives to voluntarily secure evacuation and create inundation protection plans in facilities such as underground malls in areas vulnerable to inundation, facilities for people with special needs, and large-scale factories, and 3) expand the range allowed for the designation and scope of responsibilities for flood defense cooperating entities.

## e. Publicizing Forecasts and Warnings of Flooding and Providing River Information

The Minister of Land, Infrastructure, Transport and Tourism or Prefectural Governor designate rivers with large river basins that are at risk of causing great damages to the nation's economy or other great losses as flood forecast rivers and during floods issue flood forecasts (including flood warnings, cautions, dangers, and occurence information) indicating the water level or flood volume jointly with the Director-General of the Japan Meteorological Agency. Also, aside from flood forecast rivers, important middle to small rivers are designated as water level alert rivers and during floods, when the water level reaches evacuation levels (special caution water levels) when evacuation calls are issued, this information is also disseminated. Currently as of the end of March 2014, there are 417 flood forecast rivers and 1,555 water level alert rivers.

The water level, rainfall volume, flood forecasts, flood prevention alarms 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 Disaster Prevention Information <sup>Note 1</sup>" to be utilized in issuing warnings and evacuation during floods.

Also, the data broadcast function of digital terrestrial television is being used in cooperation with broadcasters for efforts to provide river water levels and rainfall volume information and by March 2014, 50 broadcast stations nationwide are providing such services. For the observation of rainfall volume, to deal with floods and sediment disasters due to the increased frequency of concentrated downpours and localized heavy rainfall (so called sudden showers) in recent years, XRAIN (MLIT X-band MP radar network)<sup>Note 2</sup> is being developed, which makes more detailed and real-time rainfall volume observation possible, for more appropriate river administration and disaster prevention activities in addition to the traditional radar rain gauge (C-band radar) and meteorological observation networks. Rainfall volume information is also available on the Internet and an observation system consisting of 35 stations was established as of the end of March 2014.

## f. Designation of Areas Vulnerable to Inundation

To raise awareness of the dangers from flooding, work to ensure the effective evacuation of residents, and guide appropriate land use, districts that are likely to be inundated when the river floods (flood forecast districts) are designated and information such as the depth of flooding is publicized in accordance with the "Flood Control Act".

Also, so that residents can smoothly and rapidly initiate evacuation measures even when flood inundations occur, technical support for the creation and communication of hazard maps is offered to municipalities creating hazard maps designed to give residents necessary information to secure evacuation such as flood information, evacuation areas, and flood forecasts as well as opening a portal site <sup>Note 3</sup> on the MLIT homepage where all domestic hazard maps can be viewed.

Note 1 http://www.river.go.jp [PC version], http://i.river.go.jp [mobile]

Note 2 Compared to existing radars, observation at higher frequency (every minute), and higher resolution (250m mesh) is possible. Also, time needed for information transmission was reduced from 5-10 minutes to 1-2 minutes.

Note 3 http://www1.gsi.go.jp/geowww/disapotal/index.html

Flooding forecast areas are already designated and publicized for roughly 98% of the rivers concerned and 97% of municipalities within flood forecast areas already created flooding hazard maps (as of the end of March 2014).

The revision of the "Flood Control Act" in June 2013 led to the owner or administrator of underground malls designated by municipal regional disaster prevention plans, facilities for people with special needs, large-scale factories, and others to voluntarily create plans for to secure evacuation as well as create inundation prevention plans, implement training, and establish a self-staffed flood defense organization as part of their flood defense efforts. To strengthen the regional flood defense capabilities, the Ministry of Land, Infrastructure, Transport and Tourism not only allows for tax subsidies for inundation prevention facilities obtained in accordance with inundation prevention plans prepared as stipulated by this law but also establish the disaster information dissemination office established within the river-related office of Regional Development Bureaus and others across the nation as a contact point for businesses and others to support voluntary flood defense initiatives.

## g. Strategic Maintenance and Management of Rivers

The condition of rivers and facilities are assessed and appropriate maintenance and management is carried out in accordance with any changes to ensure that the river administration facilities developed function as intended during floods and other situations.

In the course of river development carried out, the number of facilities such as levees, weirs, floodgates, and drainage pump stations under management greatly increased and the age degradation of these facilities is also advancing. Also, for river infrastructure, migration to condition-based maintenance is being implemented where degradation conditions and its progress is monitored through inspections so that measures are taken at appropriate moments as well as move to extending facility life cycles and renewal in a planned manner; the Priority Plan for Social Infrastructure Development states that by fiscal year 2016, major river infrastructure administered by the nation will have long lifecycle plans by fiscal 2016. In addition, necessary technological development for extending lifecycles will be furthered as well as deliberate in cooperation with prefectures on the technical standards for middle to small rivers administered by prefectures for appropriate maintenance and management in addition to technical support through permanent consultation services made available by regional development bureaus.

Following the partial revision of the "River Law" in June 2013, clarifies the need for the administrator of river management facilities or permitted structures to maintain river management facilities or permitted structures in good condition through maintenance and repair and also stipulates the absolute minimum technical standards that must be adhered to by all administrators regarding the maintenance and repair of a diverse array of river management facilities and others by decree.

## h. Measures Against Illegally Moored Vessels in Rivers

Illegally moored Vessels in rivers hamper flood control measures (interfere with the implementation of river works, obstruction of downward flow during floods, damage to river administration facilities, etc.) and other aspects of river administration (water contamination by fuel leakage, obstruction of river usage, etc.). Such illegally moored vessels are directed to move to legal mooring facilities or removed.

In May 2013, the "Promotion Plan for Comprehensive Measures for the Appropriate Management and Improvement of the Operation Environment of Pleasure Boats" was created to resolve the issue of abandoned vessels (illegally moored vessels). In December 2013 the River Law Enforcement Ordinance was amended to prohibit the act of abandoning vessels and other objects (effective April 1, 2014).

## (4) Countermeasures against Sediment-related Disasters

Japan is steep with a geology that is complex and vulnerable over a wide area with approximately 520,000 areas that are in danger of sediment disasters such as debris flow, landslides, and slope failure where sediment-related disasters caused by concentrated heavy rainfall and earthquakes averaged approximately 1,000 cases per year over the past ten years (2004-2013) resulting in severe damages. Also, sediment-related disasters claim a large share of victims amongst natural disasters. For this reason, developing sediment control facilities in priority areas with an acute need for measures; creating a safe and appropriate warning and evacuation frameworks consisting of self, mutual, and government assistance; efficient sediment-related disaster measures consisting of integrated soft and hard measures are being promoted to reduce the number of victims claimed by sediment-related disasters.

## a. Fundamental Countermeasures against Sediment-related Disasters

Rivers with a headstream area in a dilapidated mountain terrain can cause extensive damages to the entire river basin from the sediment discharge it creates. To protect the national land from such sediment disasters and strive to protect human lives, the development of sediment control-related facilities is being promoted.

## b. Emergency Countermeasures against Sediment-related Disasters in Sediment Disaster Affected Areas

Through the concentrated development of erosion control facilities including areas prone to sediment-related disasters and surrounding regions, in recent years, measures to prevent the re-occurrence of disasters in areas that experienced a large sediment-related disaster are being promoted.

# c. Emergency Countermeasures against Sediment-related Disasters for People Requiring Assistance During Disasters

For facilities used by those requiring assistance during disasters such as hospitals, nursing homes, and kindergartens located in areas at risk of sediment-related disasters, the development of sediment-related control dams and other sediment-related disaster mitigation facilities are heavily prioritized.

Also, based on the "Act on Promotion of Sediment Disaster Countermeasures for Sediment Disaster Prone Areas (Sediment Disasters Prevention Act)", the development of facilities used by those requiring assistance during disasters is restricted in sediment disaster prone areas.



## d. Countermeasures against Sediment-related Disasters for Urban Areas Near Mountain Base Slopes

For urban areas at the foot of the mountain prone to sediment-related disasters, the preservation and fostering of forestry bands (green belts) that strive to prevent sediment-related disasters and create a living environment with abundant greenery allow for the creation of a safe and environmentally rich urban space.

## e. Countermeasures against Sediment-related Disasters Measures that Improve Regional Disaster Prevention

In hilly and mountainous regions where sediment-related disasters can cause devastating damage to the society and economy, the warning and evacuation system of villages are strengthened and the conservation of important facilities and disaster prevention backbone villages are being promoted.

- f. Promoting the Sediment Disasters Prevention Act
- (a) Promoting the Designation of Sediment-re-

## lated Disaster hazard areas

In accordance with the "Sediment-related Disasters Prevention Act", sediment-related disaster hazard likely to experience-related sediment disasters that may cause harm to the body of residents are designated and in such districts, warning and evacuation system will be developed and in such areas, soft measures are taken such as the restriction of certain development activities and structural requirements for architecture. Also, guidelines and case studies are provided for the development of warning and evacuation system as well as the creation of hazard maps to further the development of warning and evacuation system as well as hazard maps against sediment-related disasters in the municipalities.



## (b) Prompting the Relocation of Housing at Risk

At risk housing located near cliffs in danger of collapsing are prompted to relocate using the program for relocating at risk housing located near cliffs. In fiscal year 2013, this program was used to eliminate 28 at risk housing units and 18 housing units were created to replace at risk housing.

## g. Countermeasures for Large Scale Sediment-related Disasters

Once a countermeasures for large scale sediment-related disasters occur, it usually leads to extensive damages so it is important to efficiently implement preventative measures and disaster responses in accordance with the event of a disaster.

For deep catastrophic landslide, the development of monitoring and warning systems that utilize technology such as seismic sensors and satellite images in addition to the evaluation of preventative measures and establishing a warning and evacuation system utilizing slope failure risk evaluation maps are being promoted.

Under urgent disaster conditions such as river channel blockage (natural dams), sediment flows following volcanic eruptions, and landslides, to enable municipalities to appropriately decide on resident evacuation orders, the Ministry of Land, Infrastructure, Transport and Tourism and prefectures must conduct emergency studies and provide municipalities with information on the land areas likely to experience sediment disasters as well as the timing, therefore training and the

strengthening of strengthening of coordination relevant with organizations will be carried out. This was implemented in Kirishima and Sakurajima (Shinmoedake), where ash fall from volcanic activity was acute in 2013 and in the Kumanogawa River (Totsukawa River) basin of Nara Prefectures and Hikigawa River basin of Wakayama Prefecture where river channel blockage continued due to heavy rains caused by Typhoon Talas in 2011 where monitoring and observation information was provided on an ongoing basis to relevant organizations.



Chapter 7 Building a Safe and Comfortable Society

## h. Issuing Sediment Disaster Alert

When the risk of sediment disasters occurring increases due to heavy rainfall, sediment disaster alert is jointly issued by prefectures and the Japan Meteorological Agency and disseminated through the fire protection and disaster preparedness section of the prefecture to assist the head of the municipality with deciding on giving evacuation orders as well as allow residents to evacuate on their own.

## Emergency Warnings Begin Operations

Massive damage is caused by natural phenomena of extraordinary magnitude in Japan, as exemplified by the major tsunami caused by the 2011 Great East Japan Earthquake and heavy rain caused by Typhoon Talas in the same year. In response to these natural hazards, the Japan Meteorological Agency (JMA) issued warnings and various other messages. However, in some cases there was no effective means of informing municipalities and residents of a significant risk if imminent fatal disaster in association with natural phenomena on a scale far exceeding the regular warning criteria, and existing warnings and other information did not prompt residents to evacuate urgently. Based on these experiments, JMA introduced the Emergency Warning System on August 30, 2013, to highlight such hazards.

Emergency Warnings are intended for extraordinary phenomena expected to be of a scale that will far exceed the warning criteria. The criteria for Emergency Warning issuance were determined in response to the views of local governments in charge of disaster management for their own areas. Regarding heavy rain, storm, storm surge, high

waves, snowstorms, and heavy snow, when an phenomenon that only occurs once every few decades is forecast, an Emergency Warning capping the name of the phenomenon is issued. On the other hand, for tsunamis, volcanic activity, and seismic motion, Major Tsunami Warnings, Volcanic Warnings (residential areas)<sup>Note</sup>, and Earthquake Early Warnings (EEW) incorporating prediction of tremors measuring six-lower or more on JMA's seismic intensity scale are considered Emergency Warnings and are issued in the classification of Emergency Warnings respectively.

Also, regarding Emergency Warnings, to ensure that it is transmitted to as many residents as possible swiftly and surely, measures for notifications from prefectures to municipalities and dissemination to residents by the municipalities are both mandatory.

Furthermore, remember that catastrophes may occur even if no Emergency Warning is in effect. For heavy rain and other events, it is important to take early action with reference to relevant bulletins, Advisories and Warnings, which are updated in response to the latest phenomenon observations or predictions.

Phenomenon	Criteria						
Heavy Rain	-Heavy rainfall with a level of intensity observed only once every few decades is predicted in association with a typhoon or similar. Or: -Heavy rainfall is predicted in association with a typhoon expected to have a level of intensity observed only once every few decades or an extratropical cyclone with comparable intensity. <sup>(Note)</sup>						
Storm	A storm is predicted <sup>(Note)</sup>						
Storm Surge	A storm surge is predicted (Note) intensity observed only once every few decades or an						
High Waves	High waves are predicted <sup>(Note)</sup> extratropical cyclone with comparable intensity.						
Snowstorm	A snowstorm is predicted in association with an extratropical cyclone expected to have a level of intensity observed only once every few decades. (Note)						
Heavy Snow	Heavy snowfall with a level of intensity observed only once every few decades is predicted. (Note)						
Tsunami	Tsunami height is expected to be greater than 3 meters (Major Tsunami Warnings are issued in the classification of Emergency Warnings)						
Volcanic Eruptions	Eruption or possibility of eruption that may cause serious damage in residential areas and non-residential areas nearer the crater (Volcanic Warning [Level 4 and 5] and Volcanic Warning [residential areas]are issued in the classification of Emergency Warnings)						
Earthquake	Seismic intensity of 6-lower or more is predicted (Earthquake Early Warnings incorporating prediction of tremors measuring 6-lower or more on the Japan Meteorological Agency's seismic intensity scale are issued in the classification of Emergency Warnings)						

(Note) The Japan Meteorological Agency (JMA) issues Emergency Warnings by taking account of the latest phenomenon observations, predictions, and the objective indices for issuance of Emergency Warnings made in light of past catastrophes. JMA's website provides the objective indices for variables such as rainfall amounts used for the definition of a level of intensity observed only once every few decades. Source) Japan Meteorological Agency

Note When residential areas are not defined, "residential areas" is replaced with "foot-of-mountain areas".

## (5) Volcanic Disaster Measures Countermeasures

## a. Countermeasures for Sediment-related Disasters Following Heavy Volcanic Activity

In preparation of volcanic disasters including debris flow caused by volcanic mudflow, pyroclastic flow, and rainfall caused by strong volcanic activities such as eruptions and minimizing damages, erosion control dams and consolidation works to capture or suppress debris flow, mountain maintenance works (training dyke) that safely allow for the down flow of debris flow, and guide walls are being developed. In addition, for facilities that are unable to properly maintain functions due to continued and massive debris flow, descaling and other measures are carried out to maintain functional effectiveness. Also, volcanic regions have fragile geology and like Izu Oshima which experienced great damages due to Typhoon Wipha in 2013 are highly susceptible to sediment disasters caused by rainfall so the development of facilities such as erosion control dams are being promoted.

Volcanic mudflow and such tend to cause sediment-related disasters but it is extremely difficult to predict the eruption position or scale beforehand. For this reason, while utilizing the facilities mentioned above, to reduce disasters when volcanoes erupt, "Volcano Eruption Emergency Mitigation Measure Erosion Control Plans" are being created for 29 volcanoes where volcanic activity is high and has a large social impact to smoothly implement agile responses in accordance with the progression of expected volcanic activities and the scope of impact. Also, to ensure residents and others can smoothly evacuate from volcanic activities, "Volcano Disaster Prevention Maps" to be created by municipalities is being supported.

## b. Japan Meteorological Agency Initiatives

To prevent and reduce volcanic eruption disasters, domestic volcanic activity is monitored and volcanic warnings are issued in a timely manner. Especially for the 47 volcanoes in need of more intensive monitoring/observation for volcanic disaster mitigation selected by the Coordinating Committee for Prediction of Volcanic Eruptions, observation facilities are deployed and volcanic activity is being monitored around the clock.

Also, volcanic alert levels are being applied and improved through coordination of evacuation



planning at local Volcanic Disaster Mitigation Councils (applied to 30 volcanoes as of the end of March 2014).

## c. Japan Coast Guard Initiatives

Precursor phenomena to the eruption of submarine volcanoes and volcanic islands such as discolored water in the surrounding sea area are observed and the information is provided to mariners. In addition, to serve as basic data to predict the eruption of submarine volcanoes and volcanic islands, comprehensive surveys are conducted to gather basic information such as sea bottom topography geological structure and so on. Continuous GNSS observations in the Izu Islands sea area are also conducted to monitor crustal movements.

Regarding the Nishinoshima volcano which began eruption for the first time in 39 years in November 2013, volcanic

activity of the island are being continuously monitored by aircraft.

## First Eruption in 39 Years Near Nishi-no-shima of the Ogasawara Islands

On November 20, 2013, based on a report from Japan Maritime Self-Defense Force aircraft that a volcanic plume was visible offshore of Nishi-noshima which belongs to the Ogasawara islands, the Japan Coast Guard immediately dispatched an aircraft to the scene confirming that eruptions were occuring off the southeast coast of Nishi-no-shima and a new island approximately 100m in diameter was being formed. This is the first eruption in 39 years experienced by Nishi-no-shima since the eruptions between 1973-74.

In order to secure navigation safety, the Japan Coast Guard immediately issued a navigation warning and advised caution to vessels navigating nearby and also reported their observation results to the Coordinating Committee for Prediction of Volcanic Eruptions in their efforts to prevent eruption disasters. Afterwards, the new island continued to actively spew lava, reclaiming the sea around it and as a result, by December 26, 2013 it was confirmed that the diameter of the new island reached 500m and connected to Nishi-no-shima. Currently, as of March 24, 2014, the Nishi-no-shima volcano is still active.

When new land is formed due to volcanic activity, it may increase new land territory and new territorial sea. The range of territorial waters and exclusive economic zone is base on the low-tide lineNote shown on the large scale nautical chart, which serves as the territorial sea baseline, published by the Japan Coast Guard. In the future, once volcanic activities subside and safety is ensured, a precise hydrographic survey will be carried out and once the newly formed land is recorded on the nautical chart, the new range of territorial sea and exclusive economic zone will be established.

After World War II, there were four cases of submarine volcanic activities leading to the creation of new islands. Although, aside from the volcanic eruption of 1973 in Nishi-no-shima that created new island Nishi-no-shima-Shin To, they all disappeared shortly due to the effect of volcanic explosions and wave erosions. Although newly formed land in this case consisits of mostly consolidated lava so it is considered resistant to erosion, the fate of this new land is unpredictable. Japan Coast Guard will continue the surveillance and observation of the Nishi-no-shima volcano.

The Eruption



H25.11.21



Source) Japan Coast Guard



H25.11.22



H25.12.13

## d. Geospatial Information Authority of Japan Initiatives

## (a) Improved Observation and Monitoring of Volcanic Activities

At active domestic volcanoes, observation system such as GNSS-based control station (GNSS Note 1 continuous observation facility), automatic distance and angle measurement devices to survey distance changes around volcanos, and Remote GNSS Monitoring System (REGMOS) is implemented to continuously monitor threedimensional crustal movements. Also, the GNSS data observed by other organizations are combined and analyzed for more detailed monitoring of crustal movements in the surrounding area of volcanoes.

(b) Research on Natural Disasters caused by Volcanic Eruptions

In addition to observations of crustal movements by GNSS and SAR Note 2 interferometry to elucidate mechanics of volcanic activities, research is being conducted to improve observation and analysis.

## (6) Storm Surge and Denudation Measures

## a. Promoting Storm Surge and High Wave Measures

To protect human lives and assets from storm surges and high waves caused by frequently occurring storm surges, a



## b. Promoting Coastal Erosion Measures

Since a variety of factors contribute to coastal erosion across the nation, the administrators of rivers, coasts, shipping ports, and fishing ports are coordinating to implement measures such as sand bypasses<sup>Note 3</sup> and sand recycling <sup>Note 4</sup>.

## c. Providing Disaster Prevention Information Regarding Strorm Surge and High Tides

To enhance of 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 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.

## (7) Tsunami Measures

## a. Promoting Tsunami Measures

In preparation for the largest scale tsunami disasters following great earthquakes along the Nankai Trough, building regional tsunami disaster prevention through multiple defenses combining hard and soft measures against the biggest tsunami is being advanced and regional authorities are being supported for measures such as establishing tsunami flooding



Note 1 **Global Navigation Satellite Systems** 

Note 2 Technology that monitors changes in the earth's surface from artificial satellites in space.

Note 3 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.

This construction method takes the sand accumulated on the coast along lower hand side of the flow and restores it to the upper Note 4 hand side of the coast subject to erosion to restore sands.

projections, and drafting evacuation plans.

Also, as a lesson from the Great East Japan Earthquake, relevant ministries and agencies are working closely to reevaluate the hazard map creation manual.

For tsunamis with a comparatively high rate of occurrence, coastal levees are being developed along with earthquake resistant measures. In case of occurrence, coastal levees and breakwaters with a structure that steadfastly maintains effectiveness even when the tsunami flows over the levee crown will be developed and at the three major ports where population and functions are concentrated, protection standards reflecting the likelihood of high tsunamis with a comparatively high rate of occurring will be evaluated and also the automation and remote controllability of floodgates and land locks will be promoted.

Additionally, to further the strengthening of disaster prevention and mitigation measures and appropriate coastal management, the "Coastal Management Review Committee" was held and in January 2014, the future status of coastal management was compiled.

For ports, to maintain port functions even in the occurrence of large-scale earthquakes, proactive disaster prevention and disaster mitigation measures such as securing refuge areas for large-scale vessels when tsunamis occur and securing navigational routes leading to important locations.

Also, specified ports (86 ports) under the "Act on Port Regulations" have established a "Council on Tsunami Measures for Ships" to further improve tsunami measures for ships at each of the ports with the cooperation of relevant organizations.

For fluvial tsunami measures, in consideration of the liquefaction of levees and tsunami river reversal damages by the Great East Japan Earthquake as well as floodgate operators stricken by disaster, measures such as raising river levees, earthquake resistance and liquefaction measures for levees, automation and remote operation of floodgates will continue to be promoted.

For the four river systems in the Tohoku Region, the lessons learned from the Great East Japan Earthquake will be applied to the formulation of earthquake and tsunami measures, geographic changes to the surrounding river mouth area such as land subsidence following earthquakes will be reflected in changes to the "Basic Policy for River Improvement" and the "River Improvement Plan" that follows the basic policy will be formulated and changed, and initiatives for regional reconstruction and town planning such as the development of river levees in the river mouth area will be promoted in coordination with the region.

Regarding tsunami measures for airports, in preparation for large-scale tsunami disasters caused by events such as the great earthquakes along the Nankai Trough, at airports likely to experience tsunami disasters, tsunami evacuation plans that determine evacuation methods and other matters for airport users and others to protect human life will be drafted and tsunami evacuation training and other matters will continue to be carried out in accordance with these plans. Also, plans will be drafted to rapidly recover airport functions following tsunami disasters and initiatives to build cooperative frameworks with relevant authorities in accordance with the plan and other matters will be promoted.

For the tsunami measures of railways, the conditions of evacuation guidance when tsunamis occurred after the Great East Japan Earthquake will be inspected and fundamental thinking for evacuation (speedy evacuation is the most effective and important measure, etc.) for the largest scale tsunamis following something like the great earthquakes along the Nankai Trough will be reflected in the response guidelines and case studies compiled for passenger railways to secure safety when tsunamis occur to promote initiatives by railway companies.

## b. Providing Disaster Preparedness Information Regarding Tsunamis

In order to strive for the prevention and reduction of disasters caused by tsunamis, the Japan Meteorological Agency (JMA) is monitoring earthquake activities across the nation around the clock in order to make speedy and appropriate announcements for tsunami warnings/advisories and information. Taking the issues made apparent by the Great East Japan Earthquake, JMA uses the word "huge" for tsunami warnings in the case of large earthquakes with magnitude 8 or more to emphasize that it is an emergency situation as part of new tsunami warnings and other informational wording beginning in March 2013.

As of the end of March 2014, JMA monitors 36 seabed tsunami gauges including three buoy-type ones placed off the Pacific Coast of Tohoku, 16 GPS wave gauges, and 172 coastal tsunami gauges for updating tsunami warnings/advisories and information.

Additionally, in coordination with relevant agencies, a manual for the creation of tsunami and storm surge hazard map and the compilation of case studies is provided as one of the measures against large-scale disasters such as great earthquakes along the Nankai Trough.

To facilitate tsunami measures for vessels, the Japan Coast Guard creates and publishes Tsunami Information Maps for the expected behavior of tsunamis in port areas based on new assessments of the great earthquakes along the Nankai Trough (Cabinet Office, August 2012).

## c. Tsunami Evacuation Measures

Because there are concerns for tsunami disasters caused by large earthquakes such as great earthquakes along the Nankai Trough in the future, a technical guidance was created to compile methods for ensuring the appropriate placement of evacuation and other facilities utilizing the basic data of urban plans which was released in June 2013.

Regarding tsunami evacuation measures for ports, tsunami evacuation measures that account for the special characteristics of ports so that workers and others active on waterside land can safely evacuate and retreat during disasters such as tsunamis were evaluated and the "Guidelines for the Tsunami Evacuation Measures of Ports" was created. Also, for tsunami evacuation facilities developed by local governments, grants for disaster prevention and safety as well as other instruments are utilized to promote development. Initiatives for tsunami evacuation measures for ports will continue to be furthered.

## d. Development of Parks and Greenery that Effectively Function to Reduce Tsunami Damages

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.

## e. Tsunami Measures 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 Panel on Infrastructure Development reported on the "Basics of Ensuring the Function of Government Facilities in Preparation for Tsunamis, etc." and in this report, following the concept of tsunami measures in accordance with the combination of soft and hard measures presented by the report, related technical standards were amended. Comprehensive and effective tsunami measures will be promoted in coordination with authorities in charge of the operation and management of government facilities.

## (8) Earthquake Measures

## a. Improving the Earthquake Resistance and Safety of Housing and Architecture

Based on the amended "Act on Promotion of Seismic Retrofitting of Buildings" which went into effect in November 2013, established goals of making at least 90 percent of housing and building used by many people earthquake-resistant by 2015 and making 95 percent of houses earthquake-resistant as well as make the reporting of earthquake-resistance diagnosis results for large-scale buildings and others used by an unspecified number of people mandatory along with the creation of display requirements for the earthquake-resistance of buildings among other measures in its aim to promote earthquake-resistance.

Regarding subsidies concerning the earthquake-proofing of housing and buildings, Social Capital Development Integrated Grant and other measures are implemented for support but from fiscal 2013, for architectural structures requiring mandatory diagnosis, a framework for granting intensive and emergency assistance is being implemented in addition to usual subsidies.

## b. Promoting the Earthquake Resistance of Residential Land

One of the solutions Japan has adopted for urban disaster management is the revised Act on Regulation of Residential Land Development, which requires more stringent technical standards for newly-developed residential areas in relation to earth filling to reduce damage caused by the sliding and/or collapse of large-scale earth filled structures resulting from large vibration amid a great earthquake. For existing housing land, the Project for the Promotion of the Earthquake Resistance of Housing Land is underway to prevent damage from landslides, earth collapse, and/or liquefaction by, for instance, providing local governments with support for ground deformation forecast surveys and prevention measures.

## c. Implementing Judgment of the Danger Level of Disaster-Affected Housing Land

The Government works with the Liaison Council for Judgment of the Danger Level of Disaster-Affected Housing Land, an organization composed of prefectures and ordinance-designated cities, to develop the arrangements needed to prevent secondary disasters in housing areas and secure the safety of people there by, for instance, preparing an operation manual that experts can refer to when they work after a disaster to determine the level of danger quickly and accurately.

d. Development to Improve Densely Inhabited Areas

Densely Inhabited areas with issues regarding disaster resilience and living conditions are an urgent issue that requires immediate improvements through development. The Housing Basic Plan (National Plan) stipulates that the land area of densely inhabited areas (approximately 6,000ha nationwide) that are conspicuously dangerous when earthquakes occur should be mostly eliminated by 2020.

To realize this, making buildings more fire-resistant along highways and providing the roads with fire-spread prevention and evacuation routes together in order to



develop Disaster-prevention Framework Axes (Disaster-prevention Environment Axes) in cities and the development of disaster prevention parks to serve as evacuation areas, disaster prevention block improvement projects, and integrated housing and urban development projects will be used to eliminate decrepit architecture and joint rebuilding of fireproof architecture, expansion of narrow roads to improve evacuation and firefighting efforts among other small measures to improve the disaster resilience qualities of densely inhabited areas and promote the development of the living conditions.

## e. Securing Open Space

To improve disaster prevention functions and strive for safer and more comfortable town building, 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 living supplies, and as an evacuation area to protect the lives of evacuees form urban fires. Also, a disaster prevention block improvement project that integrates the implementation of developing a disaster prevention park and the surrounding urban area is being implemented in six regions including Shinkawa Disaster Prevention Park (Mitaka City, Tokyo Metropolis).

## f. Promoting the Development of Government Facilities as Disaster Prevention Centers

Government facilities need to ensure comprehensive earthquake resistance safety, not only ensure the safety of visitors but also to fully function as the central facility for disaster emergency measure activities when large scale earthquakes occur. For this reason, goals for making government facilities earthquake resistant are set and their development is being promoted in a planned and focused manner and in fiscal year 2012, the Kobe Regional Joint Government Building was renovated for earthquake resistance.

## g. 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 in regions requiring large-scale earthquake measures so that their functions are not damaged before tsunamis arrive.

For road works, to ensure smooth emergency and rescue activities, transport emergency supplies, and emergency transport essential to recovery efforts when earthquake disasters occur, important roads such as emergency transport roads are subject to seismic strengthening of bridges and elimination of utility poles. As for elimination of utility poles, based on the amendment of the Road Act and other legislation in June 2013, for roads important to disaster prevention such emergency transport roads, frameworks to allow the road administrator to prohibit or restrict private use as well as allow for national government to grant utility cable administrators interest-free loans through local government were established.

For port works, for disasters in which extensive damages are expected such as the great earthquake along the Nankai Trough and Tokyo metropolitan epicentral earthquake, to secure an economic and social system that does not succumb to functional failure, increase Japan's competitiveness, and gain international trust, the earthquake and tsunami resistance of port facilities, that serve as the base of wide area networks both domestically and internationally as well as port complexes are being strengthened depending on the urgency of disasters and the importance of port function.

For airport works, in addition to serving as the base of rescue, emergency medical activities and emergency transport when earthquakes and other disasters occur, seismic strengthening of government facilities and basic facilities that are absolutely essential to ensure necessary control functions is being implemented for the airports considered important for maintaining air transport, as well as for maintaining the aviation network and ensuring the continuity of hinterland economic activity.

For railway works, in preparation for the great earthquake along the Nankai Trough and Tokyo metropolitan epicentral earthquake, earthquake measures for major stations, elevated bridges, and other railway facilities are being promoted. Also, the fortification of the Honshu-Shikoku Bridge's (Hon-Shi Bisan Line) earthquake resistance is being steadily implemented to avoid and reduce damages due to the Nankai Trough earthquake and other events and secure the railway network that connects Honshu and Shikoku.

For sewage works, to ensure the functions required of sewers during earthquakes, "disaster prevention" such as strengthening the earthquake and tsunami resistance of pipes and water treatment facilities that connect disaster prevention bases with treatment plants and "disaster mitigation" which aims to minimize damages in anticipation of disasters striking are being combined for the promotion of integrated earthquake measures.

## h. Sediment-related Disaster Countermeasures against Large-Scale Earthquakes

In preparation for large-scale earthquakes such as the great earthquake along the Nankai Trough and Tokyo metropolitan epicentral earthquake, areas at risk of sediment-related disasters that are at high risk of damage due to earthquakes including factors such as being a base of disaster prevention and impacting important transport networks or evacuation routes or creating isolated population areas, the development of sediment-related disaster prevention facilities along with warning and evacuation systems will be promoted as part of effective sediment-related disaster measures that integrate soft and hard measures. Also, in preparation for secondary disasters due to post-earthquake rainfall and other events, regarding sediment-related disaster prevention facilities and risk areas as well as river channel blockage and other areas that may experience sediment-related disasters, when earthquakes occur, emergency and intensive inspections and studies will be conducted based on risk assessments regarding areas considered vulnerable to phenomenon such as slope failure to promote the establishment of a system to execute swift emergency measures when failure or other events are confirmed.

### i. Japan Meteorological Agency Initiatives

To prevent and reduce disasters due to earthquakes, seismic activities in and around Japan and crustal movements of the area under intensified measures against earthquake disaster are being monitored 24/7 basis to provide rapid and accurate Earthquake Early Warnings (EEWs), earthquake information, and information related to the Tokai Earthquake as swiftly and accurately as possible.

For Earthquake Early Warnings (EEWs), in light of experiences with the Great East Japan Earthquake, to ensure information is announced appropriately, the power supply and communication lines of earthquake observation stations

have been strengthened and calculation software is going to be revised to improve the accuracy and swiftness of the information. Preparations to utilize data gathered from seismographs installed by relevant organizations in the sea and deep underground are also underway.

In addition, to provide useful information that will contribute to the initial response immediately after the earthquake such as the early detection of human and fixture damage caused by long-period ground motion, from March 2013, observation information on long-period ground motion is being announced on a trial basis. Also, technical studies regarding the prediction of long-period ground motion have begun.

## j. Japan Coast Guard Initiatives

To elucidate the physical mechanism of huge earthquakes, observations of seafloor crustal movements are conducted on the landward slope of the major trenches along the Pacific side of Japan such as the Japan Trench and the Nankai Trough where the large earthquakes have repeatedly occurred. To monitor crustal movements GNSS observations are also conducted in coastal areas and the Izu Islands.

## k. Geospatial Information Authority of Japan Initiatives

## (a) Observing Crustal Movements and Strengthening Monitoring Frameworks

Across the nation and the area under intensified measures against earthquake disaster, the monitoring of crustal movements is boosted by continuous GNSS observations through 1,300 GNSS-based control stations, GNSS surveying, and geodetic leveling.

## (b) Research on Natural Disasters caused by Earthquakes

From the results of geodetic observation such as GNSS, SAR interferometry and geodetic leveling, the mechanics of earthquake occurrence is being elucidated and research is being conducted to improve observations and analysis. Also, national fundamental geospatial information and past disaster record as well as seismic intensity is combined and analyzed to research and develop method to promptly obtain and provide disaster information soon after disasters. Additionally, for the purpose of exchanging information on surveys, observations and research outcomes regarding earthquake prediction between relevant government organizations and universities as well as conduct academic deliberations based on this, 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.

## I. Stranded Commuter Measures

If a large-scale earthquake occurs in a major city, urban functions will be paralyzed and more commuters will be stranded than the Great East Japan Earthquake, therefore to secure the safety of evacuees and stranded commuters in regions where urban functions are concentrated, the Urban Reconstruction Safety Protection Plan System was newly established in 2012. Across the nation, 62 regions are designated as urban reconstruction emergency development regions to create a urban reconstruction safety protection plan, conclude agreements on urban reconstruction safety protection facilities, and carry out deregulation for cooperation between the public and private sector for a system designed to improve the disaster prevention capabilities of urban areas. Also, in 2013, special taxation measures were created for storage warehouses and budgetary measures were expanded to facilitate refugees and stranded travelers in the vicinity of major stations.

## m. Safety and Security Measures of the Underground Malls

Underground malls, serve as important public spaces within the city, but there are concerns that evacuees may get confused 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.

# Column

Amendment of the Act on Promotion of Seismic Retrofitting of Buildings (Seismic Retrofitting Promotion Law)

•To prevent the loss of human life and economic damage

In recent years, major earthquakes such as the Niigata Chuetsu-Oki earthquake of July 2007, the Iwate-Miyagi inland earthquake of June 2008, and the Great East Japan Earthquake of March 2011 have occurred and there is growing concern that Japan can experience another large-scale earthquake at any time or place. In addition, possible earthquakes such as the Tokai earthquake, Tonankai and Nankai earthquakes, and the Tokyo metropolitan epicentral earthquake are considered highly likely and once these occur, the destruction will be enormous.

The Central Disaster Prevention Council conducted an estimation of damages regarding large-scale earthquakes that are most likely to occur and is formulating an earthquake disaster prevention strategy to set goals for disaster reduction based on likely damages, etc.

For this disaster prevention strategy the earthquake-proofing of building is one of the most important issues to achieve disaster reduction goals, since it will for the most part halve the number of deaths and the monetary amount of economic losses, so it is positioned as an urgent top priority initiative. Therefore, to promote the earthquake resistance of buildings, the "Seismic Retrofitting Promotion Law" was amended and put into effect on November 25, 2013.



·Main Points of the Amendment

1 Mandatory Seismic Diagnosis and Publishing of Results For structures built before 1978 based on the socalled old earthquake resistance standards, the owners of architectural structures. that are used by unspecified number of people such as hospitals, stores, and hotels/inns, or that are used by people requiring special considerations for evacuation such as schools, nursing homes, and other facilities. are required by law to conduct earthquake resistance diagnosis and report on the results and also make publicly available the reported earthquake resistance diagnosis results.

2 Promotion of Earthquake Resistance for All Buildings

For the owners of all buildings that do not meet current building standards laws and regulations are newly required to conduct earthquake resistance diagnosis and perform seismic retrofitting to the best of their ability.

3 Relaxing of Certification Standards for Seismic Retrofitting Plans and Exceptions Regarding Certification for Floor-Area Ratio and Building Coverage Ratio

The certification standards for seismic retrofitting plans were relaxed and the scope of renovation works that qualify for certification is no longer limited. Also, depending on the seismic retrofitting construction method used for renovation, there are cases in which the building in question may no longer meet floor-area ratio and building coverage ratio restrictions, therefore in such cases these are considered exceptions and within the scope authorized, a special measure was established to relax floor-area ratios and building coverage ratios. 4 Framework for the Display of Earthquake Resistance

For all buildings, if the building is earthquake resistant, a framework was established to allow for the display of such information in areas visible to users and in advertising if desired.

5 Designating the Need for Seismic Retrofitting of Sectionally Owned Buildings

For sectionally owned buildings designated as requiring seismic retrofitting, the majority decision requirements to implement large-scale seismic

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retrofitting was reduced from 3/4 to a simple majority retrofitting. like ordinary resolutions to carry out seismic



## (9) Snow Damage Measures

## a. Securing Winter Road Traffic (Snow and Winter Works)

In accordance with the "Act on Special Measures concerning Maintenance of Road Traffic in Specified Snow Coverage and Cold Districts", to support safe and comfortable living, strengthen exchanges and cooperation between regions, the "Five Year Plan to Secure Road Transport in Special Snow and Low Temperature Regions" was established in November 2013 by Cabinet decision along with the review of specification for the road within the area of snow coverage and cold, and the projects for removing snow, preventing snow, snow damage, and frost damage on roads (snow and winter works) are being promoted. In addition, the Hokuriku Snow Damage Measures Technology Center was established in July 2012 and is promoting research and development, human resources development, assistance to local governments, as well as providing information and raising public awareness related to snow damage measures across the country. Also, when large vehicles are stalled due to unusual snowfall, to prevent an additional flow of traffic from causing severe traffic congestion; traffic will be closed at an early stage in coordination with prefectural police and carry out concentrated snow removal to ensure traffic is restored quickly. Furthermore, unifying the sharing and dissemination of snow removal conditions and other information as well as improve the efficiency of snow removal, the establishment of information relaying headquarters by the relevant organizations of road administrators is being promoted.

## b. Avalanche Disaster Measures in Heavy Snowfall Regions

Across the nation there are about 21,000 avalanche risk areas and to protect human lives from avalanche disasters in settlements, the development of avalanche prevention facilities is being promoted.

## c. Implementing Snow Clearing Waterways Projects

In heavy snowfall regions, in addition to securing flood control functions, water conveyance channels are being developed for rivers with abundant water volume to supply small and medium-sized rivers flowing through the city with water for snow clearing waterways.

## (10) Sophistication of Disaster Prevention Information

## a. Aggregation of Disaster Prevention Information

The "MLIT Disaster Prevent Information Center <sup>Note</sup>" 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.

## b. Development of Hazard Maps

For residents to take appropriate evacuation actions when disasters occur, the creation and distribution of hazard maps by municipalities is being promoted to inform residents in advance of evacuation areas and evacuation paths in addition to creating an Internet portal site <sup>Note</sup> where various hazard maps from all over the country can be searched and browsed.



## c. Improvement of Disaster Prevention Weather Information

The Japan Meteorological Agency (JMA) issues warnings and advisories by municipality as well as provides distribution maps, which are named "nowcasts", indicating up to an hour forecast for extreme meteorological phenomena affecting a small area such as tornadoes, thunder, and heavy rains. These warnings, advisories and nowcasts are also available to mobile devices. In addition, for tornadoes and other gusts, Hazardous Wind Watch alert will be issued to call for caution.

On the other hand, in the heavy rain disaster in the Kii Peninsula caused by Typhoon Talas in 2011, JMA called for caution against great damages with Heavy Rain Warnings and other measures but there was no effective way to convey the acutely heightened danger due to sustained heavy rains reaching record levels and it did not lead to timely evacuation advisories and orders being given by municipality mayors or speedy evacuation actions by residents. For this reason, in May 2013 the "Meteorological Service Act" was amended and from August 30 of the same year, "Emergency Warnings" began operations. In September 16 of the same year, for the heavy rains in Fukui Prefecture, Shiga Prefecture, and Kyoto Prefecture due to Typhoon Man-yi, a Heavy Rain Emergency Warning was issued for the first time since beginning operations.

## (11) Strengthening the Crisis Management System

In response to natural disasters, in addition to forecasting natural phenomena that could lead to disaster (Japan Meteorological Agency), conducting inspections and emergency rehabilitation of facilities during disasters (departments in charge of facility management), and rescue operations at sea (Japan Coast Guard), there are many places with established initial response systems such as the emergency assembly of staff and the establishment of disaster measure headquarters. But in light of the disaster response during the Great East Japan Earthquake, the crisis management system needs to be strengthened further. Additionally, using the equipment, manpower, expertise and other resources of MLIT and relevant organizations to support local governments stricken by disaster will be promoted more actively.

## a. 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 (Technical Emergency Control Force) was established in fiscal 2008 and is available for deployment to smoothly and rapidly implement technical support for the local government of the affected area to carry out various emergency disaster measures such as rapidly assessing the extent of the disaster, prevent or contain damages, and rapid recovery of affected areas. In fiscal 2013, approximately 1,600 members were dispatched to 41 prefectures and 113 municipalities for a total of 6,100 man-days in response to the Yamaguchi and Shimane heavy rains of July, Typhoon Man-yi in September, and the Oshima-machi landslides caused by Typhoon Wipha of October to implement assessments of damages immediately following occurrence as well as technical support including the minimization of further damages. Also, in fiscal 2013, the number of TEC-FORCE dispatches reached its highest number since inception.

# Column

Responding to the Large-Scale Sediment-related Disaster in Oshima-Machi, Tokyo Metropolitan Area - Assistance and Strengthening of Sediment Disaster Measures by TEC-FORCE -

On October 16, 2013, Typhoon Wipha caused the greatest torrential rains in observed history in Izu-Oshima with 24-hour rainfall totaling 824 mm.

This torrential rain resulted in surface failure across a wide range in Oshima-Machi, Tokyo Metropolitan Area which upstream Ohkanazawa flows into and a large volume of sediment and driftwood went beyond the basin area and flowed into residential areas including the Motomachi Kandatsu district, causing great damage including 39 dead or missing persons and 111 partially or wholly damaged housing units.

The Ministry of Land, Infrastructure, Transport and Tourism immediately dispatched sedimentrelated disaster specialists and liaisons (frontline correspondents) to Oshima-Machi, Tokyo Metropolitan Area to gather information on damages to concentrate all efforts assessing the assistance needs of the city and disaster prevention helicopters belonging to the Kanto, Chubu and Kinki Regional Development Bureaus were used to aerially confirm large-scale sediment-related disasters and up to 84 persons/day from the Kanto, Hokuriku, Chubu and Kyushu Regional Development Bureaus' TEC-FORCE for a total of approximately 1,300 man-days were dispatched to the site.

Based on the disaster information gathered, the first TEC-FORCE team from the Ministry and the Kanto Regional Development Bureau were dispatched via Japan Self-Defense Forces transport aircraft on October 16th and on the 17th damage assessment surveys were conducted on site and on the 18th members of the Hokuriku, Chubu, and Kyushu Regional Development Bureau TEC-FORCE joined on site activities.

The mission carried out on site was to prevent secondary disasters from additional rainfall by swiftly implementing emergency inspections of risky areas that are vulnerable to sediment disasters that could affect human life and based on the results, to advise and provide information to Oshima-Machi, Tokyo Metropolitan Area as well as the Japan Self-Defense Forces, police, and firefighters searching for missing persons.

In particular, the emergency inspection of dangerous areas to relieve resident evacuation orders after the passing of Typhoon Francisco, activities involved extremely dangerous field conditions involving inspections by foot of mountain streams immediately after rainfall in danger of debris flow. As a result, since there were no major changes to conditions before rainfall, these inspection results were reported to the city and relevant agencies conducting search operations and was used to make decisions regarding the relieving of evacuation orders and resuming search operations.

In addition, for search operations lighting cars belonging to the Ministry of Land, Infrastructure, Transport and Tourism were used to assist the carrying out of night tasks.

Also, surveillance cameras were installed in five areas to monitor areas at risk of sediment flows to develop and establish sediment flow monitoring framework and the images were broadcast to the Tokyo Metropolitan Area, Oshima-Machi, and Cabinet Office via satellite and also technical assistance was provided to Tokyo Metropolitan Area for the establishment of mud flow monitoring system using wire sensors.

In consideration of the fact that this disaster and the sediment disaster northern Kyushu in July 2012 claimed many victims in areas not thought to be at Night lighting support by lighting cars



The disaster mechanism in Izu Oshima-Machi, Tokyo Metropolitan Area



Source) MLIT

great risk of sediment disasters, a "Sediment Disaster Measure Improvement Study Committee" consisting of academics and experts was held to further comprehensive investigations into hard and soft measures against sediment disasters.



Installation of surveillance cameras at the affected site



## b. Improving Business Continuity Abilities

Following the ratification of the government-wide operational continuity plan (government operation continuity plan), previous undertakings of the Ministry of Land, Infrastructure, Transport and Tourism Operational Continuity Plan (Second Edition) were followed up to create the Ministry of Land, Infrastructure, Transport and Tourism Operational Continuity Plan (Third Edition) on April 1, 2014. Also, the operational continuity framework is being strengthened through such measures as the stockpiling of supplies and securing support systems from other regions without awaiting orders from ministry headquarters (immediate dispatch of TEC-FORCE).

## c. Deployment of Information Communication Systems and Equipment in Preparation for Disasters

To secure information communication systems in the event of a disaster, MLIT headquarters, local branch offices, 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, to rapidly respond to disasters, the deployment of disaster prevention helicopters, satellite communication vehicles, drainage pump vehicles, illumination vehicles, and other disaster response machinery is being expanded at regional development bureaus and local offices across the nation, so that in the event of a large-scale disaster, the framework will be able to execute rapid deployment.

## d. Implementing Practical and Wide-Area Disaster Prevention Training

Assuming the worst-case scenario that can occur, realistic training was actively carried out including coordination with relevant organizations and dispatching the TEC-FORCE from Regional Development Bureaus. Also, more realistic and participatory water disaster prevention training and other exercise were carried out with more participation from regional residents, businesses, NPOs, and others as well as evacuation training using the hazard map.

Additionally, the Great East Japan Earthquake reaffirmed the importance of coordination between relevant organizations during large-scale disasters, therefore efforts to improve and strengthen a wide-area disaster prevention framework in preparation of massive earthquakes and other large-scale disasters through the implementation of various joint exercises between multiple organizations centered around regional offices and bureaus including designated local government agencies, fire fighting organizations, and the Japan Self-Defense Force is being promoted to promote initiatives to enhance and strengthen wide-area disaster prevention readiness in preparation for large-scale disasters such as great earthquakes.

## e. Preparing for Initial Response at Sea

The Japan Coast Guard deploys patrol vessels, crafts and aircrafts around the clock to allow for rapid responses in the event of a disaster. Also, In accordance with the scale of the disaster a countermeasure headquarters is established to implement damage assessment surveys and rescue operations through patrol vessels, crafts and aircrafts for an immediate and appropriate response.

## (12) Management of Existing Stock with ICT (Information and Communications Technology)

An optical fiber network is being set up to enable the management of public facilities and sophistication of crisis management by taking advantage of ICT (Information and Communications Technology). Specifically, measures are being promoted for safe road use such as sophisticated management using optical fiber for continuous monitoring of the road slope and 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, to speed up and consolidate the control of floodgates and other facilities, the development of tsunami and storm surge disaster prevention centers to prevent damages from tsunami and storm surge is being supported through social infrastructure improvement general grants and other means.

## (13) Disaster Recovery of Public Works Facilities

In 2013, damages to public works facilities under the authority of MLIT (rivers, roads, coast, sewage, etc.) came to roughly 219.7 billion yen (15,197 cases) of reported damages due to many domestic large-scale disasters such as the heavy rains of July and August, mainly in Yamaguchi and Shimane Prefectures, as well as Typhoon Man-yi and Wipha.

Regarding these natural disaster damages, TEC-FORCE and others were deployed immediately after the disaster and swiftly carried out restoration and reconstruction as well as provide technical advice to prevent secondary disasters.

Also, for municipalities in which damages were concentrated in particular, the general price unit of spending limits for disaster assessments were expanded from less than 10 million yen to less than 50 million yen and for assessments involving only desk work, the monetary limit for assessments was raised from the usual less than 3 million yen to less than 10 million yen to simplify assessments and greatly reduce the administrative paperwork leading to project adoption in the interest of facilitating rapid disaster recovery to support early recovery.

Furthermore, the districts (30 cases) affected by natural disasters such as heavy rainfall caused by Typhoon Man-yi and rainy season; strong winds, heavy snow, and waves from low atmospheric pressure; as well as slope collapses and snow

melts were paid from emergency project promotion grants for disaster measures to ensure the safety and comfort of residents and urgently implemented measures to prevent a recurrence of disasters.

## (14) Promoting Soft Measures Including Information and Public Relations for Safety and Comfort

To ensure safety and comfort, soft measures were promoted in addition to hard measures for natural disasters and the status of progress was subject to annual inspections in accordance with the "MLIT General Framework of Soft Measures Promotion for Safety and Comfort", however, the Great East Japan Earthquake brought to light the need for congruent and integrated evaluations of hard and soft aspects and currently deliberations are in progress following the re-evaluation of the Social Capital Improvement Priority Plan/MLIT Disaster Prevention Operation Plan.



## Secure Transportation Systems Resistant to Disasters

## (1) Ensuring Redundancy and Substitutability

Rail, ports, airports and other facilities are being made disaster resistant in addition to establishing an emergency transport framework for rescue and restoration activities ensures redundancy and substitutability in efforts to minimize the impact to domestic transport activities in the event of a disaster and secure the safety of users.

The road network functions as emergency transport roads during disasters to facilitate early relief, fulfilling its function as a "lifeline".

## (2) Road Disaster Prevention Measures

To ensure a safe and highly reliable road network against disasters such as heavy rainfall, earthquakes, tsunamis, and heavy snowfall, disaster measures (measures for slopes, embankments, etc.), earthquake disaster measures (seismic reinforcement, etc.), and snowy/cold region measures (development of anti-snow facilities) are being promoted as well as supplementing traffic facilities with disaster prevention functions (turning Michi-no-Eki, service areas, and parking areas into disaster prevention bases as well as developing emergency lines of communication and escape stairs) and in June 2013 the Road Law, etc., was amended to promote the conclusion of disaster alliances with private sector businesses to implement swift road re-openings and establishment of a council for road administrators to create a framework that keeps roads open. In addition, for large-scale disasters, the actual travel data (big data) of public and privately owned vehicles was used to promote initiatives for rapid and accurate assessments and evaluations are underway for a framework to provide disaster information.

Additionally, for regions that sustained devastating damages 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. Also, as one measure to reduce tsunami damages, sea level indicator sheets are being added to road sign posts to promote the provision of information on location's height above the sea level for road users.

## (3) Disaster Prevention Measures for Various Transportation Modes

For railways, subsidies are provided to partially cover the costs of improvement projects such as disaster prevention projects carried out by passenger rail companies including rockfall and avalanche measures as well as coastal protection and improvement projects carried out by Japan Railway Construction, Transport and Technology Agency (Incorporated Administrative Agency) to maintain the function of the Seikan Tunnel such as the improvement of substations and train control facilities.

For ports, in order to maintain essential regional economic activities during disasters achieve an early restoration of facilities affected by disasters, Wide Area Port Disaster Councils and others are established for the national government, port authority, port users, and others to work together to promote the establishment of a cooperative framework to maintain port functions and facilitate rapid recovery following disasters through wide area coordination of the ports.

For airports, in addition to serving as the base of emergency transport when earthquakes and other disasters occur, airports considered important from the perspective of maintaining air transport to maintain the aviation network and ensure the continuity of hinterland economic activity, seismic strengthening is being carried out for government facilities critical to ensure necessary control functions as well as basic facilities that are absolutely essential. Also, in preparation for a large-scale tsunami disaster due to great earthquakes along the Nankai Trough, tsunami evacuation plans were created for major airports at risk of being affected by tsunami disasters to stipulate evacuation procedures for airport users in the event of a tsunami. In addition, a plan was formulated for rapid recovery of airport functions following a tsunami disaster and initiatives to establish a cooperative framework with relevant organizations based on the plan will be promoted.

## (4) Building a Logistics System Resistant to Disaster

The Great East Japan Earthquake highlighted the importance of utilizing the expertise and facilities of private sector logistics companies from the perspective of ensuring the smooth transport of relief supplies. In light of this lesson, the establishment of a logistics system that is resistant to disasters through the coordination of central government, local government, and logistics companies was evaluated and private logistics facilities that could be used as a base for supplies in the event of an earthquake were listed up (1169 locations nationwide, as of March 14, 2014) and for applicable facilities, support was given to implement emergency power supply, communication, and other facilities to promote the establishment of a cooperative framework for coordination between the public and private sectors across the nation.

## 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.

In August 2012, the Minister of Land, Infrastructure, Transport and Tourism consulted the Panel on Infrastructure Development regarding the "ideal for future standards policies" and in September of the same year, the Building Standards Sub commission under the Building Subcommittee of the Panel is conducting a review, giving priority to categories that are most requested for review. 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 inspection regulations" the second report was compiled in February 2014. In accordance with this, the "Law for a Partial Revision to the Building Standards Law" was enacted May 2014.

For measures concerning kenchikushi, in accordance with the "The Kenchikushi Law" amended in 2008, initiatives are being taken toward the course material and encouraging completion for the periodic training made mandatory for registered kenchikushi.

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.

## (2) Ensuring the Safety of Elevators and Play Facilities

To ensure the safety of conveyors (elevators and escalators) and play facilities, investigation into accident causes will continue to be done and the views of the "Interim report of the unintended car movement accident in Ishikawa Prefecture" will be incorporated into the initiatives promoted to prevent a recurrence of similar accidents. Additionally, local

government and regional development bureau officials were given training to conduct accident investigations of elevators and play facilities for the development of staff.

## 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 damages but also has an enormous impact on society so various measures are being undertaken to prevent accidents from occurring.



## Establishing and Improving the Safety Management System of Public Transportation

The "Transport Safety Management System", instituted in October 2006 when public transportation accidents and troubles due to human errors began to occur frequently, makes it mandatory for the transportation organization to create and submit a "safety management policy" as well as elect and register the "general safety manager" in addition to top management taking an active leadership role to guide the frontline to work together in establishing and strengthening the safety management system and these efforts will be assessed by national government so that the safety management system can be continuously improved under a PDCA (Plan, Do, Check, Act) cycle.

From October 2012 to the end of September 2013, transportation safety management evaluations were conducted for a total of 510 companies (103 rail companies, 90 car companies, 299 shipping companies, and 18 airlines). In light of these results, there is a great disparity between major operators and other operators in the status of implementation regarding these regulations. For this reason, a consistent policy across all modes include: 1) implement a sharper evaluation that prioritizes areas thought to have a greater effect, 2) implement evaluation that is more sophisticated and emphasizes implementable and effective initiatives by the operator for large and mediumsized operators, and 3) for small to mediumsized operators, prioritize initiatives that further promote and raise awareness of regulations including the use of public-private partnerships.





Specifically, as part of the "safety and security recovery plan for expressway and chartered buses" created in April 2013 following the Kanetsu Expressway highway tour bus accident, in October 2013, the scope of mandatory transportation safety management implementation was expanded from operators of a given scale (fleets of over 200 vehicles) to all chartered bus operators and others (approximately 4,500) and effective evaluations will be implemented toward operators newly requiring evaluations. Also, in July 2013, a framework for the Ministry of Land, Infrastructure, Transport and Tourism to certify seminars hosted by the private sector was established and efforts are being made to spread and solidify the operators' awareness of regulations by utilizing private sector resourcefulness and expertise.

## **Railway Transportation Safety Measures**

Driving accident numbers for railway traffic show a declining trend over the long term <sup>Note</sup> due to such factors as the promotion of driving assistance facilities including automatic train stop systems (ATS) and rail crossing measures but the trend is plateauing in recent years, requiring the promotion of further safety measures.

## (1) Improving Railway Safety

In light of past accidents, measures such as creating 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, give feedback on audit results for further implementation of measures to improve the safety of railways.



## a. Measures from the JR West Fukuchiyama Line Derailing Accident

The "Ministerial Ordinance to Provide the Technical Standard on Railway" was revised to make the installation of Automatic Train Stop (ATS) devices with functions to limit speed on curbs, driver anomaly detection and train stopping devices, and driving condition recording devices mandatory.

## b. Measures from the JR East Uetsu Line Derailment

A "Railway Wind Measures Council" was convened to consider both soft and hard measures for strong winds and in addition to installing additional wind gauges, the wind observation system for railways was strengthened along with other measures.

c. Measures to Ensure the Safety of JR Hokkaido from the JR Freight Hakodate Line Train Derailment See the column for more information.

Note For years such as the fiscal year of 2005 when the JR West Fukuchiyama Line derailing accident occurred, where an operation accident caused great human losses, the number of casualties is high.

# **Ensuring the Safety of JR Hokkaido**

In September 2013, a freight train belonging to JR Freight was derailed within the premises of Onuma station of the JR Hokkaido Hakodate line.

As a result of this accident, it was discovered that JR Hokkaido had neglected track displacements that exceeded maintenance level values not only at the site of the derailment accident but in many other sites and additionally tried to doctor inspection data, which is completely unacceptable behavior for a railway operator.

The Ministry of Land, Infrastructure, Transport and Tourism performed three special safety inspections that were in part unannounced and with no set end dates, which is unheard of, for the purpose of finding out all the problems with JR Hokkaido from including not only the usual technical areas of civil engineering, carriages, and operation but also the management structure.

As for the result of these special safety inspections, to take comprehensive and drastic measures, it was compiled as the "Measures Required by JR Hokkaido to Ensure Safety -Revamping JR Hokkaido-" and published in January 2014. An order to improve business was ordered to JR Hokkaido based on the "Railway Business Act" and a supervision order based on the "JR Companies Act" and to ensure its execution a constant audit framework was put in place from January 2014 for a period of around five years.

The railways operated by JR Hokkaido serve as a core transport system that supports the lives and economy of Hokkaido and because there are no immediate alternatives, JR Hokkaido must not only ensure the day-to-day safety of transport but also surely implement comprehensive and fundamental measures by revamping JR Hokkaido.

## (2) Promotion of Railway Crossing Measures

"Gridlocked rail crossings Note", mainly seen in urban areas, cause crossing accidents and chronic traffic congestion requiring immediate measures. For this reason, in accordance with the "Act on Promotion of Railway Crossings" and the "9th Fundamental Traffic Safety Program", the development of grade separations, structural improvements, and pedestrian bridges as well as improvements of crossing safety facilities for crossing gates are being used to prevent crossing accidents.

In FY2013, based on the "Act on Promotion of Railway Crossings", 7 crossings that need grade separations, 25 crossings that need structural improvements such as widening, and 50 crossings requiring safety facilities were designated. Furthermore, fast-acting measures such as widening of pedestrian paths and radical measures such as the removal of crossings through grade separation were promoted.

## (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 583 stations as of the end of fiscal year 2013). Based on the "Basic Policy to Promote Smoothness of Transport etc." (March 2011) and the "Priority Plan for Social Infrastructure Development" (August 2012), hard measures such as the promoting the development of platform doors and tactile pavings with boundary lines as well as technology development for platform doors with better carriage door alignment and soft measures are being promoted such as "friendly manners campaign" calling on rail users to offer assistance to those such as the visually impaired.

Railway crossings that are closed for more than 40 minutes/hour during hours when the train frequency is high. Note

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## Safety Measures for Maritime Traffic

In the waters around Japan, around 2,500 vessels are involved in ship accidents every year. Once a ship 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

## a. Improving Ship Safety

Regarding ship safety, the International Maritime Organization (IMO) is central in stipulating international standards and in addition to actively participating in IMO discussions, in December 2013, the installation of stability computers was made mandatory in accordance with the amendment of the SOLAS Convention <sup>Note 1</sup> and domestic laws were also revised.

Regarding the breakage accident of the Bahamas-flagged large container ship, MOL COMFORT, that occurred in the Indian Ocean, a committee was convened in June 2013 to evaluate safety measures for large container ships. In December, an interim report was prepared and published on the details of safety measures to be taken for the time being.

Also, to eliminate substandard ships Note 2, Port State Control (PSC) Note 3 is being implemented.

## b. Ensuring Ship Navigation Safety

In accordance with the "Act on Ships' Officers and Boats' Operators" which complies with the STCW Convention Note 4, the qualifications for ship personnel are defined to ensure ship navigation safety from human factors. In June 2010, the revised STCW Convention (Manila Amendments) with amendments stipulating additional competencies that ship personnel must possess was adopted and domestic laws are under revision for April 2014. Also, for the pilotage system, qualifications for people who can perform pilotage are defined for the safety of vessel traffic but finding successors is turning out to be challenging, therefore, securing a stable supply of human resources and the provision of necessary incubation training are being promoted.

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 who causes a marine accident intentionally or negligently in the course of duties and in 2013 there were 310 cases of determinations and a total of 402 marine technicians, small craft operators, or pilots were performed disciplinary actions of suspension of business operation (one to two months) or admonition to prevent the occurrence of marine accidents.

Note 1 International Convention for the Safety of Life at Sea, 1974.

Note 2 Ships not compliant with the standards of international conventions.

**Note 3** The oversight of foreign ships by the port of call.

**Note 4** The International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, 1978. The 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 promote the protection of the marine environment.

For maritime accident prevention measures, initiatives such as Maritime Information and Communication System (MICS) and lighted buoys to serve as a platform for the meteorological information system to provide information, the hosting of intergovernmental maritime accident prevention liaison committees for the purpose of facilitating effective coordination of maritime accident prevention measures, and the promotion of the "National Campaign for Preventing Marine Casualties" among other activities through the coordination of relevant authorities and others.

In October 2013, the Council of Traffic Policy Maritime Subcommittee compiled the "Initiatives for the Safety of Maritime Traffic (Report)" which outlined the direction of maritime traffic safety policy along with specific measures. This report sets out to achieve the safe and smooth evacuation of vessels as well as drastic minimization of damages in the occurrence of large-scale disasters and the centralization of traffic control operations in Tokyo Bay to relieve vessel waiting times for traffic control signals and relieve congestion during peace times.

In addition, to improve the safety and efficiency of operations of transiting vessels in narrow waters, in the Kurushima Strait, accurate tide observations are being performed to establish an information provision system for tide information using area-wide simulation.

Also, electronic nautical charts are being further improved talking it to account that certain types of vessels are being obliged to deploy the Electronic Chart Display and Information System (ECDIS) on board. And nautical charts described only by English are published to prevent marine accidents by the ships operated by foreign crew. Revision of nautical charts in the major 15 ports affected by the Great East Japan Earthquake is still in progress.

For Aids to Navigation (AtoN), development is performed effectively and efficiently in accordance with the vessel traffic environment as well as needs and in fiscal 2013, improvements and renovation was carried out in 233 locations.

Also, of the 158 AtoN that were affected by the Great East Japan Earthquake, the remaining 41 AtoN (as of March 2014) awaiting restoration, these will be restored in time as the ports and breakwaters are restored.

The "Marine Accident Analysis Center" established under the National Maritime Research Institute (Incorporated Administrative Agency) conducts highly specialized analysis of accidents as well as rapid analysis and sharing of information when major marine accidents occur.

Regarding the Straits of Malacca and Singapore, vital and extremely important sea transport lanes where 80% of Japan's imported crude oil transits through, the Government of Japan has cooperated with the littoral states of the straits for the projects under the "Cooperative Mechanism" <sup>Note 1</sup>, as well as the Japanese business industry and the Nippon Foundation, a public interest incorporated foundation, have been providing contributions to the Aids to Navigation Fund <sup>Note 2</sup>. At the 6th Co-operation Forum under the mechanism held in October 2013, Japan explained the important role of the straits and Japan's contributions for the safety of navigation in the straits, and appealed user states and other stakeholders for more contributions to the Fund with aim of staple and reliable management of the Fund. Japan, as a major user state of these straits, continues to contribute actively for the navigation safety in the straits through public and private sector utilizing the knowledge and experience obtained from cooperation and friendly relations with the littoral states as a sole cooperating country before the establishment of the Cooperative Mechanism.

Note 1 An instrument which realizes the spirit of Article 43 of the United Nations Convention on the Law of the Sea that describes the cooperation between User States and States bordering State of a strait for the first time in the world. The Cooperative Mechanism consists of the three bodies; Co-operation Forum, Project Co-ordination Committee, and the Aids to Navigation Fund.
 Note 2 A fund to cover the costs of maintenance and replacement of navigational aid facilities such as lighthouse, light beacon and buoy

used in the Straits of Malacca and Singapore.

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# Column <sub>(</sub>

The Third Traffic Vision - Initiatives for the Safety of Vessel Traffic -

In the waters around Japan, around 2,500 vessels are involved in ship accidents every year. Once a ship 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. In October 2013, the Council of Traffic Policy Maritime Subcommittee compiled the "Initiatives for the Safety of Maritime Traffic (Report)" which outlined the direction of maritime traffic safety policy along with specific measures (7 issues and 3 goals) over the next five years.

The Japan Coast Guard positions this report as the "Third Traffic Vision" and will promote measures to achieve the goals.

The Seven Issues

- (1) Safety measures for congested waters<sup>Note 1</sup>
- (2) Safety measures for semi-congested waters<sup>Note 2</sup>
- (3) Efficiency and safety of vessel traffic inside the harbor
- (4) Safety measures for small boats
- (5) Policy for the maintenance and management of Aids to Navigation (AtoN)



(Note) Virtual AIS AtoN emit signals from AIS land stations in the vicinity to display

AtoN virtually that do not exist physically

Source) Japan Coast Guard

Illustration of Maritime Traffic Safety Measures in the Event of a

- (6) Safety measures for vessel traffic in the event of a large-scale disaster
- (7) Strategic technology development

## The Three Goals

- Maintain a low occurrence rate for collision and running aground accidents in congested waters
- (2) Reduce the number of collision and running aground accidents within harbors, etc.
- (3) Reduce the number of small boat accidents

Additionally, by promoting various initiatives comprehensively through coordination with relevant agencies, in the long-term, the aim is to reduce the current number of vessel accident numbers in half by the 2020s.

Also, Maritime Traffic Safety Sub commission was established within Council of Traffic Policy Maritime Subcommittee to meet around once every year to confirm the implementation status of the measures in the Third Traffic Vision and continue with deliberations on the approach for measures of the next fiscal year, drafting of the next traffic vision, and the way forward for Maritime traffic safety measures from a long-term point of view.



Note 1 Tokyo Bay, Ise Bay, Seto Inland Sea, and Kanmonkou Bay (waters where the Act on Maritime Traffic Safety Act or the Act on Port Regulations are applicable).

**Note 2** Waters that lead to Seto Inland Sea that connect congested sea areas through each of the waters of the mouth of Tokyo Bay, Irouzaki offing, the mouth of Ise Bay, Shionomisaki offing, Murotomisaki offing, and Ashizuri offing.

## (2) Promoting Safety Measures for Ship Passengers

Around 50% of the fatalities and missing persons from accidents involving ship passengers is due to falling into sea. In order to survive a fall, it is essential that they are floating at sea and a request for rescue is made immediately. For this reason the Japan Coast Guard is spreading the message and raising awareness for wearing life jackets at all times, securing appropriate communication measures such as having cell phones in waterproof packs, and effectively using the emergency telephone hotline to the Japan Coast Guard, "118" as the three basic self-rescue measures. Also, for small crafts (fishing boats, recreational boats, etc.), the fatality rate of those that do not wear life jackets that fall into the sea is four times higher than those that wear life jackets; wearing a life jacket is a major factor in surviving a fall into sea. For this reason, in addition to support for LGL <sup>Note 1</sup> and designating model marinas for promoting life jacket wearing <sup>Note 2</sup>, wearing a life jacket is promoted year round through coordination with relevant ministries and local government.

## (3) Strengthening the Rescue System

In order for the Japan Coast Guard to carry out swift and appropriate rescue, distress frequencies are monitored around the clock and an emergency telephone hotline, "118" is made available to quickly catch information regarding incidents at sea. Also, along with improving the rescue technology and capabilities of those such as Special Rescue Team, mobile rescue technicians, and divers, enhancements and fortifications of the medical control framework to ensure the quality of emergency life-saving treatment that emergency response personnel perform as well as advancing the functionality of patrol boats and aircraft is being carried out as part of efforts to enhance and fortify the rescue and emergency system. Also, the enhancement and fortification of coordination between ministries, agencies, local governments, and private rescue organizations is also being carried out.

## 4 Air Traffic Safety Measures

## (1) Strengthening Aviation Safety Measures

## a. State Safety Program (SSP)

To ensure the effectiveness of the SSP to be introduced beginning April 2014, following the creation of the fiscal year plan which will include the establishment of indicators (safety performance indicators) and targets (safety performance targets) to be used for the quantitative measurement of aviation safety, the collection and analysis of safety information and its sharing with stakeholders of various fields along with inspections and other measures to service providers will be implemented in conjunction with activities to improve the safety of aviation. In the future, the series of activities themselves will be continuously reviewed as part of a PDCA cycle to improve the quality.

For service providers and others, with regard to events associated with certain violations (excluding aircraft accident, etc.), by allowing the internal implementation of improvement measures following dialogue (if the service provider and others can demonstrate appropriate remedial measures and actions through this dialogue, adverse dispositions will not be levied), it will support service providers in the establishment of safety management systems (SMS).

Note 2 Marinas and fishermen's cooperatives that are actively taking the initiative to promote the wearing of life jackets at all times. Designated as centers for raising safety awareness and promoting life jacket wearing in the region.

Note 1 Local activities to promote the wearing of life jackets by the family of fishermen and others. Stands for Life Guard Ladies (female wearing promotion staff).

## b. Air Transport Safety Measures

Although there are no fatal accidents since 1986 among specified domestic air carriers <sup>Note</sup>, to appropriately respond to safety troubles, the safety management system of airlines and others will be improved, preventative safety measures will be promoted, and preliminary audits and strict site inspections, including unannounced visits, for domestic airlines newly entering the market or expanding business along with other measures to appropriately improve systematic monitoring. Also, in accordance with the increased entrance of foreign airlines following the promotion of the open sky policy, monitoring of foreign airlines entering Japan were strengthened with site inspections and other measures.

## c. Certification of Domestic Jetliners

For the domestically produced passenger jet project under development, as the national government of design and manufacturing, certification is under way concerning compliance with safety and environmental standards. To



implement certification more appropriately and smoothly, the establishment and expansion of the certification organization, along with close coordination with the aviation authorities of the United States and Europe, are being carried out.

## d. Action taken for Boeing 787 Battery Trouble Measures

Battery trouble occurred on Boeing 787 in January 2013, causing a suspension of flights lasting several months. For this case, close coordination with aviation stakeholders involved including those of the United States and other relevant countries was carried out. Based on the consideration of the potential causes and preventative measures, the airlines were requested to make a proper disclosure of safety information to users in addition to battery improvements to ensure safety and peace of mind before revenue flights were resumed in May of 2013. Afterwards, a similar trouble occurred with a 787 model that was parked in January 2014. However, the scope of damages and other impacts was limited and it was an event that would not interrupt the safe operations if it occurred during the flight. Close coordination with stakeholders will continue to be pursued.

## (2) Developing Air Traffic Systems for Aviation Safety

Since the majority of serious incidents concerning air traffic services originates from human error, measures to prevent human error such as miscommunication between controllers and pilots and installation of visual display and transmission systems for controllers and pilots are being promoted.

Since the demand for operation of small aircraft such as helicopters is increasing for various kinds of missions including disaster response and medical transportation, developments of low altitude routes and departure/landing/approach procedures are being evaluated.

## Determining the Causes of Air, Rail, and Marine Accidents/ Serious Incidents and Preventing Recurrence

The Japan Transport Safety Board began operations of the Japan-Marine Accident Risk and Safety Information System (J-MARISIS) from September 2013 for foreign sailors, in light of the fact that most Japanese merchant marine fleets are operated by foreign sailors and also numerous accidents involving foreign flag vessels in Japanese coastal waters in recent years (in the future, a global version showing ship accidents around the world is planned for operation).

With regard to accidents/serious incidents investigations, 23 investigation reports of aircraft accidents/serious incidents were published, and of this, regarding the accident that occurred in July 2011 in Hokkaido where the aircraft crashed into the mountainside during basic instrument flight training resulting in three fatalities and one serious injury, a recommendation was made to the Minister of Land, Infrastructure, Transport and Tourism that until those involved in the causes can autonomously and surely operate the safety management system on their own, the status of measures regarding the safety management situation need to be



accurately assessed and supervised among other measures as an example of the four recommendations and three safety recommendations for aircraft accidents/serious incidents.

Besides, 21 investigation reports of railway accidents/serious incidents were published including that of the train derailment accident that occurred in May 2011 in Hokkaido, where recommendations were made to those involved in the causes to ensure that wheels exceeding the limits of usage for tread abrasion and the length of the abrasion are not used by establishing appropriate inspection intervals and methods to assess the status of the wheel tread and fully enforce its management as part of the three recommendations regarding railway accidents/serious incidents.

Moreover, 1,151 investigation reports of marine accidents were published including the collision accident that occurred in the Kinkasan offing in Miyagi Prefecture in September 2012, where opinions were stated to the Minister of Land, Infrastructure, Transport and Tourism and the Director-General of the Fisheries Agency to consider measures for raising increased awareness towards the effectiveness of AIS for the owners of fishing vessels and ships, gather and utilize information on the operational status of fishing ships with maritime vessel traffic from Japan-Marine Accident Risk and Safety Information System and other sources as part of the four recommendations and two opinions stated regarding maritime accidents.

## Support for Victims and Families of Public Transport Accidents

To ensure support for victims and others of public transport accidents, the Public Transport Accident Victims Support Office was established in April 2012. The Support Office is in charge of such tasks as: 1) serving as a contact point to provide information when public transport accidents occur and 2) coordination functions over the mid to long-term until the victims and affected can resume a normal life following the accident.

In fiscal 2013, support activities at the hospital where victims are being treated when serious public transportation accidents occur and promoting awareness for the support contact point were carried out. Also, during ordinary times, education and training was implemented for support staff, networks with external organizations were established and the promotion for the creation of victim support plans by public transport operators among other activities were carried out. In the future, based on feedback from stakeholders, the Support Office's functions will continue to be improved and measures to support the victims and others of public transport accidents will be steadily moved forward.

Traffic Accidents, Fatalities, Injuries, etc., Trends

11,191,041 people

(2004)

aest e

(2004)

952.709 ca

Fatalities and injuries

1995 2000 2005

Casualties

Fatalities

(Notes)1 Up until 1959, minor damage accidents (injuries lasting less than 8 days or less than 20,000 yen

16,765 people (1970)

997,861 people (1970)

718.080 case

(1970)

18

16

14

12

10

8

6

4

2

0 2010 (Fiscal year)

raffic

accident fatalities (1,000

people

785,867 people

(2013)

629,021 cases (2013)

4 373 people

(2013



## Safety Measures for Road Traffic

The traffic accident fatalities of 2013 decreased for 13 consecutive years and was 4,373 (0.9% decrease from the year before) but the percentage of the elderly traffic accident fatalities that are 65 years old and over exceeded 52% and 780,000 people suffer from injury or death caused by traffic accidents and the condition is still severe. For this reason, efforts will be made to further reduce traffic accidents and various will be implemented measures in coordination with the National Police Agency and others.

## (1) Promoting Efficient and Effective **Traffic Accident Measures**

and contemporary changes in the social

2 After 1966 property damage accidents are not included. The cases prior to 1971 do not include fatalities and casualties of Okinawa Prefecture. Source) Developed by MLIT from National Police Agency documents Recent advances in road development landscape, there is a great needs for a road environment in which pedestrians, bicyclists, and a diverse other users can safely and comfortably coexist. For arterial roads which account for roughly 70% of traffic accident fatalities, effective and efficient entire accident measures are being promoted through public participation and collaboration under the "Traffic Accident Zero Plan (strategy for concentrated relief of accident prone sections)" to implementing concentrated

1960 1955

1965 1970 1975 1980 1985 1990

in property damage) are not included

Figure II-7-4-5

Taff 1,400

1.200

1,000

800

600

400

200

acciden

cases (1,000 cases)/Casualties (1,000 people)

In addition, it is necessary to pay special attention to those community roads on which the proportion of accident casualties involving pedestrians and bicyclists is particularly high. In such cases, it is essential to ensure the existing safe pedestrian spaces, to this and wide-ranging integrated traffic accident suppression measures are currently being promoted. These include a wide ranging speed regulation, narrowing roads, widening road shoulder, sidewalk development, speed limits, installation of physical devices to reduce vehicle speed.

## (2) Promoting Safety Measures for School-Commuting Roads

For school-commuting roads, following a series of accidents in April, 2012 involving groups of children commuting to schools, a "school route emergency joint inspection program" was implemented through coordination between schools, boards of education, police, and other stakeholders. Intensive support was implemented toward the measures based on the result above.

In addition, Japan has instituted school-commuting roads safety program in each municipality, these measures include regular joint inspection infrastructure improvement and others enhancement.

## (3) Safety Driving Support on Expressways Using the ITS Spot Service

The ITS Spot Service has been available on expressways across the country since August 2011. The service supports safety driving by calling attention to accident prone areas or falling objects as well as forewarning of snow and overtopping wave conditions through car navigation system among others.

## (4) Systematic Road Facilities Management to Provide Safe and Comfortable Road Services

On December 2, 2012, nine precious lives were lost when the Chuo Expressway Sasago Tunnel ceiling panel collapse accident occurred. At the "Research and Investigation Committee on the Tunnel Ceiling Collapse Accident " after the accident, the cause of the fall and preventative measures were compiled in the report on June 18, 2013.



In the future, considering that bridges and other road structures will rapidly age, to investigate and review the optimal standards for the appropriate maintenance of road structures, a "road maintenance technical subcommittee" was established to create a maintenance cycle for maintenance and management including the improvement of measures for things such as inspections, diagnosis, and repairs as well as life cycle extension plans for the interim report.

Additionally, to achieve the appropriate management of the roads, clarifying the need for inspections, creating regulations to designate roads to attract the traffic of large vehicles that impact road structures the most, and persecution of vehicles that violate limits were some of the things included in the amended Road Law that was promulgated and for government ordinances, the facilities subject to renovation and repairs by agency were defined as tunnels and bridges and technical standards were established for the maintenance and management of roads.

A ministerial ordinance was enacted on March31, 2014 that clarified the obligations of road administrators such as visual inspections in close proximity for bridges and tunnels once every five years.

In addition, on April 14, 2014, the "Recommendations for the Full-Scale Implementation of Road Aging Countermeasures" was published by Panel on Infrastructure Development Road Subcommittee for the establishment of maintenance cycles (clarifying the obligations of road administrators) and to create a framework that runs the maintenance cycles.

## (5) Steady implementation of the "Expressway and Chartered Bus Safety and Security Recovery Plan"

In response to the Kan-Etsu Expressway tour bus accident that occurred in April 2012, the "Expressway and Chartered Bus Safety and Security Recovery Plan" was established in April 2013 to transition 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 will be definitely implemented in the two years between fiscal 2013 and 2014 and the status of implementation will be followed up and its effects measures as needed to intensively promote measures to improve the safety and regain trust of bus operations.

## Measures to Improve the Safety and Regain Trust of Bus Operations

In the early hours of April 29, 2012, a serious accident where seven passengers were killed and 38 passengers sustained minor to serious injuries occurred when an expressway tour bus crashed into the protective wall of the Kan-Etsu Expressway.

The Ministry of Land, Infrastructure, Transport and Tourism established an "Accident Response Headquarters" immediately after the accident to gather information and responded to inquiries and requests from victims through the victim support contact point.

Also, after the accident, intensive emergency audits were implemented against expressway tour bus operators and a user contact point for reporting violations was established as part of the "emergency measures" established and implemented to ensure the safety of bus operators by July 2012, and during the busy period of summer, bus pick up and drop off areas nationwide were inspected simultaneously to check regulatory compliance.

Afterwards, a "Study Group on the Direction of Bus Services" was held in fiscal 2012 and in accordance with the study findings, the "Expressway and Chartered Bus Safety and Security Recovery Plan" was established and published in April 2013. Based on this plan, individual measures such as transitioning and unifying expressway tour buses into the new share-ride expressway bus, establishing standards for driver replacement shifts to prevent overworking, and transition to fares and pricing systems that reflect the safety costs were implemented swiftly and surely over the two year period of fiscal 2013 and 2014, and the status of implementation will be followed up and its effects measures as needed to intensively promote measures to improve the safety and regain trust of bus operations.

- (Reference) Summary of the "Expressway and Chartered Bus Safety and Security Recovery Plan"
- •Transition and unify expressway tour buses into the new share-ride expressway bus
- ·Establish shift standards for replacement drivers
- Legally require small to medium operators to submit safety management rules, etc.
- Intensive monitoring and increased penalties for offending operators
- •Transition to fares and pricing systems that reflect the safety costs



## (6) 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 and measures based on this will be in effect from August 2013 and the implementation status and other progress will be followed up by the Safety Measures Committee.

## (7) Comprehensive Safety Measures for Automobiles

## a. Safety Measures for Commercial Motor Vehicles

Under the "Commercial Motor Vehicles Comprehensive Safety Plan 2009" which aims to reduce accident fatalities and personal injury accidents by half and completely eliminate driving under the influence in the ten years from 2008 to 2018, more safety measures are being implemented such as expanding the scope of mandatory installment of tachographs in trucks.

## b. Considering Vehicle Safety Measures for the Future

In the Ninth Fundamental Traffic Safety Program (established March 2011), the goal of reducing traffic accident fatalities to less than 3,000 by 2015 was established. For the achievement of this traffic accident reduction goal, the three measures of "expanding, enhancing, and strengthening safety standards, etc.", the "Advanced Safety Vehicle (ASV) Promotion Plan", and "vehicle assessment" will be coordinated in a synergistic manner to promote vehicular safety measures.

## c. Expanding and Strengthening Safety Standards

For the attainment of the world's fastest adoption of fuel cell vehicles with the coming market introduction in 2015, safety standards for fuel cell vehicles were developed. Also, the scope for mandatory equipment of collision avoidance systems on heavy vehicles was expanded and standards were strengthened. Also, to improve the safety of child seats, standards for side impact standards were added to the existing standards for frontal and rear impact.

## d. Development, Commercialization, and Promotion of Advanced Safety Vehicle (ASV)

The development, commercialization, and promotion of Advanced Safety Vehicle (ASV) is being promoted under the cooperation of industry, academia and government and ASV technology that is already commercialized such as collision damage reduction brakes are being widely promoted and efforts are under way for the commercialization of safe driving support systems that use communication such as vehicle-to-vehicle communication systems and pedestrian-to-vehicle communication systems. As part of this effort, the Tokyo 2013 ITS World Congress was held in October 2013 and a public road demo was done for the advanced highway safety system using vehicle-to-vehicle communication and pedestrian-to-vehicle communication.



## e. Providing Safety Information Through Automobile Assessment

In order to promote the selection of safe automobiles and child seats by users and the development of safer automobiles, the evaluation results of the safety of cars is published. In fiscal year 2013, 14 automobiles types and nine child seat types were newly evaluated.

## f. Swift and Steady Implementation of Automobile Recalls and Informing Users and Others

For the swift and steady implementation of automobile recalls, efforts are made to gather information from automobile manufacturers and users and during the audit of recall operations by automobile manufacturers confirmation and guidance is carried out and for automobiles with concerns for safety and environmental performance, the National Traffic Safety and Environment Laboratory (Incorporated Administrative Agency) will conduct technical verifications using the current model. Also, to strengthen the gathering of defect information from users, public awareness campaigns for the "automobile defect information hotline" (www.mlit.go.jp/RJ/) were actively carried out.

In addition, the information collected by 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. Press releases and other measures were used to especially raise user and public awareness for "pumping the brakes for trucks equipped with air brakes are dangerous" and "ensuring the functionality and knowledge regarding the use of vehicular emergency escape hammers".

Also, in fiscal year 2013 the number of recalls submitted was 303 and the number of cars affected was 7,978,639.

## g. Sophistication of Vehicle Inspections

In order to prevent illegal secondary modifications<sup>Note</sup> and the early detection of vehicular malfunctions, information technology is being utilized to make vehicle inspections more sophisticated.

## (8) Protecting Victims with the Automobile Liability Security System

The automobile liability security system, implements various victim relief measure services such as insurance payments of mandatory vehicle liability insurance, relief (governmental indemnity services) for victims of hit-and-run and uninsured car accidents, and payments for caretaker fees and establishment of care facilities for those with heavy 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.

## (9) Safety Measures of Mechanical Multistory Parking Garage

In light of the occurrence of fatalities and other accidents involving mechanical multistory parking garages, the Safety Measures Review Committee conducted analysis of the conditions surrounding the occurrence and factors involved in the accidents, then requested relevant organizations and others to ensure safety and proper usage.



## Section 5 Crisis Management and Security Measures

## Promoting Crime and Terrorism Countermeasures

## (1) Coordinating with Other Countries for Crime and Terrorism Countermeasures

## a. International Initiatives for Security

In addition to participating in meetings and projects in the field of transport security at international organizations such as Group of Eight (G8), International Maritime Organization (IMO), International Civil Aviation 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 "International Working Group on Land Transport Security (IWGLTS)" established in 2006 is currently participated in by over 16 nations and is expected to further develop as a framework for land transport security and bilateral conferences with the United States of America and European Union are also utilized to improve domestic security and international contributions.

## b. Anti-Piracy Measures

The number of pirate incidents in 2013 declined from the previous year's 15 in off the coast of Somalia and the Gulf of Aden, a strategic point of the sea lanes, due to the effect of anti-piracy measures by international society such as the continued anti-piracy activities by the navy and other forces of various countries including the Japan Maritime Self-Defense Forces, self-defense measures through Best Management Practices (BMP) <sup>Note 1</sup> implemented by merchant ships, and embarkation of Privately Contracted Armed Security Personnel on merchant ships, the fundamental causes of fostering piracy such as the poverty within Somalia are still unresolved and the continuing unstable situation surrounding vessel navigation still requires vigilance.

Under this situation, the Japan Maritime Self-Defense Force destroyers conduct escorts of vessels and within CTF151<sup>Note 2</sup> carries out zone defense<sup>Note 3</sup> in the Gulf of Aden as well as surveillance patrols with two P-3C patrol aircraft under the auspices of the "Law on Punishment of and Measures against Acts of Piracy (Pirate Measures Law)". The Ministry of Land, Infrastructure, Transport and Tourism consolidates contact points for escort requests from shipping companies and others as well as the selection of vessels to be escorted and the implementation of special protection by

Note 1 A compilation of self-defense measures (avoidance measures for pirate activities, establishing evacuation areas [citadels] within vessels, etc.) created by various organizations deeply involved with shipping such as the chambers of shipping to prevent or minimize damages due to Somali pirates.

Note 2 Multinational coalition missions against pirates.

Note 3 Permanently stationing warning and surveillance vessels in certain waters to protect navigating vessels from piracy activities.

Privately Contracted Armed Security Personnel under the "Act on Special Measures for the Security of Japanese Vessels Pitate infested waters " established in November 2013 to ensure the complete navigational safety of Japanese flag vessels.

Japan Coast Guard, for anti-piracy measures in the water off the coast of Somalia and Gulf of Aden, dispatches its eight officers, to conduct judicial police activities in case of piracy incident, onboard Japan Maritime Self Defense Force destroyers deployed to the Gulf of Aden in accordance with the Anti-Piracy Operation Order, and Japan Coast Guard provides capacity building assistance towards the coast guard agencies in Somalia and its neighboring countries such as Djibouti and Oman by inviting law enforcement officials from these countries to such training



courses as the Maritime Crime Investigation Training Course held in Japan, supported by the Japan International Cooperation Agency (JICA, Incorporated Administrative Agency).

For anti-piracy measures in the water in Southeast Asia, Japan Coast Guard also provides capacity building assistance in the area of human resource development and technical transfer, towards the coast guard agencies in Southeast Asian countries through the dispatch of the Japan Coast Guard patrol vessels for joint exercises and law enforcement trainings. Additionally, Japan Coast Guard, under the JICA framework, dispatches law enforcement experts to coast guards agencies as well as invites law enforcement officials from relevant countries to Japan for law enforcement training courses. The recent number of piracy and armed robbery incidents in Southeast Asia lower than its peak in 2000. It is however an increasing trend in these years. Since pirates has not yet eradicated, continued anti-piracy measures in this region is still necessary.



## c. Security Measures for Ports

Human resource development for port security measures is being implemented for ASEAN countries through training, expert conferences, and other measures. Also, information is being shared with other countries as port of the initiative to further raise the level of security in international ports.

## (2) Comprehensive and Strengthened Counter-Terrorism Measures for Public Transport

In recent years, a variety of major incidents targeting public transport are occurring around the world since the September 11 terrorist attacks in the United States of America (September 2001), such as the London Bombings (July

2005), and the Mumbai attacks (November 2008). In light of these circumstances, counter-terrorism measures are being developed in each respective field and during busy seasons, thorough supervision and inspections for counter-terrorism measures are implemented.

## a. Promoting Counter-Terrorism Measures for Railways

In addition to increasing security cameras within stations and strengthening patrols, "crisis management levels" are set and operated as well as "displaying security and user participation<sup>Note</sup>" as the axis of promoting counter-terrorism measures. Also, the sharing of information regarding

railway counter-terrorism measures with major nations is being actively pursued.

## b. Promoting Counter-Terrorism Measures for Ships and Ports

Ensuring security is done through the approval of security rules and ship inspections of international voyage ships, approval of security rules for international port facilities, regulation of arriving ships, and site inspections of international voyage ships and international port facilities as well as Port State Control (PSC) in accordance with the "Act on Assurance of Security of International Ships and Port Facility". Also, security measures are being made more comprehensive in light of the results of site inspections of international port facilities and security levels of other countries.

## c. Promoting Counter-Terrorism Measures for Aviation

In order to do everything possible to prevent a terrorist attack involving aircraft in our country, the aviation security framework is being strengthened in accordance with the





Note Displaying Security: Measures to proactively prevent terrorism by making security highly visible to people. User Participation: Measures to promote each individual railway user to be aware of preventing terrorism and take appropriate actions to strengthen the network for monitoring terrorist activities.

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international standards defined by the Convention on International Civil Aviation. In these circumstances, new strengthening measures are being implemented to respond to cases of terrorism and illegal entry both within and without the country, each airport is being strengthened with measures such as fences to prevent the intrusion of vehicles or people and sensors are installed so that when there is an intrusion, a swift response can be made and from October 2012 international flight passengers are subject to random manual screenings to prevent explosives and other objects that cannot be discovered by metal detectors from entering the aircraft. 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.

## d. Promoting Counter-Terrorism Measures for Automobiles

Relevant businesses are instructed to carry out inspections inside vehicles, strengthen patrol of the insides and perimeters of business offices and garages, and dispatching security officers to major bus stops during busy seasons.

## e. 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 lockdown 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) Crime Prevention Measures for Automobiles

The sealed system<sup>Note 1</sup> is effective for the prevention of unauthorized usage of vehicle license plates and the mandatory confirmation of the personal ID for people requesting the issuance of proof of registered information and indication of chassis number among others.

## (4) Balancing Security and Efficiency of Logistics

For international logistics, industrialized nations and international organizations are playing a central role in initiatives to balance security and efficiency. In our country, the spread of the AEO system<sup>Note 2</sup> is being promoted for logistics businesses and support is given to various countries to obtain AEO. Starting in fiscal year 2011, export filings from AEO approved businesses are able to get "permission" from outside bonded areas.

For the security system of airfreight with the purpose of protecting airfreight from the shipper to loading on aircraft, the KS/RA system<sup>Note 3</sup> based on international standards established by the ICAO is adopted. Afterwards, the regulation was revised, while taking consideration of maintaining smooth logistics, in accordance with requests from the United States to further strengthen security. The new regulations will be applied to international cargo flights with passengers destined for the United States from October 2012 and the scope is to be expanded to all international cargo flights with passengers from April 2014.

Also, in the container terminals of major ports, to accurately confirm the identity and association of truck drivers an access management information system is being implemented.

Note 1 A type of inspection and registration system for vehicles. To prevent the removal of license plates and other tampering, an aluminum cap is placed on the bolt securing license plates.

Note 2 This system rewards international shippers with superior security measures for their supply chain with certification as Authorized Economic Operator (AEO) by customs and gain the benefit of streamlined customs procedures.

Note 3 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 airline companies.

## (5) Information Security Measures

As the dependence on IT for socio-economic activities in general continues to grow, various cyber attacks are becoming more prevalent such as email attacks targeted toward government institutions, increasing the importance of initiatives for information security measures. In accordance with the policy of the "Information Security Policy Committee", security policies are being promoted for major infrastructure (rail, air, logistics) with measures to prevent information leaks, creation of guidelines for MLIT information security measures and prevent the disruption of operations due to IT outages.

Also, efforts are being made for implementing an initial response system and preventing the spread of damages in the event of a cyber attack against MLIT and businesses under its jurisdiction.

## 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, the disaster conditions are assessed an a disaster measures headquarters is established within MLIT (for especially large-scale accident disasters in the field of transport the government will establish an emergency disaster headquarters, etc.) to collect and aggregate information and comprehensively coordinate with relevant government organizations and other parties for urgent disaster measures to ensure that swift and appropriate disaster measures are implemented.

For accident disasters at sea, coordination with relevant organizations is being furthered such as ensuring a dispatch system for patrol boats and aircraft and readying disaster mitigation equipment in addition to implementing joint training. Also, for pollution accidents involving oil or Hazardous Noxious Substances, response equipment is being improved to strengthen the system for a swift and effective response and environmental protection information on coastal waters needed to contain oil, etc., is being compiled and provided.

## 3

## Strengthening the Coast Guard System

## (1) Improving and Strengthening the Operational System

In the waters surrounding the Senkaku Islands, Chinese government vessels are persistently violating territorial waters adding to continued tension. The Japan Coast Guard is developing 1,000 ton patrol boats equipment with monitoring ability and suppression capability to establish a full-time patrol system for the Senkaku territorial waters equivalent to 14 large-scale patrol vessels, developing docking facilities to provide base functions for patrol vessels in Ishigaki Port, and strengthening operation and command functions for the swift and appropriate sharing and dissemination of information between headquarters, district headquarters, and patrol vessels along with the assignment of new personnel to patrol vessels. Also, to ensure a system that can appropriately respond to further changes in the situation, six more large-scale patrol vessels will begin development.

## (2) Promoting Counter-Terrorism Measures

To prevent terrorism, the Japan Coast Guard patrols around facilities that are at risk, such as coastal nuclear power plants and petrochemical complexes as well as U.S. Armed Forces facilities by patrol vessels and aircrafts. Also, during peak travel periods, special security is conducted at passenger ship terminals where many people are concentrated.

In order to prevent terrorism proactivity, it is important to tie with not only relevant agencies but the private sector as well. The Japan Coast Guard encourages those who work at maritime industry to take self-security measures completely and conducts cooperation with regional communities by getting information on suspicious activities from them.

## (3) 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 Japan, and it is need to stop them for inspection in order to shed light on their objectives and activities In case any illegal activities are found, 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 the policing organization deals with them as the primary agency.

The Japan Coast Guard conducts various training as well as stronger ties with relevant ministries and agencies 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.

## (4) Promoting Measures against Maritime Crimes

Some major characteristics of recent maritime crimes include a diversity of non-fishermen casually engaging in maritime poaching crimes as well as organized criminals seeking sources of funding and environmental crimes such as illegal dumping of waste into the ocean to save processing costs and its characteristics are becoming more malicious and sophisticated. Also, for domestic crimes involving firearms and drugs, there are some that are closely related to smuggling crimes facilitated by Japanese criminal organizations and international crime syndicates along with illegal transit facilitated by international crime syndicates.

Regarding various maritime crimes, there is still a need for vigilance and the Japan Coast Guard is strengthening monitoring and prosecution, gathering and analyzing crime information, and strengthening site inspections by effectively utilizing patrol ships and aircraft as well as sharing information with relevant domestic and international organizations as part of the efforts to pursue effective measures and take strict yet appropriate measures against maritime crimes.

## Protecting Our Country's Interests in Maritime Rights

### (1) Security Activities to Protect Maritime Interests

Recently, there have been cases where official vessels from China and Taiwan have encroached upon Japanese territorial waters and through their activities have sought to stake territorial claims in the seas around the Senkaku Islands. Particularly since the acquisition and maintenance of three of the islands (Uotsuri Island, Kitakojima Island, and Minamikojima Island), in September 2012, there are cases where official vessels from China have approached and intruded upon the seas surrounding the Senkaku Islands. Activists have also intensified their efforts to assert claims on the islands.

Also, in the Japan's Exclusive Economic Zone in the East China Sea and other waters, foreign oceanographic research vessels are conducting surveys without Japan's consent.

In response to these tense conditions, the Japan Coast Guard advanced legislative changes to strengthen maritime policing powers including the improvement and strengthening of prosecution powers of Japan Coast Guard officers among other measures by coming into force the "Law for the Partial Revision of the Japan Coast Guard Act and the Law on Navigation of Foreign Ships through the Territorial Sea and Internal Waters," in September 2012. Additionally, the security system of territorial sea is being strengthened by conducting appropriate patrols on territorial sea by patrol vessels and aircraft as well as monitoring and vigilance activities in Japan's Exclusive Economic Zone to ensure Japan's sovereignty and protect maritime rights.

## (2) Promoting Maritime Surveys in Territorial Waters and the Exclusive Economic Zone and Consolidating Maritime Information

In our country's territorial waters and the exclusive economic zone there are waters lacking adequate survey data and the Japan Coast Guard is conducting intensive maritime surveys in these waters including submarine topography, crustal structure, and the baselines of territorial waters to strategically and continuously implement the development of basic information that will contribute to the safety of ship traffic, protecting our country's maritime rights, and maritime development. Also, under the comprehensive coordination of the Headquarters for Ocean Policy Secretariat, Cabinet Secretariat the "Maritime Information Clearinghouse", which aggregates the gathering, management, and provision of maritime information, is being operated. Additionally, the "Maritime Cadastre" was developed which is a web service that can overlay information on maps and allows general users to utilize various natural information (submarine

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topography, ocean currents, water temperature, etc.) and social information (port areas, fishing rights areas, etc.).

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

In April 2012, the UN "Commission on the Limits of the Continental Shelf" adopted the recommendations in regard to the submission made by Japan in November 2008 regarding the continental shelf beyond 200 nautical miles in accordance with the United Nations Convention on the Law of the Sea. In the recommendations, the total are of the approved continental shelf is equivalent to roughly 80% of Japan's national land's area. But some evaluations of water areas were deferred, the Japan Coast Guard therefore continues its further efforts to obtain recommendations with relevant government agencies under the comprehensive coordination of the Headquarters for Ocean Policy Secretariat, Cabinet Secretariat.

## (4) Conservation of Okinotorishima, Protecting the Low-Tide Line and Developing the Base of Activities

## a. Conservation of Okinotorishima

Okinotorishima is Japan's southernmost territory and is a very important island that forms the foundation of the 400,000 km2 area exclusive economic zone which exceeds the area of national land, so the observation and gathering of basic data, inspections of damages, and repairs are carried out. In addition to the two islets, the central government is taking direct control to ensure adequate measures to preserve the entire atoll.

## b. Preservation of Low-Tide Lines

In accordance with the "Law on the Development of Base Facilities and Preservation of the Low-Tide Line for the Use, Promotion, and Conservation of the Exclusive Economic Zone and Continental Shelf (Low-Tide Preservation Act)", 185 domestic locations are designated by government decree as lot-tide conservation areas to implement restrictions on activity in the area. Also, sight patrols by disaster prevention helicopters and ships as well as satellite images are used to survey low-tide lines and its surrounding conditions and by confirming the existence of restricted activities in the area or topographical changes due to natural erosion, strive to protect the low-tide line which forms the basis of the Exclusive Economic Zone and



continental shelf as well as appropriate management of related information for the implementation of sure and efficient preservation of low-tide lines.

## c. Developing Bases of Activity in Remote Islands (Okinotorishima and Minamitorishima)

In accordance with the "Low-Tide Line Conservation Act", etc., Minamitorishima and Okinotorishima which are areas remote from the mainland, port facilities are being developed as a base of activities for the conservation of the exclusive economic zone, etc., and usage for the development and usage marine resources to enable the mooring and berthing of vessels, cargo handling, etc.

## Security and Protecting Citizen's Lives and Assets

## (1) Responding to North Korea Issues

5

In response to the North Korea launching ballistic missiles and conducting nuclear tests, in accordance with the "Act on Special Measures concerning Prohibition of Entry of Specified Ships into Ports", all ships registered to North Korea are prohibited from entering Japan's ports and in light of the international situation this measure was extended to April 13, 2015. To ensure the implementation of these measures, the Japan Coast Guard is conducting the confirmation of information regarding the arrivals of North Korean-flagged ships. Also, to ensure the effectiveness of import and export restriction measure against North Korea such as the United Nations Security Council Resolution 1874, in accordance with the "Act on Special Measures concerning Cargo Inspections etc. Conducted by the Government Taking into Consideration United Nations Security Council Resolution 1874, etc.", the Ministry of Land, Infrastructure, Transport and Tourism and the Japan Coast Guard is coordinating closely with relevant administrative agencies to ensure the effectiveness of measures stipulated by the law.

Also, in light of leadership changes at North Korea, MLIT is strengthening its readiness including information gathering and communication to thoroughly implement measures in preparation of worst case scenarios and will continue to maintain the monitoring and watching framework. Also, for the cases of missile launches referred to "artificial satellites" conducted by North Korea on April 13 and December 12, 2012, and nuclear tests conducted by North Korea on February 12, 2013, information was collected and shared as part of the efforts to ensure the safety and comfort of citizens.

## (2) Responding to Armed Attacks Situations 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, etc" and "Basic Guidelines for Protection of the People" which stipulates measures regarding the evacuation, rescue and minimization of losses due to armed attacks situations, etc., MLIT, the Geospatial Information authority of Japan, the Japan Meteorological Agency, and Japan Coast Guard stipulate "Civil Protection Plan<sup>Note</sup>". MLIT will implement support such as communication and coordination with designated public institutions which are transport business operators for the transport of evacuating residents in accordance with requests from local government; the Japan Coast Guard is designated to carry out the transport of evacuating residents and emergency supplies when the transport capacity of designated public institutions is insufficient and to carry out search, rescue, and emergency activities.

## 6 Infectious Disease Measures

For countermeasures against pandemic influenza and new infectious diseases, in May 2012 the "the Act on Special Measures for Pandemic Influenza and New Infectious Diseases Preparedness and Response (hereinafter Act on Special Measures)" was established 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 to citizen's lives and the national economy by: 1) businesses in general must work to cooperate with prevention and countermeasures and consider impacts due to epidemics and work to implement appropriate countermeasures in conducting business, 2) registered business operators as requiring prior vaccination must continue to carry out business activities that contribute to the stability of citizen's lives and economy even during outbreaks, and 3) designated public institutions are required by regulation to implement countermeasures against breakouts of pandemic influenza and new infectious diseases, and designated public institutions which are transport business operators must establish individual business plans in the event of a pandemic influenza and New Infectious Diseases emergency and carry out necessary measures to appropriately implement the transport of passengers or cargo.

In June 2013, the National Action Plan for Pandemic Influenza and New Infectious Diseases of JAPAN (hereinafter National Action Plan) based on the Act on Special Measures was approved by the Cabinet and it includes countermeasures against pandemic influenza and new infectious diseases such as the basic policy, the implementation system, surveillance and intelligence gathering, prevention and stopping of outbreaks, medical treatment, and ensuring the stability citizen's lives and the national economy for the various outbreak stages of pandemic influenza and new infectious diseases.

**Note** Following the establishment of the Japan Tourism Agency in October 2008, MLIT's plan was changed to the "MLIT and Japan Tourism Agency Plan for the Protection of National Citizens".

In accordance with this, MLIT amended the MLIT Action Plan or Pandemic Influenza and New Infectious Diseases and for the implementation of the newly incorporated various measures in the Act on Special Measures: 1) the role of designated (local) public institutions which are transport business operators, 2) responses when a declaration of an emergency situation regarding Pandemic Influenza, 3) newly define industries and others that will be subject to legally specified prior vaccination, and 4) expanded the scope of the action plan to new infections diseases. Additionally, during overseas outbreak phase, cooperate with preventative measures to delay domestic epidemics as much as possible and when quarantine airports and harbor are aggregated, call for cooperation between airport and port administrators to ensure the aggregation goes smoothly and after the early phase of domestic outbreak, make transport requests for emergency supplies such as medical and food supplies in case of urgent need.