Cabinet Office
Japan

White Paper

Disaster Management in Japan 2015

Images: Prize-winning Works of the 30th Disaster Management Poster Contest

"The White Paper on Disaster Management is one of Japan's most noteworthy initiatives in the field of disaster risk reduction and management. Few countries publish such comprehensive reports on a regular basis. Other countries can learn from Japan's example and adapt this model to their own needs."

- Ms. Margareta Wahlstrom, the Special Representative of the United Nations Secretary-General for Disaster Risk Reduction/ Head of the United Nations Office for Disaster Risk Reduction (UNISDR)

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Foreword

The White Paper on Disaster Management in Japan was first published in 1963 pursuant to the Disaster Countermeasures Basic Act. This, the 53rd edition, was reported to the National Diet after cabinet approval on June 19, 2015.

This year's white paper highlights the Third UN World Conference on Disaster Risk Reduction (WCDRR), which was held in Sendai in March of this year. It was entitled the United Nations World Conference on Disaster Risk Reduction and Japan's International Cooperation on Disaster Risk Reduction. Ms. Margareta Wahlström, United Nations Special Representative of the Secretary-General for Disaster Risk Reduction, provided a message for this white paper.

This white paper looks at the revisions made to disaster countermeasures based on the heavy snows in February of last year, the landslide in Hiroshima in August, and the eruption of Mt. Ontake in September. It also provides information on the latest disaster risk reduction initiatives implemented by the national government, local governments, and community residents, and introduces a case study on an earthquake centered in northern Nagano Prefecture in which no casualties occurred thanks to mutual community support.

Even if we cannot eliminate the occurrence of natural hazards, we are confident that it is possible to mitigate disaster impacts using both the instinct to survive and the wisdom with which human beings are naturally equipped. In English, the Japanese terms *bosai* or *gensai* are translated as "disaster risk reduction," abbreviated DRR. At the last World Conference, we shared with the international community an important precept in Japan: "DRR is our DNA."

Based on the view that disaster countermeasures are never "costs," but rather investments in the future, the Government of Japan is wholeheartedly committed to achieving safe and secure living. We therefore intend to proactively request that all citizens of Japan maintain a reasonable awareness of natural threats, be well prepared in advance for the hazards they face, refuse to react to false alarms, and take actions to protect themselves from disasters.

We hope that all readers of this White Paper gain an understanding of Japan's disaster management efforts and cooperate even further in their implementation.

Eriko Yamatani
Minister of State for Disaster Management, Japan
July 2015

Message from the Special Representative of the United Nations Secretary-General for Disaster Risk Reduction for the White Paper on Disaster Management "*Bosai Hakusho* 2015"

Thanks to close cooperation between Japan and the United Nations, the Third United Nations World Conference on Disaster Risk Reduction (March 14-18) was successfully organized and concluded with positive outcomes. In particular, the Sendai Framework for Disaster Risk Reduction 2015-2030 adopted by Member States at the Conference provides a strong foundation for the continued work on reducing disaster risk and impacts for the coming 15 years. It is also an essential part of the Post-2015 Development Agenda and a clear boost for ongoing work on agreements later this year on climate and a new set of sustainable development goals.

Through hosting the World Conference now on three occasions, (Yokohama, 1994, Hyogo, 2005, and Sendai, 2015), Japan has demonstrated its strong commitment to disaster risk reduction and shared with the international community a wide range of lessons and good practices building on its own disaster experiences.

One of Japan's most noteworthy initiatives in the field of disaster risk reduction and management is the publication of this *Bosai Hakusho,* the White Paper on Disaster Management. This annual report provides comprehensive information including disaster losses and relevant data and statistics; updates on the progress of recovery and reconstructions from specific disasters; policies and measures for disaster management by disaster type; and insights into good practices on disaster risk reduction/ prevention at local/community level, and much more.

This White Paper is a well-established publication and few countries publish such comprehensive reports on a regular basis, totally dedicated to disaster risk management. This report helps us better understand how Japan has developed its disaster risk management policies and measures over a period of time. Other countries can learn from Japan's example and adapt this model of annual reporting to their own needs in the context of monitoring progress on implementation of the Sendai Framework for Disaster Risk Reduction, particularly under the four priority areas of action:

1: *Understanding disaster risk;*
2: *Strengthening disaster risk governance to manage disaster risk;*
3: *Investing in disaster risk reduction and resilience;*
4: *Enhancing disaster preparedness for effective response, and to "Build Back Better" in recovery, rehabilitation and reconstruction.*

The World Conference confirmed the importance of enhanced international cooperation and global partnership on disaster risk reduction. As the Head of UNISDR, I would like to extend our appreciation to Japan for its ongoing support and commitment to the area of disaster risk reduction and reiterate my strong wish that Japan will continue to work with various stakeholders in the international community and demonstrate leadership in the global efforts towards the achievement of the goals of the Sendai Framework for Disaster Risk Reduction.

Margareta Wahlström
The Special Representative of the United Nations Secretary-General
for Disaster Risk Reduction
Head of the United Nations Office for Disaster Risk Reduction (UNISDR)

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INTRODUCTION

The Third UN World Conference on Disaster Risk Reduction (WCDRR) was held in Sendai, Miyagi Prefecture from March 14 to 18, 2015, four years after the Great East Japan Earthquake. Over 100 ministers from 187 UN member states, including 25 heads of state and government, the Secretary-General of the UN, and the Administrator of the United Nations Development Programme (UNDP) participated, making it one of the largest UN conferences ever held in Japan. At the Conference, the Sendai Framework for Disaster Risk Reduction (SFDRR) 2015-2030 was formulated as a new initiative and guideline for disaster risk reduction (DRR). With this, the initiatives of the international community entered a new stage aimed at the further promotion of the mainstreaming of disaster risk reduction. In addition, related events were conducted such as symposiums and seminars on disaster risk reduction and recovery, exhibitions, a DRR Industry Exhibition ("*Bosai*" Industry Fair), study tours of disaster-affected areas, and post-conference excursions to various locations in the Tohoku region.

Through these initiatives, the Conference served to once again express Japan's gratitude to countries all over the world for the assistance received after the Great East Japan Earthquake, and allowed Japan to share the lessons learned and technologies Japan has developed through this and earthquake and other disasters. The Conference also presented the current state of recovery and efforts related to the Great East Japan Earthquake and provided an important opportunity to contribute to the promotion of disaster-stricken areas.

Part I of the White Paper on Disaster Management in Japan 2015 highlights the "United Nations World Conference on Disaster Risk Reduction and Japan's International Cooperation on Disaster Risk Reduction." It looks at the background leading up to the implementation of the third WCDRR, the nature of the discussions that were held there, and how the SFDRR will be promoted to achieve even greater mainstreaming of disaster risk reduction.

Part II, on the "Status of Disaster Management Measures in Japan," looks at the state of measures and policy initiatives with a particular focus on those implemented in FY 2014, including:

- A description of revisions to the Disaster Countermeasures Basic Act adopted in November 2014 based on the great number of abandoned cars and transportation blockages caused by delays in snow removal operations during the heavy snows of February 2014.
- A description of the revised content of and initiatives related to the Act on the Promotion of Sediment Disaster Countermeasures in Sediment Disaster Prone Areas, which was revised in November 2014 based on issues such as the numerous areas which were not designated as the sediment disaster hazard areas and which had not been subject to basic surveys, and the insufficient communication of the risks of sediment disasters to residents.
- A description of the Plan concerning Specific Emergency Countermeasures and Activities for a Nankai Trough Earthquake, which was formulated and established in March 2015 at the Officers' Meeting of the Central Disaster Management Council pursuant to Chapter 4 of the Basic Plan for the Promotion of Nankai Trough Earthquake Disaster Risk Reduction Countermeasures.
- A description of the revised content of the Basic Plan for the Promotion of Tokyo Inland Earthquake Emergency Countermeasures, which was revised and approved by the Cabinet in March 2015 pursuant to the Act on Special Measures against Tokyo Inland Earthquake.
- A description of the content of the "Report on Future Volcano DRR Promotion Based on Lessons from the Eruption of Mt. Ontake," which was compiled in March 2015 after the establishment and investigations of the Working Group for the Promotion of Volcano Disaster Prevention under the Central Disaster Management Council's Disaster Management Implementation Committee based on the large number of casualties caused by the eruption of Mt. Ontake in September 2014.

About the White Paper on Disaster Management in Japan

The White Paper on Disaster Management in Japan is a report designated by law to be drawn up and reported annually to the ordinary session of the Diet pursuant to the Disaster Countermeasures Basic Act. The White Paper was first published in 1963. This is the 53rd edition.

In addition to providing an overview of measures taken concerning disasters in the year before last (FY2013) and plans concerning disaster risk reduction for the current year (FY2015), each report features a theme based on the current state of DRR policies at the time it was written.

Part I:

The United Nations World Conference on Disaster Risk Reduction (DRR) and Japan's International Cooperation on DRR: Toward Mainstreaming DRR in International Society

Part I The United Nations World Conference on Disaster Risk Reduction (DRR) and Japan's International Cooperation on DRR: Mainstreaming DRR in International Society

Chapter I Background to the United Nations World Conference on Disaster Risk Reduction

On March 14–18, 2015, four years after the Great East Japan Earthquake, the Third United Nations World Conference on Disaster Risk Reduction (WCDRR) was held in Sendai, Miyagi Prefecture. The WCDRR is a conference to formulate global DRR strategy organized by the United Nations, and this was the third such conference to be held in Japan following the First WCDRR held in Yokohama in 1994, and the Second WCDRR held in Kobe, Hyogo Prefecture in 2005. At the Third UN WCDRR, the Sendai Framework for Disaster Risk Reduction 2015–2030 was formulated as the successor to the Hyogo Framework for Action (HFA), the international DRR policy formulated at the Second World Conference. This chapter outlines the developments leading up to the initial organization of the UN WCDRR, highlighting the discussions that have taken place as well as the initiatives that have been implemented over the course of the first three conferences.

Section 1: International Decade for Natural Disaster Reduction and the First UN World Conference on Natural Disaster Reduction

1-1 Establishment of the International Decade for Natural Disaster Reduction (IDNDR)

In 1971, the year after a cyclone in Bangladesh took the lives of approximately 300,000 people, international mechanisms were established in the field of emergency assistance to help respond to the natural disasters that occur all around the world. These included the United Nations Disaster Relief Organization (UNDRO), which was given the mission of coordinating efforts to improve the efficacy of disaster relief activities.

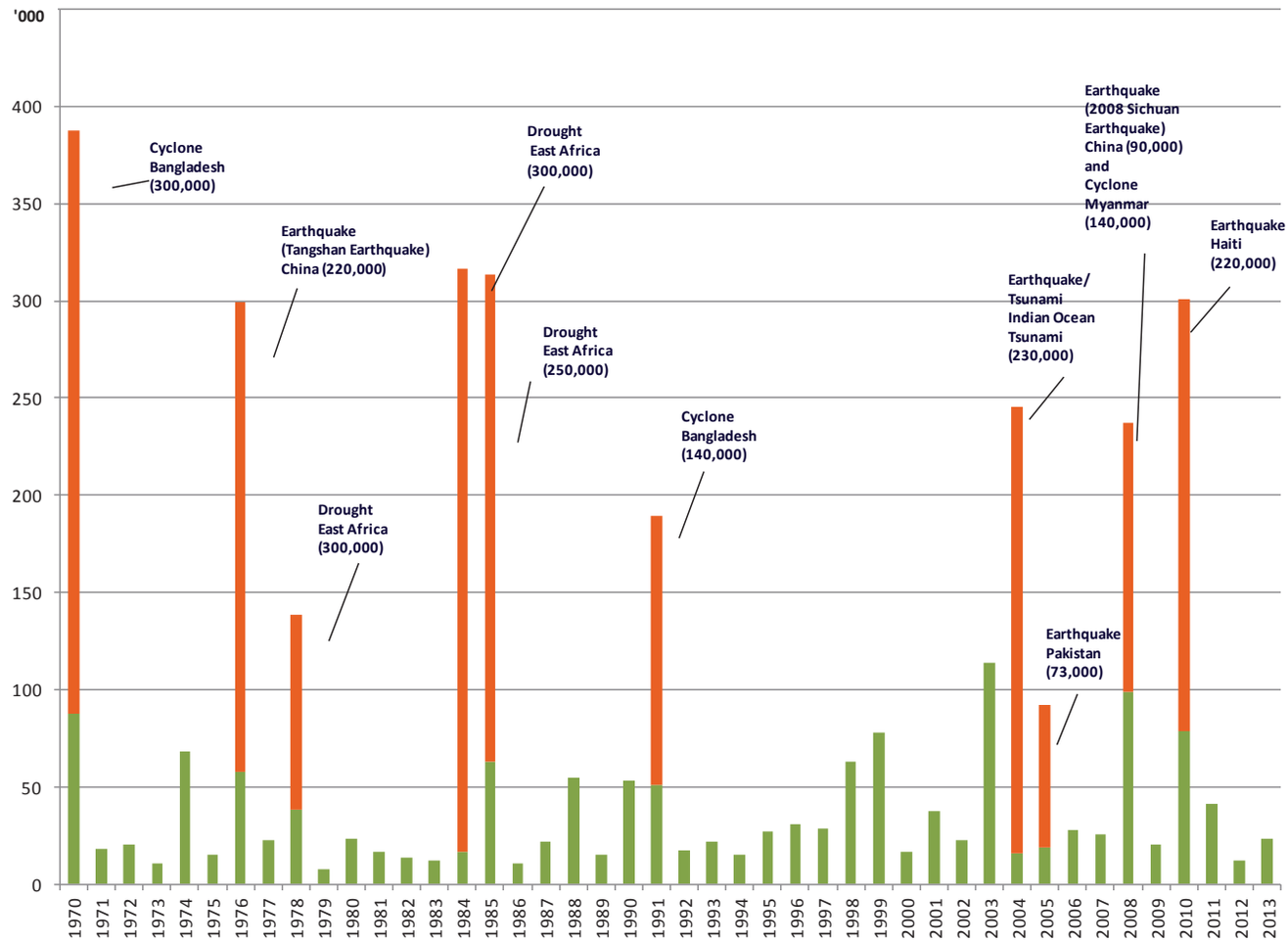
Subsequently, over the past 20 years, natural disasters have taken the lives of some 3 million people worldwide and caused more than $23 billion in direct damage. When drought conditions were threatening the lives of more than 20 million people in Africa, the United Nations passed a resolution in 1987 at the 42nd UN General Assembly declaring the 1990s the International Decade for Natural Disaster Reduction (IDNDR).

The objective of the IDNDR was to mobilize the knowledge of the international community in efforts to mitigate the damage caused by disasters before those disasters occur. In other words, the IDNDR sought to shift the focus of the international community from efforts mainly devoted to emergency response and recovery after a disaster, to efforts conducted before disasters, designed to mitigate the damage from natural disasters in developing countries.

Japan, which experienced massive disasters after World War II and established its own DRR framework to mitigate damage from natural disasters, played a leading role in establishing the IDNDR. For example, Japan jointly presented the resolution to the UN General Assembly together with Morocco, which represented the African region where drought and desertification were inflicting severe damage in the 1980s.

The direction of IDNDR activities was defined in a 1989 resolution of the UN General Assembly. This led to the designation of the International Day for Disaster Reduction (the second Wednesday in October, subsequently made October 13 each year). Disaster risk reduction and prevention measures were implemented in countries around the world with international cooperation, and the IDNDR secretariat was established in Geneva. In Japan, the Headquarters for the IDNDR was set up in 1989, headed by the prime minister, to put in place a framework for the promotion of these activities.

Fig. I-1-1 Trends in the Number of Fatalities and Missing Persons Attributed to Natural Disasters Worldwide Since 1970



Source: Analysis by the Asian Disaster Reduction Center based on the EM-DAT (D. Guha-Sapir, R. Below, Ph. Hoyois - EM-DAT: International Disaster Database – www.emdat.be – Université Catholique de Louvain – Brussels – Belgium). The number of fatalities and missing persons.

Note: ■ Indicates the number of fatalities caused by the largest disaster in the year.

1-2 The First UN World Conference on Natural Disaster Reduction and the Promotion of the Yokohama Strategy

In 1994, the First UN World Conference on Natural Disaster Reduction was held in Yokohama City, Japan. At that event, programs that had been conducted by the international community at this midway point in the IDNDR were evaluated, and the Yokohama Strategy and Plan of Action for a Safer World: Guidelines for Natural Disaster Prevention, Preparedness and Mitigation ("Yokohama Strategy") were adopted as the outcome document. The objective was also to draft global DRR action guidelines for the latter half of the decade and beyond.

Stating that "Sustainable economic growth and sustainable development cannot be achieved in many countries without adequate measures to reduce disaster losses by development of disaster resilient societies and disaster prevention and preparedness," the Yokohama Strategy defined the principles of risk assessment, disaster risk prevention, and emergency response preparations as well as strategy and action plans at each level for the year 2000 and beyond.

Fig. I-1-2 Outline of the Yokohama Strategy

Yokohama Strategy and Plan of Action for a Safer World (Yokohama Strategy)

I. Basis for the Strategy

Sustainable economic growth and sustainable development cannot be achieved in many countries without adequate measures to reduce disaster losses by development of disaster resilient societies and disaster prevention and preparedness

II. Principles

- **Risk Assessment is a required step for the adoption of adequate disaster reduction policies and measures**
- **Disaster prevention and preparedness are of primary importance in reducing the need for disaster relief, etc.**

III. Strategy for the Year 2000 and beyond

- **Development of a global culture of prevention, capacity building in each disaster vulnerable country and community, education and training in disaster prevention, preparedness, and mitigation, networking so as to enhance disaster prevention, reduction and mitigation activities, more active and constructive role of media, improved risk assessment, etc.**

IV. Plan of Action

(Activities at the community and national levels)

(Activities at the regional and sub-regional levels)

Establishing or strengthening of sub-regional or regional centres for disaster reduction and prevention which, with a view to enhancing national capabilities, would perform the functions of collecting and disseminating documentation and information for disaster reduction, human resource development, supporting and strengthening natural disaster reduction mechanisms

(Activities at the international level)

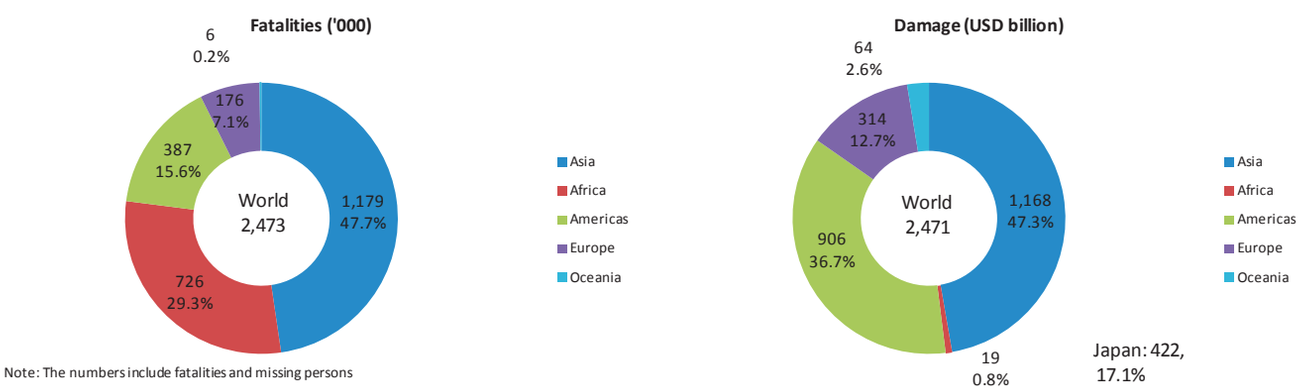
Source: Cabinet Office

The Yokohama Strategy called for the establishment of DRR departments in each country and cooperative frameworks at the regional level. As a result, the Asian Disaster Reduction Center (ADRC) was established in Kobe City, Hyogo Prefecture, Japan.

The ADRC was established in Kobe in July 1998 after ministerial-level talks and meetings of experts with other Asian countries to share the lessons of disasters in Japan with the Asian region, including the lessons of the Great Hanshin–Awaji Earthquake of 1995.

Asia accounts for about half of the damage inflicted by disasters around the world in terms of both human casualties and economic damage. It is essential that countries in this region cooperate to reduce disaster risks while relating experiences of disasters common to the region such as earthquakes, tsunamis, and typhoons.

Fig. I-1-3 Regional Distribution of Worldwide Disasters



Note: The numbers include fatalities and missing persons

Source: Analysis by the Asian Disaster Reduction Center of data from 1984 to 2013 based on the EM-DAT (D. Guha-Sapir, R. Below, Ph. Hoyois - EM-DAT: International Disaster Database – www.emdat.be – Université Catholique de Louvain – Brussels – Belgium).

Section 2: Establishment of the UNISDR and the Second UN World Conference on Disaster Reduction

While the IDNDR was reaching its conclusion at the end of 1999, natural disasters continued to inflict damage. The UN launched the International Strategy for Disaster Reduction (ISDR) in 2000 to pass down the outcomes of the IDNDR and tackle the issues that remained. In addition, it established the Inter-Agency Task Force to coordinate a range of DRR activities within UN systems as well as the Inter-Agency Secretariat to serve as a secretariat.

In 2003, the UN General Assembly resolved to hold the Second UN World Conference on Disaster Reduction with the objective of updating the Yokohama Strategy to serve as a 21st century DRR framework. The conference was held in Kobe City, Hyogo Prefecture, from January 18-22, 2005, precisely 10 years after the Great Hanshin-Awaji Earthquake. More than 4,000 people participated in the conference from 168 UN Member States (including 42 government ministers or higher-level officials), international organizations, non-governmental organizations, and other groups. Forums open to the general public held as part of the conference were attended by more than 40,000 people, primarily ordinary citizens.

As the outcome of the second World Conference, the Hyogo Framework for Action 2005−2015: Building the Resilience of Nations and Communities to Disasters (HFA) was formulated. The HFA set the goal of achieving substantial reductions in losses of life, as well as in losses of social, economic, and environmental assets, from disasters, and defined five priorities for action to be implemented over 10 years to achieve this. Furthermore, the conference issued a joint declaration on creating an early warning system for tsunamis following the massive tsunami in the Indian Ocean that struck on December 26, 2004, just before the conference.

Fig. I-1-4 **Component of Hyogo Framework for Action (HFA)**

Hyogo Framework for Action 2005-2015
-Building the Resilience of Nations and Communities to Disasters-

[Expected Outcome]
The substantial reduction of disaster losses, in lives and in the social, economic and environmental assets of communities and countries

[Three Strategic Goals]
a) The integration of disaster risk reduction into sustainable development policies and planning
b) The development and strengthening of institutions, mechanisms and capacities at all levels, in particular at the community level, that can contribute to building resilience to hazards
c) The systematic incorporation of risk reduction approaches into the implementation of emergency preparedness, response and recovery programmes

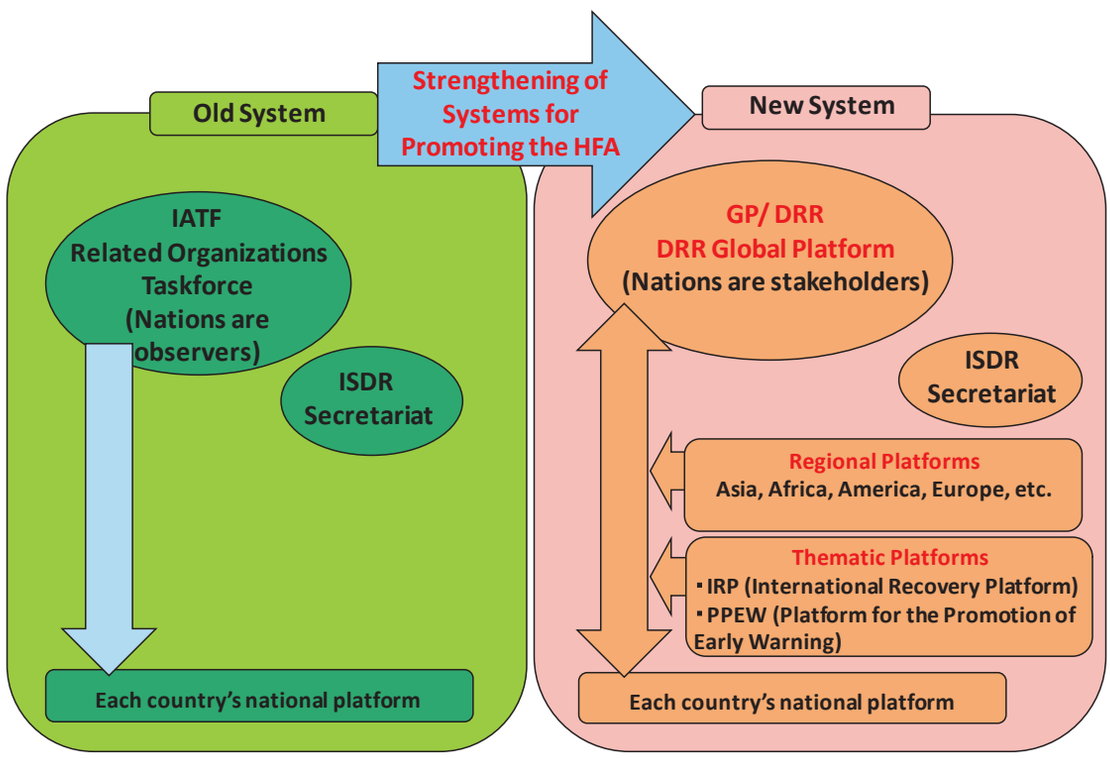
[Five Priorities for Action]
1. Ensure that disaster risk reduction (DRR) is a national and a local priority with a strong institutional basis for implementation
Creation of National institutional and legislative frameworks, etc.
2. Identify, assess and monitor disaster risks and enhance early warning
National and local risk assessments (Development of risk maps, Development of systems of indicators of disaster risk), etc. and vulnerability
3. Use knowledge, innovation and education to build a culture of safety and resilience at all levels
Information exchange, research, public awareness (engagement of media, sustained public education campaign), etc.
4. Reduce the underlying risk factors
Improvement of earthquake resistance of the important public facilities and infrastructure, etc.
5. Strengthen disaster preparedness for effective response at all levels
Preparation of contingency plans and policies at all levels, promotion of disaster preparedness exercises, etc.

Source: Cabinet Office

Following this, experts began taking into account ways to make the HFA a more efficient framework. The promotional framework up to this point consisted of the Inter-Agency Task Force, primarily made up of international organizations, and the respective promotional frameworks in each country. The UN member states took the lead in deciding on a direction for HFA promotion. The next challenge was to figure out how to disseminate this goal to regions around the world. Therefore, the promotional framework was reorganized into the Global Platform (GP) for Disaster Risk Reduction comprised of the members of the Inter-Agency Task Force and UN Member States. In addition, regional platforms to discuss HFA activities in each region (held in various regions the year after the GP) and platforms on individual DRR themes were established to create a framework that enabled cross-cutting discussions at the national, regional, and global levels. The International Recovery Platform (IRP), a platform to gather and globally communicate wide-ranging knowledge on recovery and reconstruction, launched activities in May 2005 in Kobe City, Hyogo Prefecture, with support from the Japanese government (described in detail in Chapter 3). Since its first meeting in June 2007, the GP has been held once every two years in Geneva.

In addition, the new post of Special Representative of the Secretary-General (SRSG) for Disaster Risk Reduction was created in 2008, with Ms. Margareta Wahlström appointed to serve as the first SRSG for DRR. UNISDR regional offices were established in Nairobi, Panama, Bangkok, and other locations to manage regions, and the UNISDR Hyogo Office was opened in 2007 in Kobe City, Hyogo Prefecture.

Fig. I-1-5 **Strengthening of Systems for Promoting the HFA**



Source: Cabinet Office

Section 3: The Progress and Challenges of Initiatives Based on the HFA

3-1 Progress of Initiatives Based on the HFA

The UNISDR is monitoring the progress of the initiatives implemented by various countries based on the HFA. Disaster management organizations and systems have been established in each country, including developing countries based on Priority Action 1, "Ensure that disaster risk reduction is a national and a local priority with a strong institutional basis for implementation." Based on Priority Action 5, "Strengthen disaster preparedness for effective response at all levels," disaster response systems, including early warning systems, have been strengthened. There is clearly a growing trend toward using the fruits of scientific and technical advances in DRR.

The following two cases illustrate these types of advances in DRR measures.

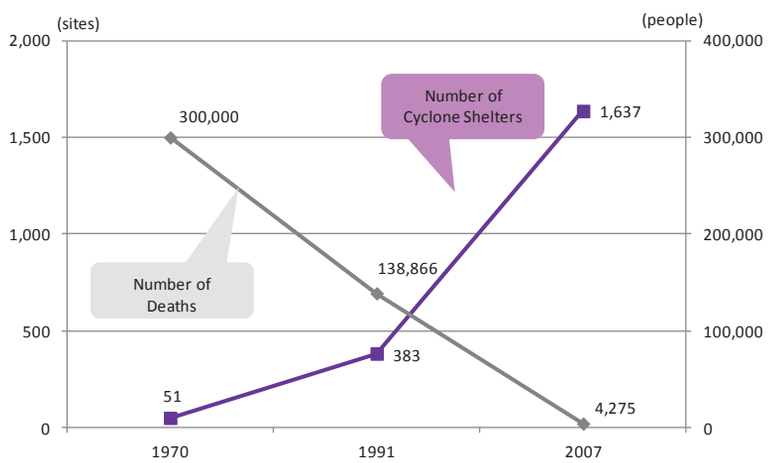
(1) Indian Ocean Tsunami Warning System Development

After the tsunami that struck in the Indian Ocean in December 2004, the UNESCO Intergovernmental Oceanographic Commission (IOC) moved ahead in building the Indian Ocean Tsunami Warning System. The Japanese government (Japan Meteorological Agency) lent technical support to building the Indonesian government's tsunami warning system and actively contributed to building the system in other ways such as by sending experts to various trainings. Following these activities, official operations of a tsunami warning system in the Indian Ocean were launched in October 2011, and a system was built to allow the release and sharing of information by three institutions: the Australian Bureau of Meteorology, the Indian National Center for Ocean Information Services, and the Indonesian Badan Meteorologi, Klimatologi, dan Geofisika (BMKG).

(2) Progress on Bangladeshi Cyclone Measures

Bangladesh has experienced large cyclones in the past, with a cyclone in 1970 leaving 300,000 people dead or missing. Following this, the country set up cyclone evacuation shelters and held corresponding evacuation drills using grant aid from Japan. Damage in human terms has been substantially reduced through these efforts, as exhibited by the fact that a 1991 cyclone caused slightly fewer than 14,000 casualties, and a 2007 cyclone caused slightly fewer than 5,000 casualties.

Fig. I-1-6 **Trend in Cyclone Shelters Construction and Cyclone Victims in Bangladesh**



Cyclone Shelter

Source: "JICA's Cooperation on Disaster Management Toward Mainstreaming Disaster Risk Reduction - Building Disaster Resilience Societies-", March 2015, Japan International Cooperation Agency (JICA)

3-2 Disaster Risk Reduction Challenges Since 2005

As described above, progress has been seen in countries' DRR initiatives based on the HFA. However, according to a UNISDR assessment, initiatives under Priority Action 4, "Reduce the underlying risk factors," have fallen relatively behind. One background factor cited was the increasing trend in disaster risks worldwide.

One approach to natural disaster risks suggests that these risks are determined by the interaction of the three elements of hazard, vulnerability, and exposure. Traditional DRR measures attempt to reduce vulnerability; in short, improving physical and non-physical conditions before a disaster occurs (such as seismic retrofitting and DRR education), and conducting relief and rescue activities after a disaster occurs. These types of activities to reduce vulnerability were being done under the HFA, but a greater concern is the issue of exposure. The population exposed to hazards has grown due to increasing urbanization, and a disaster in one country or region now affects economic activities in other countries because supply chains have grown to extend across a wider area due to globalization. There is also concern that hazards themselves, external forces created from natural phenomena, are increasing. As a result of climate change, tropical cyclones will increase in strength and sea levels will continue to rise over the long term, and this will lead to more frequent destructive storm surges and an increase in hazards themselves.

The following sections examine the factors that are exacerbating these disaster risks using recent disaster examples.

(1) The Advancement of Urbanization

According to the 2014 Revision of World Urbanization Prospects, released by the Population Division of the United Nations Department of Economic and Social Affairs in 2014, more people live in urban areas than in rural areas globally. The proportion of the world population living in urban areas was 30% in 1950, grew to 54% in 2014, and is predicted to increase to 66% in 2050.

Urbanization in developing countries is at times forcing newer urban dwellers to live in regions and conditions vulnerable to disaster, such as slum districts that have formed in cities. In addition, especially in the case of a large disaster in a capital city that affects governing functions, disaster response measures and restoration efforts will also face impediments, which may greatly exacerbate the damage.

This situation first became evident in the 2010 earthquake in Haiti. A magnitude 7.0 earthquake struck approximately 15 km west-southwest of Haiti's capital of Port-au-Prince on January 12 at 4:53 pm local time. The scope of the damage extended beyond Port-au-Prince to Léogâne, a suburb approximately 30 km west of Port-au-Prince, Jacmel, approximately 120 km to the south, Carrefour, and other outlying major cities of the country. The earthquake caused approximately 316,000 fatalities, injured approximately 310,000 persons, destroyed 105,000 houses, and damaged 208,000 more homes. In the capital of Port-au-Prince, key infrastructure including electricity, water, and telephone service, as well as government buildings including the Presidential Palace, suffered major damage. Administrative functions were crippled, impacting the initial disaster response as well as economic activities. In addition, urban sprawl had given rise to unplanned residential areas creeping up steep hillsides and the formation of large slums not serviced by urban infrastructure in the suburbs, and these were factors that also exacerbated the earthquake's damage.

(2) Ongoing Globalization

Given the increasing international division of industrial production around the globe, a disaster in one country disrupts the entire supply chain and creates a situation that affects other countries' economic activities. As Japanese manufacturers and other foreign companies develop their businesses overseas in East Asia, including Southeast Asia, and actively engage in sales and procurement activities, the international division of production is becoming more developed, and a trade structure has formed in which intermediate goods are traded within the region and final goods are exported out of the region. Given this, the 2011 floods that occurred in Thailand seriously impacted trade conditions in neighboring countries and the region, including Japan.

Starting in May 2011, heavier-than-average rains continued to fall over an extended period of time in Thailand, causing the Chao Phraya River, which runs through the Thai capital of Bangkok, to overflow its banks. This resulted in widespread flood damage from Bangkok to northern Thailand for an extended period of time. Due to the flooding, seven industrial parks in Ayutthaya Province, where many Japanese companies are based, experienced flooding starting in October of that year. This seriously impacted a wide swath of the supply chain for automobiles, electronics, and other industries inside and outside of Thailand. The economic activities of neighboring countries and the region, including Japan, were severely affected both directly and indirectly. In the field of automobile production, for example, Thailand serves as a network hub for automotive parts supplied to ASEAN and other countries. The flood damage caused a sharp decline in Thai production of these intermediate goods, which in turn put downward pressure on assembly and other aspects of automobile production in neighboring countries and the region. In Japan, too, the volume of automobile production fell.

(3) Changing Meteorological Disasters

As experts have continued to study future disaster risks and the long-term impacts of climate change, there has been an increasing focus on climate disaster risks, especially for small island nations considered to be most vulnerable to those impact. According to the Fifth Assessment Report compiled by the Intergovernmental Panel on Climate Change (IPCC) in 2014, many extreme weather events and changes in climate phenomena have been observed since 1950. There is likely to be an increase in the number of heavy precipitation events in continental areas, higher flood risk on a regional scale, and more frequent extreme high tides like those experienced during storm surges. The assessment pointed out that many human systems are gravely vulnerable to the current climate variability and are exposed to risk. While it is not necessarily clear how these long-term changes in climate systems are affecting actual climate disasters, this white paper will survey the climate disaster risks by reviewing large-scale climate disasters that have occurred in recent years.

*Hurricane Sandy (USA, 2012)

Hurricane Sandy, which struck the US at the end of October 2012, resulted in widespread damage caused by strong winds as well as severe storm surge damage along the northeastern coast, including New York City. When Sandy made landfall in the US, its hurricane intensity was Category 1 (5 being the strongest), but its landfall coincided with high tide. This resulted in a storm surge exceeding 4 m in New York City. Damage to buildings and the flooding of underground subway tunnels and stations, electrical substations, and other facilities suspended operations of transportation, water, and power lifelines. This caused fuel shortages and a chain reaction of other damage. Based on the lessons of Hurricane Katrina (a Category 3 storm at landfall), which caused massive damage in 2005, the US began implementing extensive DRR measures before the hurricane made landfall. Efforts were made to dispatch federal emergency management personnel without waiting for requests from relevant local governments and to distribute water, food, blankets, and other relief supplies. Nevertheless, the massive storm surge itself could not be avoided. Based on the lessons of Sandy, the following year in June 2013, New York City formulated and released PlaNYC, its long-term disaster management plan. This plan predicts that New York City will experience rising sea levels by 2050 and along with this, more frequent storm surges, damage across a wider area, and higher damage costs when flooding occurs. As countermeasures, the plan clarifies the policy on facilities improvements and DRR measures for the city as a whole, including the protection of coastal areas, flood protection measures for buildings, and the use of insurance.

*Typhoon Haiyan (Philippines, 2013)

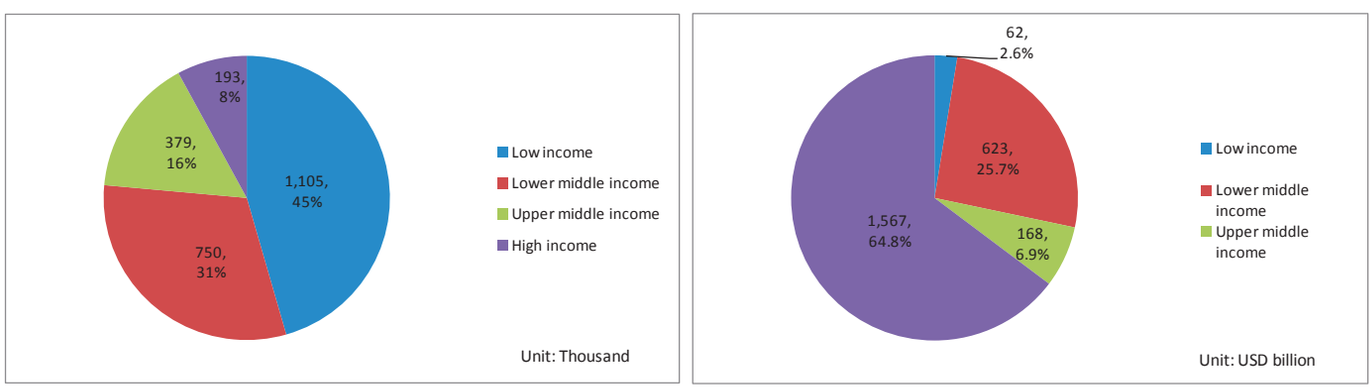
Typhoon Haiyan, which struck in November 2013, made landfall in the central Philippines. The city of Tacloban, the urbanized city on the island of Leyte, and other areas experienced strong winds and a storm surge reaching 5–6 m, resulting in more than 6,000 fatalities and severe damage. Typhoon Haiyan continued to gain strength as it approached the Philippines, and its central pressure just before making landfall reached 895 hPa (the same level as the powerful Isewan Typhoon that struck Japan in 1959), causing a storm surge of massive proportions. The Philippines' disaster management authority urged citizens to evacuate in preparation for the storm surge, but many residents did not understand what the term "storm surge" meant, even if they were familiar with tsunamis, and there were many reports of delayed evacuations. Based on the lessons of Typhoon Haiyan, the government of the Philippines has set goals for the rigorous implementation of comprehensive land-use planning and efforts to ensure advance evacuation.

3-3 Disaster Risk Reduction Challenges in Developing Countries: The Vicious Cycle of Disasters and Poverty

The total number of fatalities worldwide from natural disasters over the past 30 years (1984–2013) is approximately 2.48 million. Of these, about half are concentrated in low-income countries, and about 30% are concentrated in lower middle-income countries. This illustrates the negative correlation between lower national incomes and higher natural disaster fatalities.

Looking at damage in terms of value, approximately 65% is concentrated in high-income countries. However, as is shown in Fig. I-1-8, which compares damage to GDP, a single disaster in a low- or middle-income country can result in economic damage valued at more than 20% of that country's annual GDP. In one case, the damage even exceeded the country's annual GDP. For example, in addition to the damage in Port-au-Prince caused by the 2010 earthquake in Haiti, the damage also extended to major urban areas in its suburbs. Thus, the economic damage inflicted on Haiti was valued at approximately 1.2 times its GDP. The size of this impact can be better understood in comparison with wealthier nations: the economic damage from Hurricane Katrina in the US in 2005 was 1% of GDP, while that caused by the Great East Japan Earthquake in Japan was 3.5% of GDP.

Fig. I-1-7 **The Number of Deaths (left) and Economic Damage (right) by Natural Disasters Disaggregated by National Per Capita Income**



Source: Data from 1984-2013, developed by the Asian Disaster Reduction Center based on the EM-DAT

Fig. I-1-8 **Damage as a Percentage of GDP Caused by Recent Natural Disasters**

World Bank's Income Group	Country	Year	Disaster Type	Damage (USD billion)	GDP (USD billion)	Damage/GDP (%)
Low	Tajikistan	2008	Extreme Temperature	0.84	3.72	23%
	Haiti	2010	Earthquake	8.00	6.48	123%
	Samoa	2012	Cyclone	0.13	0.64	20%
Lower Middle	Guyana	2005	Flood	0.47	0.79	59%
	Guyana	2006	Flood	0.17	0.82	21%
Upper Middle	Chile	2010	Earthquake	30.00	171.96	17%
	Thailand	2011	Flood	40.00	318.52	13%
High	USA	2005	Hurricane	125.00	12274.90	1%

Japan

Disaster	Year	Damage (JPY)	GDP (JPY)	Damage/GDP(%)
Great Hanshin-Awaji Earthquake	1995	approx. 9.6 trillion	496 trillion	1.9%
Great East Japan Earthquake	2011	approx. 16.9 trillion	482 trillion	3.5%

Source: Developed by the Asian Disaster Reduction Center based on the EM-DAT
*For the GDP and income grouping, we used figures and groupings from the year prior to the year of the disaster.

This economic damage from natural disasters is a major impediment to sustainable development in developing countries. To achieve sustainable development in developing countries, urgent efforts are needed to reduce disaster damage by reducing social vulnerability to disasters, as well as exposures to hazards taking into consideration development policy.

Chapter II The Third UN World Conference on Disaster Risk Reduction (WCDRR)

This chapter discusses the Third UN World Conference on Disaster Risk Reduction, including the preparation process, conference overview, outcome documents, and special features.

Section 1: Preparations for the Third WCDRR

1-1 UN-Led Preparations

In May 2011, about two months after the Great East Japan Earthquake, the Third Session of the Global Platform for Disaster Risk Reduction was held in Geneva, Switzerland. The State-Minister of the Cabinet Office attended from Japan and communicated that Japan was prepared to host the Third UN World Conference on Disaster Risk Reduction (WCDRR). The following year on July 3-4, 2012, Japan held the World Ministerial Conference on Disaster Reduction in Tohoku, whose theme was "Wisdom of the World to the Disaster-Affected Areas: Lessons of the Disaster-Affected Areas to the World," in the three disaster-affected prefectures. In December of the same year, it was decided at the 67th session of the UN General Assembly that the Third UN WCDRR would be held in Japan in early 2015. In the following year, 2013, Japan selected the conference location based on a request for proposals. The city of Sendai was chosen as the conference venue at a Cabinet meeting that May. At the 68th session of the UN General Assembly in December 2013, the goals of the World Conference were set, namely, the completion of the evaluation of HFA efforts and the formulation of a Post-2015 DRR framework. Decisions were also made regarding the preparation process, dates, and location of the conference.

Milestones in the conference preparation process were agreed upon at the Preparatory Committee Meetings (PrepCom) attended by all UN Member States and held in Geneva in July and November of 2014, which approved the Conference structure and procedures. The Bureau was established as the steering organization for the PrepCom in March 2014, comprised of representatives from 10 member states in five regions as well as the host country, Japan, and preparations for the PrepComs began.

In April 2014, Regional Platforms began to be held to wrap up the respective HFA activities in Central Asia, Africa, the Americas, Pacific states, Asia, Europe, and Arab states, as well as to discuss the development of a post-2015 DRR framework. The Asian Region Platform (the 6th Asian Ministerial Conference on DRR) was held in Bangkok in June 2014. The status of HFA implementation in Asia and the future direction of DRR were discussed, with the Bangkok Declaration on Disaster Risk Reduction in Asia and the Pacific 2014 adopted as the outcome document. The Government of Japan sent the State-Minister of the Cabinet Office to attend these Regional Platforms, and requested that countries participate in the World Conference at the highest level possible. In July, the Government of Japan organized a symposium around the theme of "Mainstreaming Disaster Risk Reduction into Development" at a meeting of the United Nations Economic and Social Council (ECOSOC) in New York. It also held a panel exhibit to share with the world the status of recovery in the regions affected by the Great East Japan Earthquake.

On July 14-15, the First PrepCom was held in Geneva. The Japanese government provided inputs into a new DRR framework and, as the host country, reported on the progress of preparations to hold the World Conference in Sendai. Work on drafting a post-2015 framework for DRR, the outcome document of the World Conference, began in September in Geneva, with the ambassadors of Thailand and Finland serving as co-chairs of the Bureau and facilitating the process.

The second PrepCom was held on November 17-18 in Geneva. Drafts of a new DRR framework, which had up to that point been discussed only in closed-door meetings, were reviewed, and the implementation procedure of the main conference was approved. Discussions of the new DRR framework drafts continued, with negotiations continuing in Geneva through December and January. There were also discussions of a political declaration, which Japan drafted as the facilitator. These drafts were discussed at the third PrepCom, held on March 13, 2015, the day before the World

Conference, leading to continued negotiations during the Conference.

Intergovernmental Preparatory Committee Meeting

1-2 Preparations in Japan

National Preparatory Meetings for the Third WCDRR were held to investigate Japan's proposal for a new DRR framework, the current state of recovery from the Great East Japan Earthquake, and mechanisms for the sharing of Japan's expertise, including the lessons learned from previous disasters. These meetings were attended by scholars, disaster-related organizations, and local governments in the disaster-stricken areas of Tohoku, among others, and were held five times starting in February 2014. Building on the results of these discussions, the Japanese government proposed a new DRR framework to the PrepCom in Geneva and positioned proposals in the outcome document including prior DRR investment, the concept of "Build Back Better," and the development of DRR systems that incorporate the participation of multi-stakeholders.

In the City of Sendai, the Sendai Committee for the WCDRR was established. It was comprised of representatives from Sendai City, Tohoku University, the local business community, the Government of Japan, the six prefectures of the Tohoku region, and other relevant organizations. The committee coordinated with local interested parties and governments to investigate the implementation of such matters as support for the Conference, related programs, welcome events, and projects to highlight the appeal of the City of Sendai and the Tohoku region.

Related events included a symposium on women's participation and leadership in DRR and recovery, meetings on disaster risk reduction and mitigation by the Science Council of Japan, and the International Recovery Forum (a 20th anniversary project of the Great Hanshin-Awaji Earthquake), and these gatherings all featured discussions on the Third WCDRR. The Cabinet Office and the Ministry of Foreign Affairs also co-sponsored a multi-sector DRR symposium together with the Japan CSO Coalition for 2015 WCDRR (JCC2015) and gathered opinions from citizens on relevant topics.

Logo of the Third World Conference on Disaster Risk Reduction

UN World Conference on
Disaster Risk Reduction
2015 Sendai Japan

This logo is a stylized image of people joining hands to create a chain of action towards building disaster resilience. The five colors of the logo represent the five priorities of the HFA.

Initiatives in Japan's Scientific Community in Preparation for the Third WCDRR

In November 2014, 30 scientific associations engaged in disaster risk reduction and mitigation in Japan jointly held a forum on the International Mobilization of Experiences from the Great East Japan Earthquake and the Great Hanshin-Awaji Earthquake and released a joint declaration on global DRR.

(Logos of the 30 scientific associations)

In January 2015, the Science Council of Japan held the Tokyo Conference on International Study for Disaster Risk Reduction and Resilience, inviting world leaders and top-class researchers participating in the Third WCDRR to discuss the concept of DRR science and technology that achieves both disaster risk reduction and sustainable development. The Tokyo Statement was adopted during the conference with a view to the Third WCDRR.

Overview of the Tokyo Statement

- Assessment of the present status (increasing losses/complexity, insufficient application of scientific knowledge and technology in DRR, the need to integrate DRR and sustainable development)
- Key directions (policymakers and practitioners should be fully aware of the latest scientific knowledge on disasters, application of science and technology in national DRR platforms, collaboration between earth environmental sciences and global earth observations)
- Findings and recommendations (common methodology on data collection and economic analysis of disasters, enhanced numerical pre-assessments of damage by hazard, sharing of DRR best practices based on scientific findings)
- Concrete initiatives (empowering national platforms to practice evidence-based DRR, enhanced forecasting and visualization capabilities of new risks, enhanced collaboration among related organizations, formation of an international network)

Section 2: Overview of the Third WCDRR

2-1 Overview of the Conference and Implementation Structure

(1) Overview of the Conference

The Third WCDRR was held in Sendai City, Miyagi Prefecture, from March 14-18, 2015, four years after the Great East Japan Earthquake. More than 6,500 people participated, including representatives from 187 UN Member States, international organizations, and accredited NGOs (also, more than 100 ministers, including 25 heads of state, the UN Secretary-General, and the UNDP Administrator). More than 150,000 people attended all related conference events, making this one of the largest UN-led international meetings to be held in Japan.

Eriko Yamatani, the Minister of State for Disaster Management, served as the president of the Conference. The conference program included the Plenary Sessions (featuring statements from each of the participating countries), Ministerial Roundtables (five sessions), High Level Partnership Dialogues (three sessions), and Working Sessions (34 sessions).

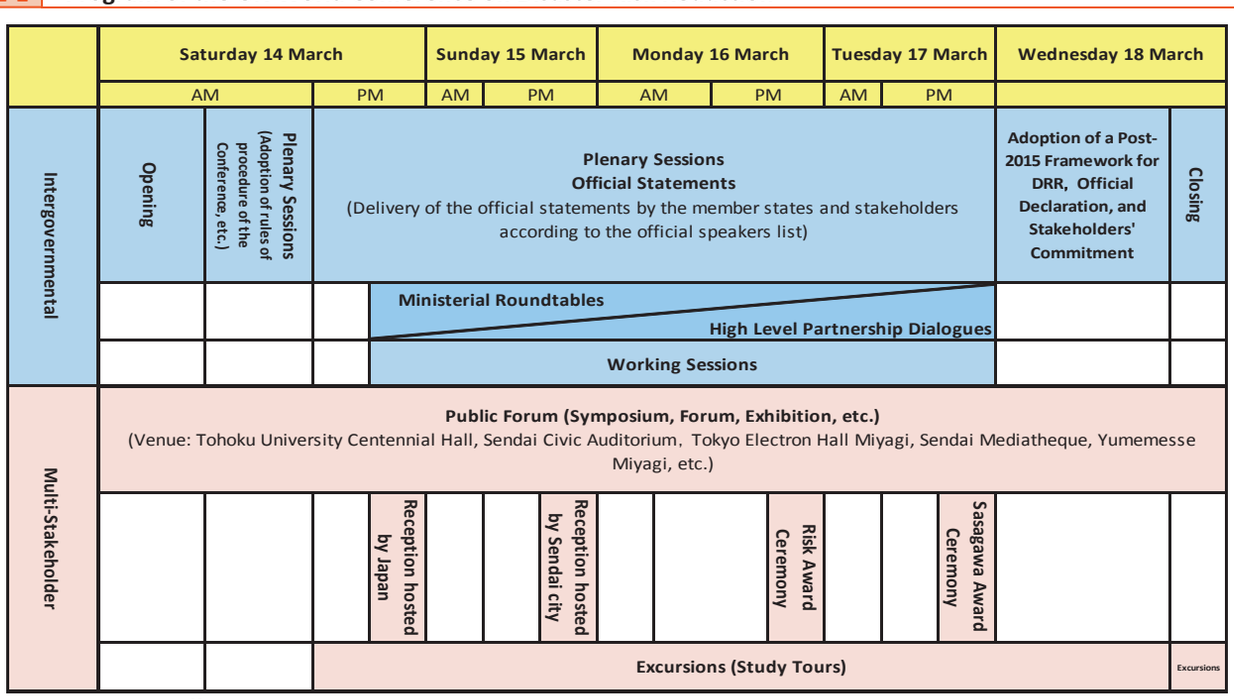
Outcome documents of the Conference include the Sendai Framework for Disaster Risk Reduction (SFDRR) 2015–2030, the successor framework to the Hyogo Framework for Action (HFA) 2005–2015, which was adopted at the Second WCDRR, as well as the Sendai Declaration, which expresses the resolution to promote the new framework.

Related events included approximately 400 symposiums and seminars and 200 exhibits on disaster risk reduction and recovery, the "*Bosai*" Industry Fair, featuring 160 company and organization participants, study tours of disaster-stricken areas, and post-conference excursions to various locations in the Tohoku region. Through these activities, the World Conference provided a venue where Japan could once again express its appreciation to all countries for the support it received after the Great East Japan Earthquake and to share the lessons learned and technologies gained through this earthquake as well as the many other disasters Japan has experienced. The events were also important opportunities for Japan to communicate the status of recovery and projects in the regions affected by the Great East Japan Earthquake and to help promote the disaster-affected regions.

(2) Implementation Structure

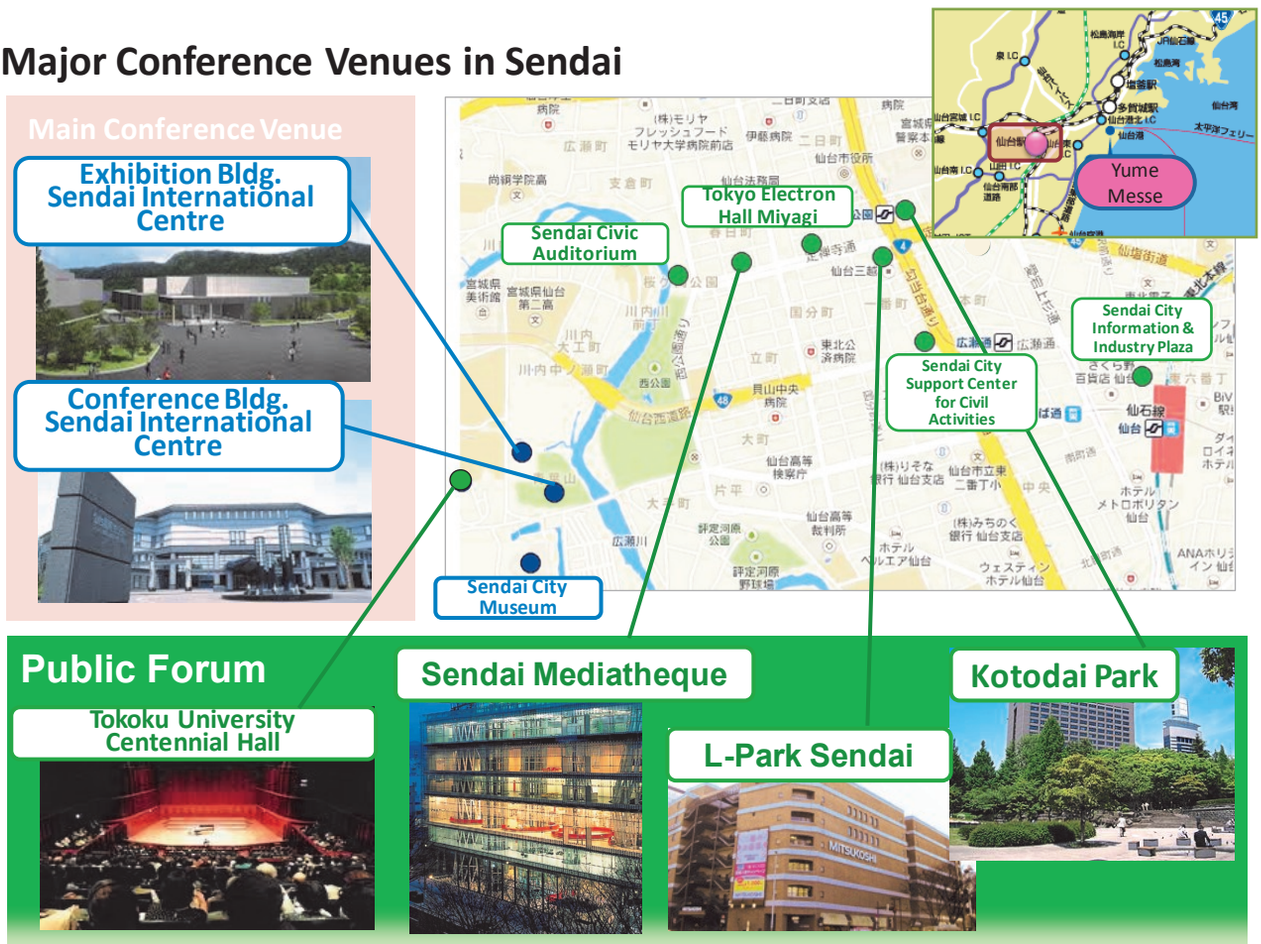
The Third WCDRR was an UN-led conference, and the UNISDR served as the secretariat for the UN side. The Cabinet Office and the Ministry of Foreign Affairs served as the secretariat for Japan as the host country, handling the conference logistics. They worked with the relevant government agencies to examine the new DRR framework and they participated in the main conference and its related events. In the City of Sendai, the Sendai Committee for the WCDRR was established. It was comprised of representatives from Sendai City, Tohoku University, the local business community, the Government of Japan, the six prefectures of the Tohoku region, and other relevant organizations. The Sendai Committee investigated and managed the implementation of such matters as support for the Conference, related programs, welcome event, and projects to highlight the appeal of the City of Sendai and the Tohoku region.

Fig. I-2-1 **Program of the UN World Conference on Disaster Risk Reduction**



Source: Cabinet Office

Fig. I-2-2 Location of the Major Venues of the WCDRR



*Some related events were held in Aomori Prefecture, Iwate Prefecture and Fukushima Prefecture.

Source: Cabinet Office

Fig. I-2-3 Major Meetings and Sessions During the WCDRR

Session Title	Schedule	Theme
Official Plenary Session	Mar. 14-17 (Sat.-Tues.)	Official statements by Member State delegations, international organizations, and other major groups
High Level Partnership Dialogues	15:00-18:00 March 14 (Sat.)	Mobilizing Women's Leadership in Disaster Risk Reduction
	15:00-18:00 March 16 (Mon.)	Risk Sensitive Investment: Public-Private Partnerships
	10:00-13:00 March 17 (Tues.)	Inclusive Disaster Risk Management: Governments, Communities, and Organizations Acting Together
Ministerial Roundtables	10:00-13:00 March 15 (Sun.)	Reconstructing After Disasters: Building Back Better
	15:00-18:00 March 15 (Sun.)	International Cooperation in Support of a Post-2015 Framework for Disaster Risk Reduction
	10:00-13:00 March 16 (Mon.)	Governing Disaster Risk: Overcoming Challenges
	15:00-18:00 March 16 (Mon.)	Reducing Disaster Risk in Urban Settings
	15:00-18:00 March 17 (Tues.)	Public Investment Strategies for Disaster Risk Reduction
Working Sessions	Mar. 14-17 (Sat.-Tues.)	Sessions (34) were held on the following four themes: (1) Progress on the existing HFA Priorities for Action (2) Emerging Risks (3) Commitments to Post-HFA Implementation (4) Accelerating Post-HFA Implementation

Source: Cabinet Office

Fig. I-2-4 List of Working Sessions

	Theme	Working Session Title	Schedule
1	Progress on Existing HFA Priorities for Action	Governance and Development Planning at National/Local Levels (Priority 1)	10:00-11:30 March 15 (Sun.)
2a		Risk Identification and Assessment (Priority 2)	15:00-16:30 March 14 (Sat.)
2b		Early Warning (Priority 2)	17:00-18:30 March 14 (Sat.)
3		Education and Knowledge in Building a Culture of Resilience (Priority 3)	10:00-11:40 March 16 (Mon.)
4		Underlying Risk Factors (Priority 4)	10:00-11:30 March 16 (Mon.)
5		Preparedness for Effective Response (Priority 5)	12:00-13:30 March 17 (Tues.)
6	Emerging Risks	Technological Hazards: From Risk Reduction to Recovery	13:00-14:30 March 14 (Sat.)
7		Disaster and Climate Risk: Accelerating National and Local Initiatives	10:00-11:30 March 17 (Tues.)
8		Reducing the Risk of Epidemics and Pandemics	16:00-17:30 March 15 (Sun.)
9		Ecosystems Management and Resilience	16:00-17:30 March 15 (Sun.)
10		Building Resilient Futures for Rural Areas	10:00-11:30 March 15 (Sun.)
11		Global Risk Trends	12:00-13:30 March 15 (Sun.)
12		Integrated Water Resource Management	12:00-13:30 March 15 (Sun.)
13		Land Use Planning for Disaster Risk Reduction	16:00-17:30 March 16 (Mon.)
14		Reducing Disaster Risk to Alleviate Poverty	16:00-17:30 March 15 (Sun.)
15		Lessons from Mega-Disasters	10:00-11:30 March 15 (Sun.)
16		Economic Aspects of Disaster Risk Reduction	14:00-15:30 March 16 (Mon.)
17	Commitments to Post -HFA Implementation	Business and Private Sector: Investing in Resilient Infrastructure	10:00-11:30 March 16 (Mon.)
18		Disaster Risk in the Financial System	12:00-13:30 March 16 (Mon.)
19		Applying Science and Technology to Disaster Risk Reduction Decision-Making	14:00-15:30 March 15 (Sun.)
20		Communities Addressing Local Risks	12:00-13:30 March 16 (Mon.)
21		Children and Youth - "Don't Decide My Future Without Me"	14:00-15:30 March 17 (Tues.)
22		Earth Observation and High Technology to Reduce Risks	12:00-13:30 March 15 (Sun.)
23		Food Security, Disaster-Resilient Agriculture and Nutrition	12:00-13:30 March 17 (Tues.)
24		From Crisis Response to Building Resilience	16:00-17:30 March 17 (Tues.)
25		Proactive Participation of Persons with Disabilities in Inclusive Disaster Risk Reduction for All	16:00-17:30 March 17 (Tues.)
26	Accelerating Post-HFA Implementation	Commitments to Safe Schools	17:00-18:30 March 14 (Sat.)
27		Resilient Cultural Heritage	14:00-15:30 March 15 (Sun.)
28		Measuring and Reporting Progress	10:00-11:30 March 17 (Tues.)
29		Standards for Disaster Risk Reduction Including Building Codes	14:00-15:30 March 17 (Tues.)
30		Preparing for Disaster-Induced Relocation	14:00-15:30 March 17 (Tues.)
31		Towards a Resilient Tourism Sector	12:00-13:30 March 16 (Mon.)
32		Disaster Risk Management for Healthy Societies	14:00-15:30 March 15 (Sun.)
33		Disaster Risk Transfer and Insurance	13:00-14:30 March 14 (Sat.)

Source: Cabinet Office

2-2 Official Programme

(1) Opening Ceremony

The opening ceremony was held on the morning of March 14, with the Emperor and Empress of Japan attending. Eriko Yamatani, the Minister of State for Disaster Management, was elected Conference president and gave the opening remarks. Next, Secretary-General of the United Nations Ban Ki-moon and Prime Minister Shinzo Abe, representing the host country, gave welcome remarks to those assembled. Remarks were also given by personages such Laurent Fabius, French Minister of Foreign Affairs and International Development, serving as president of the 21st Conference of the Parties (COP21), and Regina Pritchett, representative of the nine Major Groups. Finally, Mayor of Sendai City Emiko Okuyama gave welcome remarks. The agenda and rules of procedure were then adopted, the vice presidents were elected, and the Main Committee was established.

UN Secretary-General Ban Ki-moon giving remarks during the opening ceremony
(Right side of the podium: Emperor and Empress of Japan; Podium center: Prime Minister Shinzo Abe;
Left side of the podium: Eriko Yamatani, Minister of State for Disaster Management)

(2) Plenary Sessions

The Plenary Sessions consisted of statements by representatives of national governments and UN organizations, as well as statements covering country-specific issues and initiatives already taken based on the HFA, opinions on the new DRR framework, and the initiatives needed to promote it.

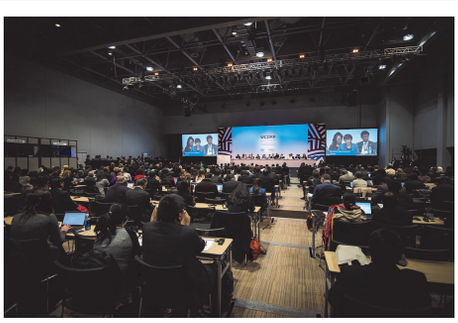
During the high level segment, Prime Minister Abe gave a statement, emphasizing the importance of prior investment in disaster risk reduction, better disaster recovery (termed “Build Back Better”), and the participation of diverse stakeholders. Prime Minister Abe also announced the Sendai Cooperation Initiative for Disaster Risk Reduction, setting forth a policy of sharing Japan’s expertise and technologies with the world and declaring Japan’s intention to engage in international cooperation in the field of disaster risk reduction by providing a total of USD 4 billion in financial assistance as well as human resource development for 40,000 people over the four-year period from 2015 to 2018.

Prime Minister Shinzo Abe giving a statement during the High Level Segment

(3) High Level Partnership Dialogues

Three High Level Partnership Dialogues were held over the three days of March 14, 16, and 17. They covered three themes: “Mobilizing Women's Leadership for Disaster Risk Reduction,” “Risk Sensitive Investment: Public–Private Partnerships,” and “Inclusive Disaster Risk Management: Governments, Communities, and Groups Acting Together.” While heads of state participated in these dialogues, all Conference participants had an opportunity to participate and make statements during these sessions.

Day	Theme	Description
14 (Sat.)	Mobilizing Women's Leadership in Disaster Risk Reduction	In a session co-chaired by Sanae Takashi, Minister for Internal Affairs and Communications of Japan, and Loren Legarda, Member of the Senate of the Philippines, Prime Minister Shinzo Abe delivered the keynote presentation. The session featured several panelists: Tarja Halonen, Former President of Finland, Kristalina Georgieva, Vice-President for Budget and Human Resources, European Commission, and Emiko Okuyama, Mayor of Sendai. Their discussion covered priorities and commitments in the promotion of a new disaster reduction framework, and efforts to promote the participation and leadership of women in all disaster reduction efforts. In his keynote speech, Prime Minister Abe highlighted the leadership demonstrated by women during the Great East Japan Earthquake and the role women played in caring for evacuees and rebuilding their communities. He called for the equality of women in everyday life, and the audience indicated its approval. He announced that Japan would begin "Mobilizing Women's Leadership in Disaster Risk Reduction" as part of the key project known as the Sendai Cooperation Initiative for Disaster Risk Reduction. As co-chair of the session, Minister Takashi gave welcome remarks, emphasizing the importance of women's leadership in every stage of disaster response, including preparedness, emergency response, recovery, and restoration. He explained Japanese initiatives related to the role of women's firefighting units and women's firefighting clubs, and explained the establishment of emergency disaster FM stations by women, and their role in disseminating information. He discussed the various activities conducted by women in response to the Great East Japan Earthquake. Mayor Okuyama of Sendai, who served as a panelist, explained the need for women's participation in all facets of decision-making, based on lessons learned from the Great East Japan Earthquake.
16 (Mon.)	Risk Sensitive Investment: Public-Private Partnerships	This session was chaired by Fuat Oktay, Director-General of the Prime Ministry Emergency and Disaster Management Authority of Turkey, and featured a keynote speech by Gaelle Olivier, CEO of General Insurance, AXA Asia. Panelists included Sandra Wu, Chair and Chief Executive Officer of Kokusai Kogyo, Toshiyuki Shiga, Representative Director and Vice-Chair of Nissan Motor Corporation, and Shamshad Akhtar, Executive Secretary of the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP). They discussed the importance of public-private partnerships in reducing disaster risks, noting the need to build relationships of trust and to foster close cooperation between national and regional level private sector organizations and government institutions. Many best practices were shared. The participants also announced a commitment to support a new framework for disaster reduction.
17 (Tues.)	Inclusive Disaster Risk Management: Governments, Communities, and Organizations Acting Together	This session was chaired by Noel Arscott, Minister of Local Government and Community Development of Jamaica, and featured a keynote speech by Anote Tong, President of the Republic of Kiribati. Panelists included Laila Iskander, Minister of Urban Development and Informal Settlements of Egypt, and William Anthony Kirsopp Lake, Executive Director, United Nations Children’s Fund. The discussion noted that it is not only governments, but communities, organizations, and particularly those groups most heavily impacted by disasters, such as the poor, children, women, and the handicapped, who need to participate in the policy-making process and contribute to efforts to reduce disasters. Participants discussed the importance of adopting this kind of inclusive approach to ensure that concrete actions are achieved under the new DRR framework.



Sanae Takaichi, Minister for Internal Affairs and Communications, co-chairing the High Level Partnership Dialogue on “Mobilizing Women’s Leadership for Disaster Risk Reduction”

Special Feature: Women and DRR

The Great East Japan Earthquake led to an increased awareness of the need for a greater level of women's participation in the process of establishing government programs and policies related to DRR, as well as the importance of striving to consider the differences in men's and women's needs.

A review of data on local disaster management councils nationwide in Japan reveals that the ratio of women council members on prefectural disaster management councils was 12.1% as of April 2014 (1.4 points higher than the previous year), while no prefectures had women delegates on their disaster management councils, the same as the previous year.

Meanwhile, the ratio of women council members on municipal disaster management councils was 7.1% as of April 2014. Broken down by type, the data shows that women accounted for 12.1% of council members in government-designated cities, 8.7% of council members in other cities, and 4.3% of council members in towns and villages. The percentage of municipal disaster management councils lacking any women members was 31.9%, while the majority of disaster management councils in towns and villages were comprised of only male members.

The ratio of women council members on local disaster management councils remains low. There is still a need to increase women's participation in the process of deciding government programs and policies related to DRR.

Given this, women's leadership was a key topic at the Third WCDRR.

Prime Minister Shinzo Abe gave the keynote speech at the High Level Partnership Dialogue "Mobilizing Women's Leadership for Disaster Risk Reduction." He noted that one of the key projects of the Sendai Cooperation Initiative for DRR (SCIDRR) announced on March 14 is "Training to Promote Women's Leadership in DRR", and emphasized that women are drivers in creating disaster-resilient societies.

In conjunction with the World Conference, the Cabinet Office held exhibits at the "Women and DRR" themed pavilion, and the Ministry of Foreign Affairs, Cabinet Office, and Reconstruction Agency sponsored a symposium on "Good Practices of Women's Entrepreneurship in Local Communities in the Process of Disaster Reconstruction."

In reviewing the Sendai Framework for Disaster Risk Reduction 2015–2030 formulated during the World Conference, Japan encouraged the international community to incorporate the need to ensure women's leadership and opportunities for equal participation in various decisions. As a result, the Sendai Framework for Disaster Risk Reduction 2015–2030 contains explicit stipulations, advocated by Japan, regarding the promotion of women's leadership and the roles for women in DRR.

Women and DRR Exhibit

Public forum on "Good Practices of Women's Entrepreneurship in Local Communities in the Process of Disaster Reconstruction"

(4) Ministerial Roundtables

Ministerial Roundtables were held on March 15-17 on the five themes of “Reconstructing after Disasters: Build Back Better,” “International Cooperation in Support of a Post-2015 Framework for Disaster Risk Reduction,” “Governing Disaster Risk: Overcoming Challenges,” “Reducing Disaster Risk in Urban Settings,” and “Public Investment Strategies for Disaster Risk Reduction.” The Roundtables were attended by more than 30 representatives of government ministries and international organizations, who gave opinion statements and discussed initiatives and commitments for promoting the new DRR framework.

Day	Theme	Description
15 (Sun.)	Reconstruction after disasters: building back better	This session, chaired by Numan Kurtulmus, Deputy Prime Minister of Turkey, was attended by MLIT Minister Akihiro Ota, as well as government officials from countries including New Zealand, Malaysia, China, and France. Participants discussed disaster conditions, recovery efforts post-disaster, and the provision of information and knowledge related to disaster prevention measures, all from the perspective of the "Build Back Better" approach to disaster reconstruction. MLIT Minister Ota spoke about the lessons learned from the disasters Japan has experienced in the past, such as the Great Hanshin-Awaji Earthquake, the Great East Japan Earthquake, and various floods, and about the various disaster management and disaster reduction efforts that have been undertaken. He also highlighted the importance of "imagining the worst-case scenario and engaging in disaster reduction efforts that integrate both structural and non-structural measures," and "making preventive investments to promote safer community development."
15 (Sun.)	International cooperation in support of a post-2015 framework for disaster risk reduction	This session was chaired by Rajnath Singh, Minister of Home Affairs of India, and statements were made by participants including Minister of Foreign Affairs Fumio Kishida and government officials from countries including Brazil, Cambodia, the Republic of Korea, and Russia. Opinions were expressed regarding technology support and skills development in a new DRR framework, and regarding procedures for international cooperation and global partnership for supporting national governments. Minister of Foreign Affairs Kishida expressed resolve to promote international cooperation on DRR based on the "three keys" focused on by Japan in the Sendai Cooperation Initiative for Disaster Risk Reduction announced by Prime Minister Abe; that is, preventive investments in disaster reduction based on long-term perspectives, global partnerships, and approaches to human safety and security. The President of JICA also participated in this session, emphasizing the importance of leadership, ownership, risk assessment, and DRR investments in promoting the mainstreaming of DRR, and expressing support for the Sendai Cooperation Initiative.
16 (Mon.)	Governing Disaster Risk: Overcoming Challenges	Led by María Del Pilar Cornejo, Minister of the Secretariat of Risk Management of Ecuador, this session was attended by Ryosei Akazawa, State-Minister of the Cabinet Office of Japan, as well as government officials from countries including Indonesia, Luxemburg, and Madagascar. Participants discussed efforts aimed at further strengthening governance in the new DRR framework. State-Minister Akazawa highlighted the lessons learned from Japan's many past disasters and the importance of ensuring that citizens have a high level of disaster awareness. He also explained Japan's efforts to establish Tsunami Preparedness Day. He discussed "the importance of promoting initiatives that involve the entire nation and society at large," of "finding an optimal balance between structural and non-structural measures," and of "preventive investments." The participants praised Japanese initiatives.
16 (Mon.)	Reducing Disaster Risk in Urban Settings	This session was led by Pravin Jamnadas Gordhan, Minister of Cooperative Governance and Traditional Affairs of South Africa, and was attended by government officials from countries including Uganda, Senegal, Germany, and Portugal. Discussions were held on the outcomes of national and local government initiatives related to DRR in urban areas. Governor Toshizo Ido of Hyogo Prefecture participated from Japan. He discussed the experience and lessons of the Great Hanshin-Awaji Earthquake, the role of the Disaster Reduction and Human Renovation Institution (DRI), and the importance of international DRR cooperation for Hyogo Prefecture. He also explained the importance of cooperation and connections between local governments.
17 (Tues.)	Public Investment Strategies for Disaster Risk Reduction	This session was led by Raed Arafat, Secretary of State, Ministry of Interior of Romania, and was attended by government officials from Tunisia, Madagascar, Egypt, and Panama. The discussion highlighted case studies of successful public investments that were made in consideration of DRR perspectives, and opinions were exchanged on the role of governments in promoting public investments aimed at improving resilience. The session was attended by Takayuki Hashimoto, Co-Chairman of the Keidanren's Committee on Risk Management, who spoke about the experience and lessons of the Great East Japan Earthquake, the importance of placing priority on protecting employees' families, and the importance of formulating and supporting enterprise BCPs. He also emphasized the importance of incorporating DRR perspectives in economic activities.

Minister for Foreign Affairs Fumio Kishida speaking at a Ministerial Roundtable

Minister of Land, Infrastructure, Transport and Tourism Akihiro Ota speaking at a Ministerial Roundtable

(5) Working Sessions

A total of 34 Working Sessions were held on March 14-17, where experts and other leaders discussed individual topics on the four themes of "Progress on the Existing Hyogo Framework for Action 2005–2015: Building the Resilience to Nations and Communities Priorities," "Emerging Risks," "Commitments to Implementation," and "Accelerating Implementation."

Japanese national government agencies, local governments, and others actively participated in the Working Sessions from the preparatory stage, and more than half of the sessions featured speakers from Japan. These sessions provided important opportunities for Japan to communicate to other participants its knowledge and technologies developed as a result of the Great East Japan Earthquake, and many other disasters, and to share information about the current status of restoration from the Great East Japan Earthquake and related initiatives.

Following is a summary of the main Working Sessions in which Japan participated.

Day	Theme	Description
14 (Sat.)	Technological Hazards: From Risk Reduction to Recovery	This session featured panelists from Japan, Belarus, Madagascar, and the International Federation of Red Cross and Red Crescent Societies (IFRC) who gave presentations on comprehensive approaches to preventing, preparing for, and responding to disasters caused by technological hazards, the use of lessons learned from past disasters, and the strengthening of risk assessment and governance. Information was shared on lessons learned and initiatives to address these risks. The ambassador from Belarus discussed the Chernobyl disaster while the minister from Madagascar highlighted efforts to reduce chemical accidents. Japan's Director-General for Nuclear Disaster Management of the Cabinet Office served as a panelist and spoke about Japan's lessons learned, knowledge gained, and initiatives to address nuclear disasters based on the experience of managing response efforts through a national on-site disaster management headquarters following the Tokyo Electric Power Company (TEPCO) Fukushima Daiichi Nuclear Power Plant Accident.
15 (Sun.)	Governance and Development Planning at National/Local Levels (Priority 1)	Participants examined the progress made on the HFA (particularly Priority 1) by focusing on outcomes and issues related to the creation of governance structures necessary for strengthening national disaster resilience. Presentations were given by panelists from countries including Japan, Turkey, and India, who discussed the establishment of effective disaster management systems at the national and local levels, as well as the regional (international) level. Serving as a panelist, Ryosei Akazawa, State-Minister of the Cabinet Office of Japan, emphasized the importance of improving citizen awareness, mainstreaming DRR throughout the government, achieving an optical combination of structural and non-structural measures, and preventive investments.
15 (Sun.)	Lessons from Mega-Disasters	To achieve greater clarity on what constitutes a mega-disaster and how to reduce the damage caused by mega-disasters, participants discussed lessons learned from the mega-disasters that have occurred in countries including Japan, Chile, China, and Turkey. They also reviewed initiatives taken thus far and discussed the measures that need to be taken going forward. During the opening remarks, Akihiro Nishimura, State Minister of Land, Infrastructure, Transport and Tourism cited the adage that "a natural disaster strikes when you least expect it" in giving an overview of the damage caused by the Great East Japan Earthquake, and spoke about the importance of sharing the lessons learned from mega-quakes. The Director-General of the Japan Meteorological Agency served as a panelist for this session and reported on the earthquake information and tsunami warnings that were issued at the time of the Great East Japan Earthquake. He also discussed the background for why information announcements can be made so rapidly and accurately in Japan even regarding mega-disasters that occur only infrequently. He discussed the centralized processing of data from observations to analysis, information announcements, and communications, and technological improvements adopted by coordinators through everyday operations and lessons learned.

Day	Theme	Description
15 (Sun.)	Resilient Cultural Heritage	Participants included representatives of the African World Heritage Fund (AWHF) and international research organizations involved in indigenous peoples' affairs, as well as speakers from Japan, the US, and Italy, who discussed the role of cultural heritage in disasters, and particularly its contribution to community resilience. Japan's Commissioner of the Agency for Cultural Affairs participated in this session, presenting examples in which cultural heritage helped contribute to the emotional recovery of regions after past earthquake disasters. He spoke about how initial response systems are mobilized and national cooperative networks are built when disasters strike, and described the agency's support for municipalities in the creation of checklists of cultural heritage assets, pursuant to the Basic Plan of History and Culture. Such checklists can be used during ordinary times for social development, and during emergencies for damage assessments.
16 (Mon.)	Education and Knowledge in Building a Culture of Resilience (Priority 3)	Experiences and lessons were shared from countries including Japan (Hyogo Prefecture), Greece, Armenia, and Namibia regarding initiatives for improving DRR education and knowledge, which have been promoted under the Hyogo Framework for Action (HFA). Participants discussed the need to foster strong political will, to strengthen partnerships between various stakeholders, and to adopt a community-oriented approach. Hyogo Prefecture Governor Toshizo Ido participated from Japan. He noted that Hyogo Prefecture is committed to forever remembering the earthquake experience, passing those memories on to future generations, and using them to prepare for future disasters. The prefecture promotes various activities and is continually conducting DRR education and outreach. The governor highlighted such efforts being conducted by Hyogo Prefecture based on the experiences of the Great Hanshin-Awaji Earthquake. For example, care is being taken to conduct practical DRR education to ensure that knowledge is translated into action.
16 (Mon.)	Communities Addressing Local Risks	To help ensure that practical DRR activities implemented in highly disaster resilient communities, which are implemented on a small scale, can be spread across a wider area, participants discussed good practices adopted by countries including Japan (Iwate Prefecture), the Philippines, Chile, and Lebanon for strengthening disaster resilience under a new DRR framework. Takuya Tasso, Governor of Iwate Prefecture, served as a panelist and discussed the role of local governments, town councils, and women's associations in conducting activities during a disaster. Based on the Proposal from Iwate Prefecture about Disaster Risk Reduction and Reconstruction, he emphasized that young people and women are the real drivers of restoration, and noted the importance of their efforts in rebuilding local communities. He also emphasized the effectiveness of cultivating a sense of self-responsibility for protecting oneself and others through community-based DRR education.
17 (Tues.)	Standards for Disaster Risk Reduction Including Building Codes	Panelists from Japan, UNESCO, the World Bank, and Nepal's National Society for Earthquake Technology (NSET) gave presentations on various standards for reducing disaster reduction risks. The Deputy Director General of the MLIT's Housing Bureau participated from Japan. After introducing the modern construction standards that have been firmly embedded since the Great Kanto Earthquake as a result of Japan's earthquake propensity, he discussed Japan's Building Standards Act, building and architect inspection and certification systems, research conducted in the field of construction, and seismic resistance training provided to overseas practitioners and researchers.

Ryosei Akazawa, State-Minister of the Cabinet Office served as a panelist in the Working Session on "Governance and Development Planning at the National/Local Levels (Priority 1)"

(6) Conference Venue Exhibits

Exhibits at the conference venue included several by overseas organizations such as the UN, nine major groups, and a group of disabled persons. Exhibits were also hosted in cooperation with relevant Japanese ministries, agencies, and local governments (Tokyo and Hyogo Prefecture), the Japan Aerospace Exploration Agency (JAXA), the Japan International Cooperation Agency (JICA), and NHK (Japan Broadcasting Corporation).

The Government of Japan hosted exhibits on themes including satellite observation technology (Japan Meteorological Agency), advanced disaster management using ICT and other technologies (Ministry of Internal Affairs and Communications), initiatives for reconstruction from the Great Hanshin-Awaji Earthquake (Hyogo Prefecture) and the Great East Japan Earthquake (Reconstruction Agency), and international cooperation related to DRR. The Conference also featured outdoor exhibits of electric vehicles from Nissan Motor as well as exhibits of mobile power-supply cars and ICT cars by the Ministry of Internal Affairs and Communications. The ICT cars are equipped with a mobile ICT unit enabling telephone calls and data transmission, and can be dispatched to disaster-affected regions during a disaster to quickly build a communications environment. Internet connectivity was provided to Conference participants through a wireless LAN network contributed by ICT cars. The Ignite Stage was also set up to offer 15-minute presentations by participants on DRR-related topics and projects.

Indoor DRR exhibition at the Conference venue

Outdoor exhibits at the Conference venue

Ignite Stage presentation

(7) Bilateral Meetings

More than 100 ministerial level ministers, including 25 heads of state, participated in the Third WCDRR. Prime Minister Shinzo Abe and his Cabinet ministers took this opportunity to hold bilateral meetings with representatives of other countries. Prime Minister Abe held talks with the heads of state of Kenya, Thailand, Turkmenistan, Swaziland, Vanuatu, Rwanda, Tanzania, Zimbabwe, Micronesia, Cambodia, and Kiribati from March 13-15. In addition to discussing cooperation for a successful World Conference, the leaders also discussed various ways to develop cooperative bilateral relations, and Prime Minister Abe received courtesy visits from the vice presidents of participating countries. Prime Minister Abe also met with UN Secretary-General Ban Ki-moon to discuss ways to strengthen cooperation between Japan and the UN, among other topics, and received courtesy visits from the heads or other representatives of participating international organizations. Minister of State for Disaster Management Eriko Yamatani, Minister for Reconstruction Wataru Takeshita, Minister for Internal Affairs and Communications Sanae Takaichi, Minister for Foreign Affairs Fumio Kishida, and Minister for Land, Infrastructure, Transport and Tourism Akihiro Ota also took part in bilateral meetings with their counterparts including vice presidents, deputy prime ministers, and relevant cabinet ministers.

(8) Luncheon with the Prime Minister

On the afternoon of March 14, the first day of the Conference, Prime Minister Abe held a luncheon for the heads of state participating in the Third WCDRR.

At the start of the luncheon, Prime Minister Abe expressed his appreciation, on behalf of the host country, to the heads of state for their participation in the Third WCDRR as an indication of the political commitment of the international community to DRR.

Following this, World Bank Group President Jim Yong Kim gave an address as a guest speaker. He mentioned the cyclone that was striking the country of Vanuatu and emphasized the great importance of DRR in working to eliminate extreme poverty and rectify economic disparity. He expressed his gratitude for the individual political leadership of Prime Minister Abe and the efforts of Japan in keeping DRR on the international agenda. He also touched on the importance of prior preparations, citing both infectious diseases such as Ebola and natural disasters as serious risks currently faced by the international community. In addition, President Kim expressed his gratitude for Japan's leadership in the two areas of DRR and universal healthcare coverage, noting that this year, as the year the post-2015 development agenda is being adopted, presents a key opportunity to tackle the important issues of DRR and healthcare.

Next, Helen Clark, Administrator of the UNDP, gave remarks in which she spoke highly of the SCIDRR as well as DRR cooperation based on Japan's concept of "Build Back Better." She also spoke about how Sendai's reconstruction from the Great East Japan Earthquake encourages others, how individual DRR actions alone are insufficient, and how DRR must be fully incorporated into general development policy.

At the luncheon, dishes were served on Sendai *tansu*, wooden boxes that are a traditional craft of Sendai, to highlight the appeal of Sendai and promote the recovery of disaster-affected areas.

Prime Minister Abe giving remarks at the beginning of the luncheon
(attended by UN Secretary-General Ban Ki-moon and heads of state including the King of Swaziland)

(9) Welcome Reception by the Japanese Government

The Government of Japan hosted a welcome reception for participants of the Third WCDRR, numbering approximately 1,000 people from government, the private sector, community groups, and other organizations, at the Sendai Royal Park Hotel at 7:00 pm on March 14.

Prime Minister Abe gave remarks at the beginning of the reception, where he expressed his gratitude to the participants and introduced the food booths at the event. He noted their offerings, which included an assortment of meats, fish, and Japanese sake from the six prefectures of the Tohoku region as well as sushi prepared with local fish by sushi chefs who had lost their restaurants in the Great East Japan Earthquake. He also mentioned the Olympic and Paralympic Games which are to be held in Tokyo in 2020 and promoted them as an opportunity for Japan to both host and entertain people from all over the world, while boosting the reconstruction of the Tohoku region.

Next, UN Secretary-General Ban Ki-moon gave remarks, expressing his gratitude to the Government of Japan for hosting the reception and encouraging the many journalists participating in the Third WCDRR to communicate to the world the importance of DRR. He also emphasized that reaching agreement on a strong outcome document from Sendai, which was affected by the Great East Japan Earthquake, would contribute to sustainable development and climate change initiatives.

In a toast, Minister of State for Disaster Management Eriko Yamatani introduced some of the recovery efforts of the Great East Japan Earthquake intended to achieve the principle of “Build Back Better.” She encouraged guests to visit the disaster-affected regions to observe the state of reconstruction as well as to enjoy the beauty, food, and culture of the Tohoku region.

We Are *Tomodachi*, the official magazine of the Government of Japan that contains articles related to advanced Japanese DRR technologies and reconstruction from the Great East Japan Earthquake, and other topics, was distributed at the venue to further communicate Japan’s efforts to participants.

Welcome reception hosted by the Government of Japan

Special Feature: Green Conference

A variety of steps were taken at the Third WCDRR to make it a “green” conference. Specifically, the UNISDR targeted a reduction of at least 50% in the amount of paper used at the Conference and created a “Conference Box” that allowed access to all documents on the WCDRR website in an attempt to go paperless. The Government of Japan offered rentals of iPads at the venue for country representatives that did not have portable tablets to facilitate paperless proceedings. To reduce CO_2 emissions, organizers encouraged the use of shuttle buses between the hotel and Conference venue, and Sendai City offered free rentals of “Date Bike” electric community bicycles.

On the final day of the conference, the UN announced that the Conference Box had been accessed more than 2,500 times, and that efforts to promote a paperless World Conference resulted in printing savings equivalent to approximately 10 million sheets of paper.

2-3 Outcome Documents

The session to adopt the outcome documents for the plenary session was held in the late evening of March 18. Drafts of the Sendai Framework for Disaster Risk Reduction (SFDRR) 2015-2030 and the Sendai Declaration, compiled just prior to the session by the Main Committee, were reported by committee co-chairs. Conference President Yamatani presented these documents for deliberation at the plenary session, with both documents being adopted unanimously.

In her remarks at the closing ceremony, Conference President Yamatani expressed her thanks to the Conference participants and all who had participated in the organization of the event. She also declared her intention to strengthen DRR initiatives at the global, regional, national, and community levels under the SFDRR, and to work to ensure that the new development agenda and climate change framework integrate the perspective of disaster risk reduction. She also alluded to promoting initiatives to promote self-help and mutual help. Given that November 5 is Tsunami Preparedness Day in Japan, she proposed that the establishment of a World Tsunami Awareness Day would help raise awareness of DRR around the world.

Special Representative of the United Nations Secretary-General for Disaster Risk Reduction Wahlström spoke of the need for strong commitments and political leadership to implement the SFDRR over the next 15 years, as well as to implement the 120 new voluntary commitments made by concerned parties through the Conference, and the 88 commitments made during Conference preparations.

Main Committee adopting the outcome documents

Adoption of the outcome documents

Closing ceremony

(1) Sendai Framework for Disaster Risk Reduction (SFDRR) 2015-2030

The SFDRR was adopted as the successor to the HFA 2005-2015, and includes stipulations regarding the expected outcomes and goals, guiding principles, priorities for action, roles of stakeholders, and international cooperation and global partnership. Anticipated outcomes of the SFDRR in the next 15 years are "The substantial reduction of disaster risk and losses in terms of lives, livelihoods, and health, and in terms of the economic, physical, social, cultural, and environmental assets of persons, businesses, communities, and countries." To realize this, it pursues these goals: "Prevent new and reduce existing disaster risks through the implementation of integrated and inclusive economic, structural, legal, social, health, cultural, educational, environmental, technological, political, and institutional measures that prevent and reduce hazard exposure and vulnerability to disaster, increase preparedness for response and recovery, and thus strengthen resilience."

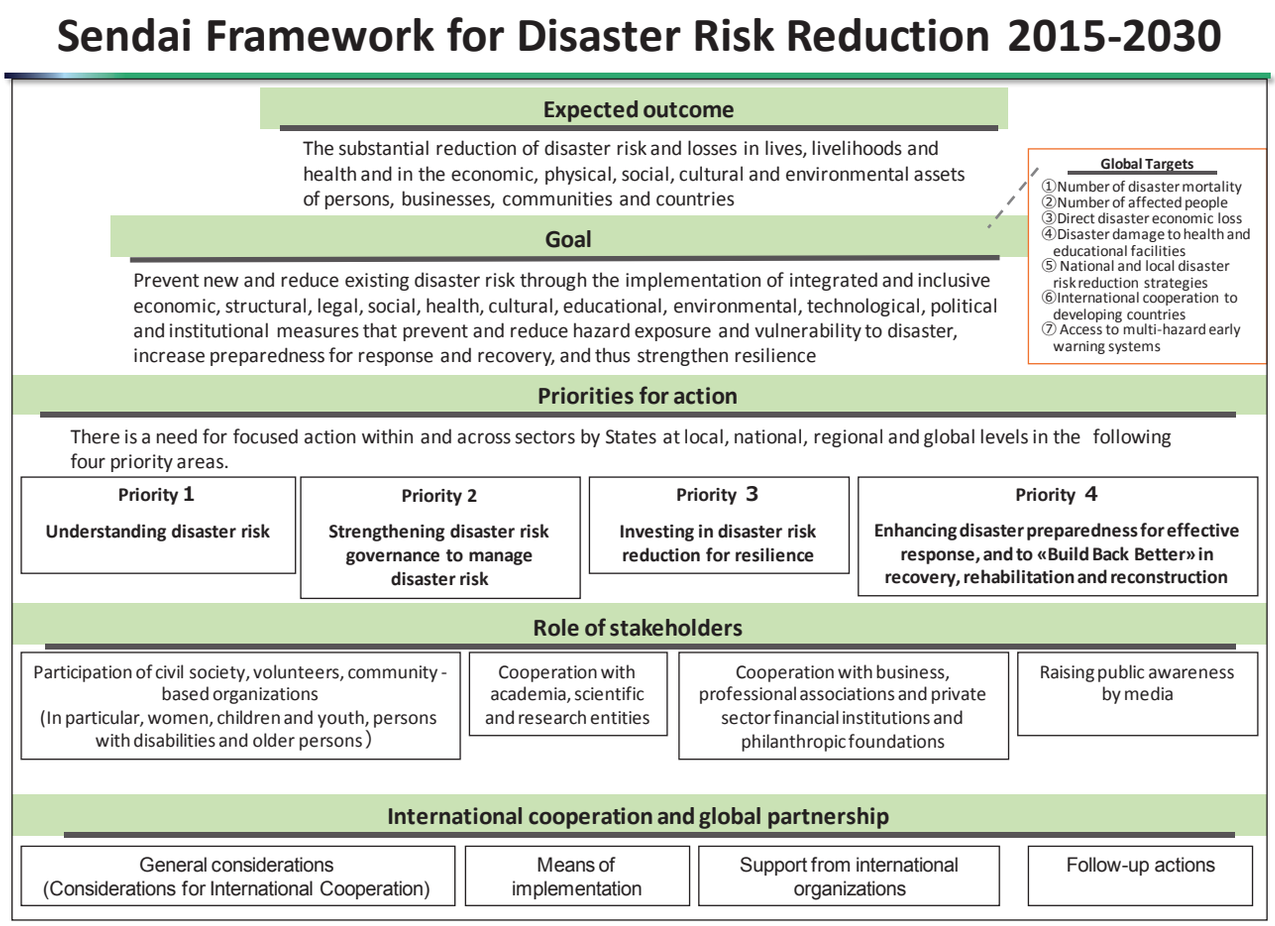
Seven global targets were established to promote the evaluation of progress on initiatives to accomplish these outcomes and goals. Specifically, they are to substantially reduce by 2030 (1) disaster mortality, (2) the number of affected people, (3) direct disaster economic losses, (4) disaster damage to critical infrastructure and disruption of basic services; and to substantially increase by 2020 (5) the number of countries with national and local DRR strategies; and by 2030 (6) international cooperation with developing countries, and (7) the availability of and access to multi-hazard early warning systems and disaster risk information and assessments by citizens. It is anticipated that setting these targets will lead to clear positioning of DRR in the Post-2015 Development Agenda to be formulated this fall.

Substituting the five Priorities for Actions of the Hyogo Framework for Action, the SFDRR specifies the four Priorities for Action of (1) understanding disaster risk, (2) strengthening disaster risk governance to manage disaster risk, (3) investing in disaster risk reduction and resilience, and (4) enhancing disaster preparedness for effective response and to "Build Back Better" in recovery, rehabilitation, and reconstruction.

In addition, an independent chapter to encourage the participation and cooperation of numerous stakeholders has been created, and the roles to be performed by communities, academic and scientific research institutes, private companies, the media, and other groups have also been specified.

Taken all together, the SFDRR fully reflects the importance of prior disaster risk reduction investment, "Build Back Better," and governance involving diverse stakeholders, all of which were emphasized by Japan from the negotiation stage of this framework. It also reinforces initiatives designed to reduce the underlying risk factors—a challenge in the HFA initiatives—and its content is quite substantial.

Fig. I-2-5 Easy Look-up Charts of Sendai Framework for Disaster Risk Reduction 2015-2030



Source: Cabinet Office

(2) Sendai Declaration

The Sendai Declaration expresses the political commitments of each country to disaster risk reduction and was adopted to promote the SFDRR.

Sendai Declaration

1. We, the Heads of State and Government, ministers, and delegates participating in the Third United Nations World Conference on Disaster Risk Reduction, gathered from March 14-18, 2015 in Sendai City of Miyagi Prefecture in Japan, which has demonstrated a vibrant recovery from the Great East Japan Earthquake of March 2011. Recognizing the increasing impact of disasters and their complexity in many parts of the world, we declare our determination to enhance our efforts to strengthen disaster risk reduction to reduce disaster losses of lives and assets from disasters worldwide.

2. We value the important role played by the Hyogo Framework for Action 2005–2015: Building the Resilience of Nations and Communities to Disasters over the past ten years. Having completed the assessment and review of and considered the experience gained under its implementation, we hereby adopt the Sendai Framework for Disaster Risk Reduction 2015–2030. We are strongly committed to the implementation of the new framework as the guide to enhance our efforts for the future.

3. We call all stakeholders to action, aware that the realization of the new framework depends on our unceasing and tireless collective efforts to make the world safer from the risk of disasters in the decades to come for the benefit of the present and future generations.

4. We thank the people and the Government of Japan as well as the City of Sendai for hosting the Third United Nations World Conference on Disaster Risk Reduction and extend our appreciation to Japan for its commitment to advancing disaster risk reduction in the global development agenda.

Special Feature: Measures for Persons with Disabilities at the Third UN WCDRR

The Government of Japan, Sendai City, the Nippon Foundation, and UNISDR undertook a range of measures with the goal of making the Third UN World Conference on DRR an accessible conference (a conference in which persons living with disabilities can participate without difficulty).

Specific measures that were implemented include making the facilities barrier free, providing Japanese Sign Language and International Sign Language for each session, displaying Japanese and English captioning on screens, and providing accessible transport. These measures enabled more than 200 persons with disabilities to participate in the World Conference and received strong praise, including calls from involved parties that these measures should become the standard for future UN conferences.

General UN conferences in the past, apart from conferences concerning persons with disabilities, have not provided opportunities for statements by representatives of groups of persons with disabilities. This was the first time such an opportunity was offered at a Plenary Session, and Monthian Buntan, a fully blind senator of the Upper House of the Royal Thai Parliament, gave a statement. Mr. Buntan advocated that the DRR frameworks implemented by countries be inclusive of and ensure equal access for persons with disabilities, and highlighted the importance of having persons with disabilities actively involved in DRR policy development.

Discussions were held in a Working Session of the Conference on the topic of “Proactive Participation of Persons with Disabilities in Inclusive Disaster Risk Reduction for All,” and symposiums and other side events related to themes of persons with disabilities were also held.

The Sendai Framework for Disaster Risk Reduction 2015–2030, adopted on the final day of the conference, also clearly states the importance of persons with disabilities. The conference achieved significant outcomes in terms of promoting efforts for persons with disabilities in future DRR initiatives.

Mr. Buntan giving a statement at a Plenary Session

Sign language interpretation

2-4 Related Events

As part of the Third WCDRR, related events providing information on initiatives concerning disaster risk reduction, disaster mitigation, and recovery were held at venues peripheral to the main Conference venue. The events were arranged by a diverse array of stakeholders, both domestic and overseas, including government agencies, local governments, NPOs, NGOs, universities, and regional organizations.

The Great East Japan Earthquake Forum was held at Tohoku University to provide perspectives on better disaster recovery and new DRR methods that leverage the experience and lessons gained from the Great East Japan Earthquake. In addition, approximately 400 symposia and seminars were held in Sendai and at venues in neighboring prefectures affected by the quake. Both indoor and outdoor exhibitions were held at Sendai Mediatheque, such as the Tohoku Reconstruction and Disaster Risk Reduction Pavilion and the DRR Exhibition. Further, the "*Bosai*" Industry Fair was held at the Yume Messe Miyagi to display Japanese technologies and products related to DRR which offer greater comfort, economy, and environmental advantages not only during emergencies, but also on an everyday basis. Two halls covered the themes of "Civil Society Collaboration and Disaster Risk Reduction" and "Women and DRR."

A total of 42 study tours on 25 topics were organized for Conference participants from around the globe in order to provide information on the state of recovery from the Great East Japan Earthquake and to highlight initiatives to "Build Back Better." After the Conference, five excursion tours were held to enable participants to experience the culture and food of the prefectures in the Tohoku region.

(1) Symposiums and Seminars, Including the Great East Japan Earthquake Forum

The Government of Japan and the Sendai Committee for the Third WCDRR held the Great East Japan Earthquake Forum as a core component of its public forums to explore prospects for achieving the principle of "Build Back Better" and to discuss new prospects for DRR. Sponsored by the Government of Japan and the Sendai Committee for the Third WCDRR, this forum focused on 10 themes including prospects for DRR in Japan and national resiliency.

On March 14, the Cabinet Office held a forum on the theme of "Japan's Perspective: A Quest for Ultimate DRR - From Hyogo to Sendai and Beyond." The forum included discussions of measures for a new DRR framework based on DRR measures that have been strengthened in the wake of the extensive damage wrought by the Great Hanshin-Awaji Earthquake and Great East Japan Earthquake.

Yohei Matsumoto, State-Minister of the Cabinet Office, gave the opening remarks at this event. There were presentations by governors and vice governors of four prefectures in the Tohoku region on topics including recovery from the Great East Japan Earthquake and DRR measures learned from disasters. A panel discussion featured representatives of companies, local governments, experts, and international organizations.

Approximately 400 large and small symposiums, seminars, and other events were held in venues around Sendai City and the prefectures of Aomori, Iwate, Miyagi, and Fukushima led by ministries and agencies of the Government of Japan as well as a range of Japanese and international groups. These events highlighted lessons learned from the Great East Japan Earthquake and recovery and reconstruction initiatives as well as DRR efforts implemented in countries worldwide.

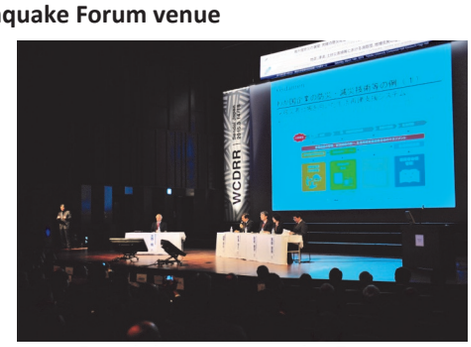
Fig. I-2-6 The Great East Japan Earthquake Forums

Session	Schedule		Organizer	Theme
1	Sat. March 14	13:30-15:00	Cabinet Office of Japan	Japan's Perspective: A Quest for Ultimate DRR - From Hyogo to Sendai and Beyond
2		15:30-17:30	Fire and Disaster Management Agency of Japan	Role of Volunteer Fire Corps and Community Residents in Earthquakes, Tsunamis, and Sediment Disasters
3	Sun. March 15	10:00-12:00	City of Sendai	Sendai Medical Forum: Review of Medical Relief and Public Health Maintenance after the Great East Japan Earthquake and Recommendations for Future Activities
4		13:30-15:30	Reconstruction Agency, Japan	Revival from the Great East Japan Earthquake and the Way Forward
5		16:30-18:30	MLIT (Ministry of Land, Infrastructure, Transport and Tourism) Japan, JSCE (Japan Society of Civil Engineers), HELP (High-level Experts and Leaders Panel on Water and Disaster)	Towards Mitigating Loss Caused By Mega-Disasters: Ways to Save Lives and Prevent Devastating Damage to Socioeconomic Activities
6	Mon. March 16	10:00-13:00	National Resilience Promotion Office of the Cabinet Office of Japan	Building National Resilience : What Should We Leave for the Next Generation?
7		15:00-18:00	Ministry of Education, Culture, Sports, Science and Technology, The Japanese National Commission for UNESCO, Miyagi University of Education	Fostering DRR Through Education for Sustainable Development: Towards a Better Future for Children
8	Tue. March 17	10:00-12:00	Japan International Cooperation Agency (JICA)	Disaster Risk Reduction (DRR) and International Cooperation: Sharing Experiences and Lessons Learned from the Mega-Disasters and Japan's DRR Culture with the World Through International Cooperation
9		14:30-18:00	Sendai Disaster Waste Treatment Forum Executive Committee	Disaster Waste Management After Huge Disasters: Preparations and Rapid Recovery Through Public-Private Partnerships
10	Wed. March 18	14:30-17:00	City of Sendai, Sendai Committee for the UN World Conference on Disaster Risk Reduction	Citizen Power to Support Reconstruction and Disaster Risk Reduction

Source: Cabinet Office

The Great East Japan Earthquake Forum venue

State-Minister of the Cabinet Office Yohei Matsumoto giving remarks at the Great East Japan Earthquake Forum



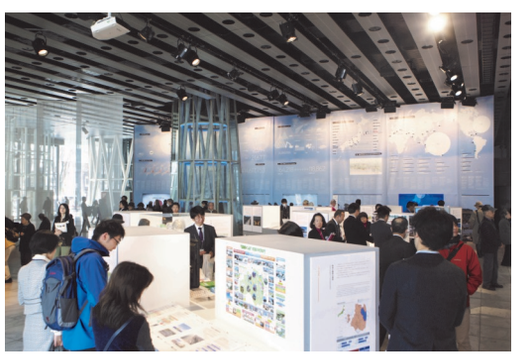
Panel discussion at the Forum

(2) Tohoku Reconstruction and DRR Pavilion, DRR Exhibition

The four disaster-affected prefectures of Aomori, Iwate, Miyagi, and Fukushima, as well as Sendai City, set up the Tohoku Reconstruction and DRR Pavilion on the first floor of Sendai Mediatheque. It featured exhibits related to DRR, recovery, and reconstruction to share with the world the experience and lessons of the Great East Japan Earthquake and promote the future of Sendai and the Tohoku region.

More than 200 Japanese and international groups presented booth and poster exhibits at Sendai Mediatheque, Sendai Shimin Kaikan Hall, and the Sendai City Information and Industry Plaza (inside the AER), among other venues. These exhibits introduced DRR activities and recovery efforts to a total of more than 40,000 visitors.

In addition, an outdoor exhibit entitled Sendai Disaster Prevention Square 2015 was held at Kotodai Park and included firefighting drills and vehicle exhibits, music stages, and various booths, as well as hands-on experiences that allowed families and other visitors to have fun while learning about disaster risk reduction and mitigation. The exhibition attracted a total of approximately 50,000 visitors.

Tohoku Reconstruction and DRR Pavilion at Sendai Mediatheque


Booth and poster exhibits (5th floor of Sendai Mediatheque (right), Sendai Shimin Kaikan Hall (left))

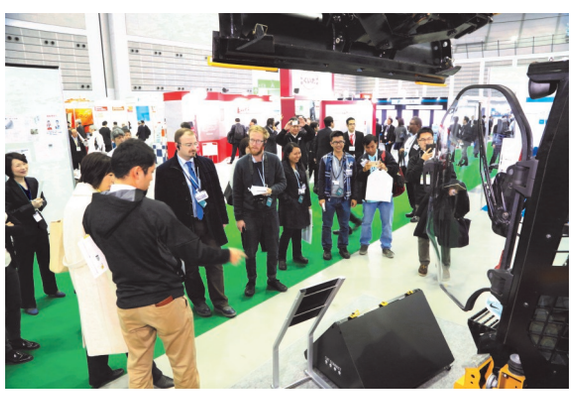

Outdoor exhibits

Exhibition (Sendai City Information and Industry Plaza (inside the AER))

(3) *Bosai* Industry Fair (DRR Industry Exhibition) in Sendai

From March 15-17, the Cabinet Office, Miyagi Prefecture, and Nikkan Kogyo Shimbun (The Business & Technology Daily News) held the *Bosai* Industry Fair (DRR Industry Exhibition) at the Miyagi Exhibition Center (Yume Messe Miyagi). The exhibition gathered state-of-the-art Japanese DRR technologies and products under one roof to highlight the theme: "Let's hand down our experience and preparedness for future disasters." A total of approximately 6,000 visitors came to the exhibition, which featured exhibits by 160 companies and groups in wide-ranging fields from construction, machinery, energy, IT, and communications to food and logistics.

The *Bosai* Industry Symposium was held on March 16. Focusing on the theme "Toward DRR industry development and DRR capacity improvement," keynote speeches and a panel discussion were held on the role companies are expected to perform in the event of a disaster, including coordination with the authorities. In the first session, companies participating in the *Bosai* Industry Fair introduced company initiatives and technologies useful not only in times of emergency but also in the course of everyday life. In the second session, keynote speeches and a panel discussion were held on the issues that Japan should address to improve the capacity for DRR and develop the DRR industry.



***Bosai* Industry Fair**

(4) Study Tour

During the World Conference, study tours lasting from a half day to a full day were organized for Conference participants. These tours, which consisted of visits to disaster-affected regions including areas devastated by the tsunami, the Fukushima Daiichi Nuclear Power Station, and temporary housing facilities, were conducted to share the experience of and lessons learned from the Great East Japan Earthquake as well as the current status of recovery. All of the planned 42 tours on 25 topics were conducted for a total of 635 participants. They provided an opportunity for participants to see and experience firsthand the progress made to "Build Back Better" in the Tohoku region and to learn about the participation of diverse actors in DRR activities, DRR education, and recovery initiatives.

Fig. I-2-7 **Study Tours During the WCDRR**

	Study Tour Theme (Upper Row) Tour Destination (Lower Row)	Planned & Organized by	No. of Tours Offered	Itinerary
1	Multiple Defense Measures Against Tsunamis: Lessons Learned from the Great East Japan Earthquake Sendai Coast (Multiple Defense Against Tsunamis), Arahama Elementary School (ruins), Tsunami Evacuation Tower	Sendai Committee Tour Office	5	Half-day
2	Resurrection of the Natural Environment in Tsunami-Affected Areas Gamo Tideland, Minamigamo Community, Seaside Park Adventure Field		2	
3	Agricultural Challenges in Tsunami-Affected Areas Sendai City Agriculture & Horticulture Center, Restored Drainage Pump Station, Michisaki (Hydroponic Agriculture Factory)		2	
4	Resilient Urban Infrastructures: Wastewater Treatment Plant & Gas Plant Minamigamo Wastewater Treatment Plant, Sendai Minato Gas Plant		1	
5	Visit a School Devastated by the Tsunami Arahama Elementary School (ruins)		2	
6	New Concept of Our Town: Achieving both Disaster-Resilience and Eco-Friendliness Tago Nishi Eco-Model Town		1	
7	Recovery of Residents and Business in Ishinomaki, One of the Most Severely Damaged Cities Hiyoriyama Hill, Nippon Paper Industries Ishinomaki Mill, Kadonowaki Elementary School (ruins), Fishing Port & Tsunami Evacuation Building (Miyagi Express Corporation), Ishinomaki Community & Info Center		1	
8	Tohoku University Guided Tour Katahira Campus/Seiryo Campus/Aobayama Campus		4	
9	DRR Efforts of the Private Sector: Case of a Brewery in a Tsunami-Affected Area Kirin Brewery Sendai Plant		2	
10	Disaster Prevention Education for Youth Sendai Seiryo Secondary School		1	
11	Disaster Risk Reduction Education for Children with Special Needs Miyagi University of Education's Affiliated School for Special Needs Education	Sendai Committee Tour Office	1	Half-day
12	DRR Efforts of the Private Sector: Experience a Disaster Drill in a Department Store Fujisaki Department Store & Aoba-dori Community Planning Council		1	
13	Yuriage: A Historical Fishing Port Making Steady Progress in Recovery Yuriage Port Area, Hiyoriyama Hill, Maple Pavilion		1	
14	Experience Yuriage: Japanese Morning Market Yuriage Port Morning Market		1	
15	Millennium Hope Hills for Tsunami Evacuation, and Efforts of Local Residents to Build a Resilient City Millennium Hope Hills Project, Mega-Scale Solar Power Plant, Tamaura Nishi Community		2	
16	Joint Public and Private Action for Regional Disaster Prevention and Advanced Disaster Prevention Technology for Housing: Working Together to Build a Disaster-Resilient Town Sekisui House Tohoku Factory		4	
17	Aratozawa, Legacy of the Greatest Landslide Disaster: Lessons Learned from the Iwate-Miyagi Inland Earthquake in 2008 Aratozawa Landslide Site, Heilsam Kurikoma, Kurihara Fire Department		1	All day
18	Revitalizing Fukushima: Reconstruction from the Tsunami and Efforts of the Fishing Industry Soma Port, Soma Reconstruction Support Center, Recovery Public Housing, Wada Strawberry Farm	Fukushima Prefecture	1	All day
19	Revitalizing Fukushima: Food Safety Fukushima Agricultural Technology Center (Koriyama City), Sake Breweries (Nihonmatsu City), Fukushima City School Lunch Center		1	
20	Accelerating Reconstruction with the Latest Technology and Passing on Memories of the Disaster to Future Generations: Rikuzentakata's Large-Scale Land-Raising Projects and Ofunato's Disaster Memorial Bridge of Hope, Miracle Lone Pine Tree (Rikuzentakata City), Ofunato Tsunami Museum	Iwate Prefecture	1	
21	"The Miracle of Kamaishi" and Local Government Horizontal Supplementation: Disaster Prevention Education Measures in Kamaishi and Logistic Support Activities in Tono Kamaishi City: Unosumai District, Tono Disaster Control Center		1	

	Study Tour Theme (Upper Row) Tour Destination (Lower Row)	Planned & Organized by	No. of Tours Offered	Itinerary
22	Reinvention Every 1000 Years: Security Measures Being Taken at the Onagawa Nuclear Power Plant Using Lessons Learned from Past Disasters	Miyagi Prefecture	1	All day
	Ishinomaki Fish Market, Onagawa Regional Medical Center, Onagawa Nuclear Power Plant			
23	Operation Tomodachi: Witness the Impressive Restoration of Sendai Airport and Business Continuity Management (BCM)		1	
	Sendai Airport, Port of Sendai Shiogama, Yume Messe Miyagi, JX Nippon Oil & Energy Corporation Refinery			
24	Fukushima Daiichi Nuclear Power Station: Decontamination and Decommission	Agency for Natural Resources and Energy, Fukushima Prefecture	3	
	Fukushima Daiichi Nuclear Power Station			
25	Communicating Past Lessons and the Efforts of Sanriku Railway: Kamaishi's Communication of Tradition to Future Generations and the Restoration Work on the Sanriku Railway		1	
	Kamaishi City, Sanriku Railway (Route between Kamaishi and Ofunato) and a Railway Restoration Site			

Source: Cabinet Office

**Preparing for tsunamis/
Study tour on multilayered defenses**

Participants listening to the former principal of Arahama Elementary School, which was damaged in the tsunami

Study tour to Sendai Municipal Seiryo Chuo Kyoiku Secondary School

Participants learning about people's experiences in the tsunami-damaged area of Yuriage, Natori City

Recovery Fukushima: Food Safety & Security Tour

(5) Excursions

After the World Conference, on March 18-20, five excursions were offered to Conference participants and their spouses in four prefectures of the Tohoku region. The excursions allowed participants to experience the rich nature and cultural heritage of the Tohoku region. The 38 people that participated from various countries experienced the traditional crafts of ceramics painting and tea ceremony as well as floating down the Mogamigawa River in a traditional boat. The excursions also a provided valuable opportunity to tour the World Heritage Site of Hiraizumi and other historical structures and to experience the culture, history, and nature of the Tohoku region. There were also excursions to visit disaster-affected areas including the disaster management government building ruins in the town of Minamisanriku, a sake brewery that was rebuilt after the earthquake, fishing boats bringing their catches to a rebuilt fishing port, and explanations of recovery efforts taken by product manufacturers.

Fig. I-2-8 Excursions During the WCDRR

	Theme of Excursion (Upper Row) Tour Destinations (Lower Row)	Planned & Organized by	No. of Excursions Offered	Itinerary
1	Recovery of the Rias Coastline and Matsushima Bay's Miraculous Survival from the Tsunami: From the Tsunami Disaster to Recovery – Developing a Disaster-Resistant Community Shiogama City (Shiogama Shrine, Urakasumi Sake Brewery Saura Co., Ltd., Sushi Restaurant), Matsushima (Bay Cruise, Zuiganzi Temple, Kokeshi Painting), Kesennuma (Fish market, Rias Ark Museum of Art), Minamisanriku (Temporary Recovery Shopping Area)	Miyagi Prefecture	1	2 days and 1 night
2	Exploring the World Heritage Site and One of the Most Beautiful Bays in the World: Golden Route of Tohoku – Matsushima and Hiraizumi Matsushima (Bay Cruise, Zuiganji Temple), Hiraizumi Town (Motsu-ji Temple, Chuson-ji Temple)	Miyagi and Iwate Prefecture	1	1 day
3	Viewing the Natural Beauty of the Ice Monsters and Experiencing the Traditional Culture of Snow Country: Let's Experience the Nature and Culture of Yamagata Prefecture Zao Hot Springs (Zao Ice Monsters, Yamagata Maiko), Mogami River Cruise, Ginzan Hot Springs	Yamagata Prefecture	1	2 days and 1 night
4	Revitalizing Fukushima: Overcoming the Disaster with the Concept of Building Back Better Shinchi Town, Wada Strawberry Farm, Stock Warehouse for Disaster Prevention, JA Fukushima, Minka-en, Fukushima Agricultural Technology Centre, Dekoyashiki, Sake Breweries, Mahoron, the Fukushima Prefectural Center of Cultural Properties	Fukushima Prefecture	1	
5	Revitalizing Fukushima: Integrating Innovation and Tradition Decontamination Information Plaza, The Power of Mothers, Fukushima Agricultural Technology Center, Fukushima Renewable Energy Institute, AIST, Aiku, Tsuruga-jo Castle, Kaeigura Sake Breweries	Fukushima Prefecture	1	

Source: Cabinet Office

Participants experiencing tea ceremony

Special Feature: Public Forums

During the Third WCDRR, symposiums were held not only at venues in Sendai city, but also in the prefectures of Aomori, Iwate, Miyagi, and Fukushima, focusing on various initiatives related to disaster risk reduction and mitigation, and recovery. For instance, a symposium on the theme of cultural properties and DRR was held in Iwate Prefecture and attracted about 160 participants, including country representatives and experts from inside and outside of Iwate Prefecture. After the symposium, participants visited the World Heritage Site of Chuson-ji Temple in Hiraizumi, where they were welcomed with a performance by the Hiraizumi Municipal Nagashima Elementary School Fire-Fighting Club. They heard about the DRR measures taken at Chuson-ji Temple and enjoyed a water cannon demonstration.

Water cannon demonstration at Chuson-ji Temple

Special Feature: Cooperative Efforts by Volunteer Groups

Many volunteers went to the disaster-affected areas after the Great East Japan Earthquake, but this brought many issues related to disaster response to the fore, including the lack of coordination among support groups and between the government and support groups. To address these types of issues, a number of support groups in Japan including the Shinsai ga Tsunagu Zenkoku Network (National Network for Disaster Response) and the Japan Platform are currently moving to study the creation of a new organization that would serve a coordination and liaison function when a major disaster occurs to achieve more effective disaster response.

On March 15 during the Third WCDRR, a public forum on the topic of “Call for National Disaster Response Coordination Mechanism in Japan: The Role of Japanese Volunteer Organizations in Disasters" was held in Sendai City for NPOs and NGOs, support groups, social welfare councils, staff from government organizations, and others involved in disaster support.

The public forum included a presentation by the US National Voluntary Organizations Active in Disaster (NVOAD) on examples of support coordination overseas. In addition, researchers, representatives of support groups, business leaders, and others held lively debates including a panel discussion on creating systems to coordinate operations in Japan.

Ongoing discussions are expected to be held on a range of points including strengthening networking among support groups and building relationships with the authorities.

2-5 Follow-up Activities

International cooperation on DRR to advance the SFDRR is discussed in detail in Chapter 3. It covers global management of SFDRR progress and necessary efforts related to the principle of "Build Back Better," which is explicitly mentioned in the SFDRR.

(1) Implementation of Conference Outcomes and Follow-up

To promote the SFDRR, a mechanism is needed to appropriately follow-up on the status of its fulfillment. Key challenges will include monitoring the seven newly established global targets, improving the methods involved, and the development of indicators that measure the progress on newly established priority actions. It is therefore necessary to support the activities of the UNISDR, including these initiatives, and to establish international disaster statistical methods that will contribute to these initiatives.

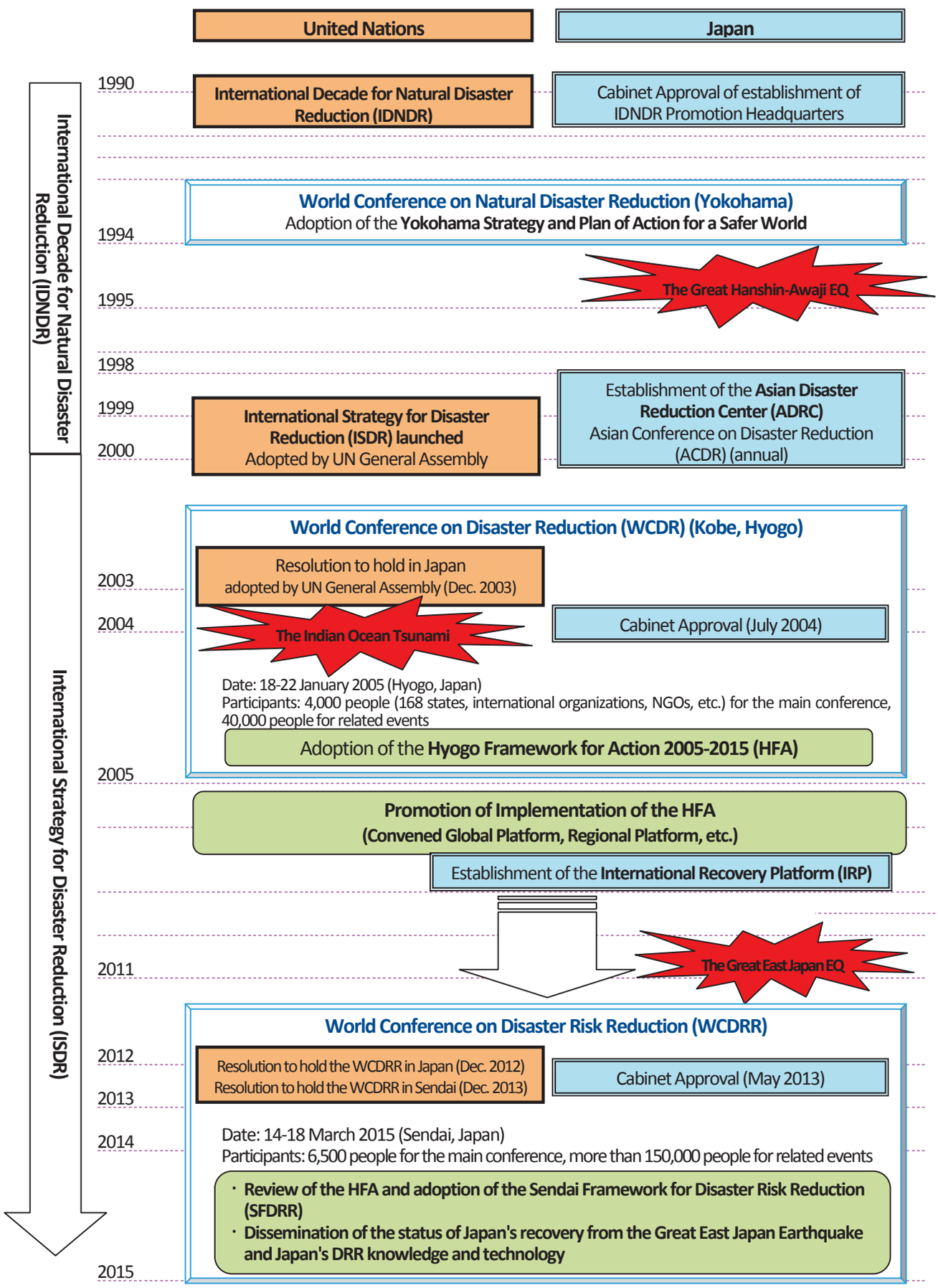
As a follow-up to the Third WCDRR, the Government of Japan is working to obtain the understanding and consent of other countries for the UN designation of November 5 as World Tsunami Day, as proposed by Conference President Yamatani at the closing ceremony.

(2) Promotion of International Cooperation for Disseminating "Build Back Better" (Support for IRP Activities)

At the Second World Conference in 2005, the International Recovery Platform (IRP; discussed in detail in Chapter 3) was launched to integrate and share a range of knowledge on recovery after a disaster, utilizing recovery efforts from the Great Hanshin-Awaji Earthquake that had been conducted by Hyogo Prefecture where the conference was held.

Likewise, at the Third WCDRR held in the disaster-affected areas of Sendai and the Tohoku region four years after the Great East Japan Earthquake, information on the current state of recovery from that quake and related DRR initiatives were shared with participants from countries around the world. Even after the Conference, it is important to keep the international community informed of the progress of recovery from the Great East Japan Earthquake and on initiatives aimed at "Build Back Better." To do this, it is necessary to use strategies compiled by the International Recovery Platform (IRP) to develop activities in Sendai and Tohoku for collecting and disseminating good practices and for cultivating human resources, and to strengthen the development of systems for this purpose.

Fig. I-2-9 Background of the UN World Conference on Disaster Risk Reduction



Source: Cabinet Office

Special Feature: Voices of Participants from the Third WCDRR

Excerpts from the UNISDR Website

- Events like this are important. While the negotiations that take place at the World Conference are part of an intergovernmental process conducted by foreign diplomats, I think it is necessary to come here and feel the pain of disaster victims and the momentum to reduce risk. Action is demonstrated when people have the resolve to act.

  (Member of a DRR NGO active in India and Myanmar)

- I think this is an opportunity to hear people in the community talk about their experience and share this with people of the world.

  (Local government official in Japan)

- The WCDRR provides an extremely valuable opportunity for communities and the international community to listen to one another's stories. Japan is at the forefront of innovation to reduce disaster risk and Build Back Better. And truly wonderful events are taking place here, such as firefighters conducting activities for children. DRR is also something that people can have fun doing.

  (Staff member of an international organization)

- We came to this conference with big ambition, participated in the meetings, and received recognition even from high-level figures. We were able to go to some 100 forums, and young people were able to be inspired. A special feature of the World Conference is that young people were able to participate and talk about how they might contribute to the new DRR framework in specific fields. I can go back home with a very positive feeling. Our voices were really heard.

  (Member of a network NGO involved in youth and DRR issues)

- It is imperative that the people of the world find ways to reduce the risks of disaster. Let us, as the leaders of the world, make the UN World Conference on Disaster Risk Reduction in Sendai an opportunity to chart a new direction for disaster resilience in order to fill generations with hope for the future.

  (President of Vanuatu)

A Tweet by Kristalina Georgieva, Vice-President, European Commission

- Want a successful event? Do it in #Japan – the perfect host with attention to big and small things alike #WCDRR.

Chapter III Japan's International Cooperation on Disaster Risk Reduction (DRR)

Section 1: Overview

As discussed in Chapter 2, the Sendai Framework for Disaster Risk Reduction (SFDRR) was adopted at the Third UN World Conference on Disaster Risk Reduction (WCDRR), held in March of this year, to succeed the HFA, adopted in 2005, as the guideline for disaster risk reduction in countries around the world. Over the coming 15-year period, promoting the SFDRR will be the responsibility of the international community, and of Japan as a country which has led the world in the field of disaster risk reduction.

Therefore, in accordance with the Sendai Cooperation Initiative for Disaster Risk Reduction (SCIDRR) announced by Prime Minister Shinzo Abe, Japan will contribute to the mainstreaming of disaster risk reduction in the international community by effectively combining the promotion of structural and non-structural supports as well as global cooperation, and region-wide cooperation; contributing a total of four billion dollars to fields related to disaster risk reduction and providing human resource development for 40,000 people over the next four years (Fig. I-3-1).

Furthermore, Japan will also proactively continue to promote international cooperation in DRR through measures including multilateral cooperation via international agencies such as the UN, regional cooperation in Asia, and intergovernmental cooperation. The following sections discuss these activities.

Special Feature: What Does it Mean to Mainstream DRR?

At the Third WCDRR, the Government of Japan advocated the importance of "mainstreaming DRR," a term that deserves closer consideration.

In the international community, the phrase "gender mainstreaming" is used to mean broadening gender policy by incorporating the viewpoint of gender into all policies. In the context of DRR, as was seen in the WCDRR conference flow detailed in Chapter 1, the primary meaning of "DRR mainstreaming" is making prior efforts in initiatives to mitigate damage from disasters in particular; in other words, to ensure that DRR efforts are reflected in all policies on a widespread basis. All sectors are affected once a disaster strikes, and DRR cannot be achieved unless advanced preparations are made in all types of policies. Japan has been building a disaster management system with relevant ministries and agencies, public agencies, local governments, and others under the Central Disaster Management Council, comprised of all relevant Cabinet ministers. It is imperative that all stakeholders in countries around the world work to create systems to address DRR during ordinary times, before a disaster strikes.

An evaluation of the Hyogo Framework for Action (HFA) revealed that progress on initiatives to "Reduce the underlying risk factors" (Priority Action 4) had stalled. Disaster risks are increasing due to improper land use and urban development. Especially in developing countries, integrating considerations of disaster risk from the development stage and creating resilient cities and communities are necessary to escape the vicious cycle of poverty and disaster occurrence. In other words, mainstreaming DRR means ensuring that DRR perspectives are reflected in all development policies. The Millennium Development Goals (MDG) formulated in 2001 set the basic course for international cooperation in development, but do not address issues of DRR. Incorporating DRR perspectives in the post-2015 development agenda to be adopted by the UN General Assembly in the fall of 2015 is imperative to the mainstreaming of DRR. In the same vein, a new global agreement on climate change is to be formulated at COP21 in the winter of 2015. Since island nations and nations with coastal areas in particular are expected to face increased disaster risks due to the effects of climate change, incorporating DRR perspectives into climate change adaptation is also essential.

The problem is that it is difficult to collect funds and move disaster prevention policies forward before a disaster strikes, as compared with the amount of funds invested in emergency response measures after a disaster. To promote the mainstreaming of DRR, there needs to be greater understanding that prior investment in DRR is much more cost effective than investment in recovery and restoration after a disaster.

The SFDRR adopted at the Third WCDRR includes numerical DRR goals to advance this concept of mainstreaming DRR. It includes prior DRR investment and fundamental disaster prevention measures in the recovery phase after a disaster strikes, in adherence with the "Build Back Better" principle, and establishes a concept of DRR governance as the responsibility not only of governments, but of all stakeholders, with diverse stakeholders fully performing their respective roles. Implementation of these measures in the international community will lead to the mainstreaming of DRR. To this end, Japan will continue to actively cooperate in the area of international DRR as a leader in the DRR field.

Fig. I-3-1 Outline of the Sendai Cooperation Initiative for Disaster Risk Reduction (SCIDRR)

Sendai Cooperation Initiative for Disaster Risk Reduction (SCIDRR)

1. Basic Concept

- Disasters are an obstacle to poverty eradication and sustainable development, and thus a threat to human security.
- **Mainstreaming of disaster risk reduction (DRR)** - introducing the DRR perspective in all development policy and planning - is important. Clearly positioning DRR in the post-2015 development agenda is important from the perspective of resource mobilization.
- High attention to the efforts for "adaptation" at the climate change negotiation where an agreement is required by the end of this year. Firm DRR efforts will contribute to the climate change negotiation.
- Japan will build with the international community a society that is resilient to disasters by sharing with the world its knowledge and technology as a country advanced in DRR.

2. Basic Policies

- Japan attaches particular importance to the three points in DRR policies outlined below, building on the experience of the past 10 years since the formulation of HFA.

(1) Investment in DRR from the long-term perspective

Prior investment in DRR is more cost-effective than post-disaster emergency response and recovery and contributes to sustainable development.

(2) Build Back Better

The post-disaster phase provides an opportunity to implement drastic measures to build countries and regions that are resilient to disasters.

(3) Collaboration between the central governments and various actors

Addressing with networks including local governments, private companies, NGOs/CSOs, international organizations and regional organizations, with the central government taking the initiative.

- Japan will take the following perspectives into consideration in implementing cooperation.

(1) The human security approach and **promoting women's participation** (women, children, the elderly and persons with disabilities)

(2) Cooperation based on the perspective of **adaptation to the impacts of climate change**

(3) Utilizing **Japan's knowledge and technology**

⇒ Cooperation through effectively combining (i) non-material assistance, (ii) material assistance and (iii) global and region-wide cooperation.

3. Concrete Measures

DRR cooperation totaling to 4 billion US dollars and training of 40 thousand from 2015 to 2018

Non-material assistance

Assistance for establishing laws, institutions and systems, human resource development and other technical assistance

- Laws and regulations relating to DRR (basic acts on disaster countermeasures, laws and regulations on the use of land / building standards)
- Basic DRR plans, master plans for flood control, master plans for urban planning, land-use plans, urban planning
- Assistance to and strengthening setup of DRR branches in government
- Assistance to build and strengthen partnership systems among the public and private sectors and NGOs
- Disaster risk assessment (development hazard maps, research assistance for adaption to climate change, etc.)
- Technologies for disaster observation, prediction and warning (ICT, earth observation, geospatial information)
- Community-based DRR, disaster education
- Human resource development, training, technology transfer for DRR policy planning and emergency disaster relief
- Training to promote women's leadership in DRR

Material assistance

Economic and social infrastructure development with Japanese technology as prior investment in DRR ("quality growth")

- Countermeasures against flooding, debris flow, landslides and storm surges, forest improvement for disaster reduction
- Satellites necessary for disaster observation, perdition and warning, and information and communication infrastructure
- Improvement of buildings quality (earthquake resistance, wind resistance)
- Provision of equipment related to DRR
- Transportation, lifeline and public facilities resilient to disasters, DRR-related information and communication facilities
- Recovery and reconstruction assistance

Global and region-wide cooperation

Assistance for UNISDR and IRP, region-wide cooperation

- Assistance for the monitoring of the global targets and the improvement of its methods, as well as for the development of indicators
- Development of international disaster statistics
- Dissemination of information on good practices of "Build Back Better" including efforts from the Tohoku region
- Assistance for efforts to build region-wide institutions and systems (Sentinel Asia, Asian Disaster Reduction Center, AHA Centre, etc.)
- Assistance for countermeasures against climate change (including Green Climate Fund (GCF))
- Collaboration between regional cooperation of each region and Japan's bilateral cooperation

Source: Ministry of Foreign Affairs

Section 2: DRR Cooperation through the UN and Other International Organizations

This section describes the organizations and systems that function as international mechanisms for emergency response, disaster prevention, recovery, and restoration based on the development of DRR discussions in the international community, and highlights Japan's support for these efforts.

2-1 Support for Emergency Response: Coordination Mechanisms through OCHA

Various international organizations provide emergency support in their respective fields when a disaster occurs, with the United Nations Office for Coordination of Humanitarian Affairs (OCHA) providing overall coordination for these efforts. As mentioned in Chapter 1, the United Nations Disaster Relief Organization (UNDRO) was established in 1971 by a UN resolution. Subsequently, as regional conflicts began erupting in various parts of the world following the end of the Cold War, a 1991 UN resolution reorganized UNDRO into the UN Department of Humanitarian Affairs (DHA), which was charged with also coordinating support for conditions arising due to conflict. The DHA was subsequently reorganized into the current OCHA organization as part of UN restructuring in 1998.

Relevant governments generally handle their own disaster response, but when a disaster overwhelms the government's capacity, requests for support are made to the international community. OCHA then coordinates the international support following the guidelines below.

(1) General coordination of international humanitarian assistance activities at headquarters/local sites at the time of a disaster occurrence

- When OCHA receives a request from a country where a disaster occurs, it dispatches a UN Disaster Assessment and Coordination (UNDAC) team to the disaster-affected country. While coordinating with the UN team and government of the country, the UNDAC team ascertains the conditions on the ground and identifies support needs.
- At OCHA, a Situation Report is issued based on local information to inform the international community, including donors, of the emergency support needs, status of support provision, and other matters.
- Information pertaining to support and other activities related to a given disaster by various international organizations, including OCHA, is published on ReliefWeb to share information with the international community.
- When large-scale, wide-ranging support is needed, the needs are summarized and sent out in a Flash Appeal to mobilize emergency support funding from donors.
- For the initial response, the necessary funding for emergency response from the Central Emergency Response Fund (CERF) and other sources is promptly provided to humanitarian support organizations.

(2) Maintaining and developing disaster response coordination mechanisms at ordinary times

- Trainings are held for country staff registered with the UNDAC team, seminars are offered to increase the number of staff members, and initiatives are conducted to improve emergency response capacity and raise awareness in developing countries.

The first World Humanitarian Summit is scheduled to be held in 2016 in Istanbul, Turkey. In preparation for this, Japan hosted the Northeast and Southeast Asia Regional Preparatory Meeting in July 2014 in Tokyo together with Indonesia and OCHA.

Japan contributed approximately USD 8.6 million to OCHA in fiscal 2014 (year ending March 2015).

2-2 Mechanisms for Disaster Risk Reduction: Activities of the UNISDR

As described in Chapter 1, which reviewed the history of the World Conference, DRR mechanisms were established in the international community through a resolution of the UN General Assembly that designated the 1990s as the International Decade for Natural Disaster Reduction (IDNDR). This was done to reduce, as much as possible, tragic disasters from being repeated around the world through preparedness efforts. Entering the 2000s, these activities were continued by the International Strategy for Disaster Reduction (ISDR). The DRR strategy of the Hyogo Framework for Action (HFA) was formulated in 2005 at the Second World Conference, and then the Sendai Framework for DRR 2015–

2030 was formulated in 2015 at the Third WCDRR. The UNISDR secretariat in Geneva serves as the World Conference secretariat (described in more details in Chapters 1 and 2). It will also conduct monitoring the progress of the newly established seven global targets and DRR initiatives in countries worldwide for advancing the Sendai Framework going forward.

The UNISDR conducts numerous activities to raise awareness of DRR. For instance, it has contributed to advancing global DRR strategy by rolling out the "Making Cities Resilient" campaign targeting local governments and drafting the Global Assessment Report on Disaster Risk Reduction (GAR).

Japan contributed approximately USD 1.34 million for expenses supporting the activities of the UNISDR in fiscal 2014 (year ending March 2015; excluding expenses related to the WCDRR).

2-3 International Recovery Platform (IRP)

The International Recovery Platform (IRP) was established after the Second UN World Conference on Disaster Reduction in 2005 to harness initiatives focused on recovery from the Great Hanshin-Awaji Earthquake at its headquarters in Hyogo Prefecture and to aggregate and provide expertise on post-disaster recovery.

In May 2005, it was affirmed that the activities of the IRP, as a framework for international support that aggregates and provides information on post-disaster recovery expertise, would be developed through coordination between agencies such as the Government of Japan, UNDP, UNISDR, OCHA, the International Labour Organization (ILO), the Asian Disaster Reduction Center (ADRC), the World Bank, and the International Federation of Red Cross and Red Crescent Societies (IFRC). HAT Kobe (Happy Active Town Kobe; Kobe new eastern city center) was offered as the headquarters for activities by Hyogo Prefecture, and the organization began engaging in international recovery and support activities based on the HFA.

The IRP engages in various activities whose goals include providing a coordination framework and network for post-disaster recovery and needs assessment; facilitating the dissemination of lessons learned and the development of common tools and mechanisms; providing advice and support on the formulation of post-disaster recovery planning and programming; and strengthening national capacities in coordination with long-term development plans. The IRP's activities include holding the annual International Recovery Forum, creating Guidance Notes on Recovery, and conducting human resource development workshops.

The 11th International Recovery Forum was held in Kobe, Hyogo Prefecture in January 2015. This event, whose theme was "Sending the Message of Building Back Better from Hyogo, Japan," attracted 179 people involved in DRR from 36 countries and 27 organizations. In FY 2014, Japan provided support to cover the expenses involved in holding the International Recovery Forum, through a contribution to the UNISDR for expenses to support IRP activities (FY2014: Funding from money donated to the UN: USD 225,000; International Recovery Forum expenses, approximately JPY 7.5 million).

To promote the "Build Back Better" concept around the world, which is a clear priority of the SFDRR, the IRP will have to work on sharing and classifying good practices in recovery, strengthening activities to provide advice and support in ways that leverage accumulated knowledge, and enhancing systems for engaging in these activities.

Concept of "Build Back Better"

"Build Back Better" is a concept to build more resilient communities throughout the reconstruction phase following a disaster. To reduce the potential risk of disaster damage, it is necessary to build homes in lower risk areas, and to build disaster-resistant urban structures. The reconstruction phase following a disaster is an opportunity to incorporate lessons learned from the disaster experience into fundamental processes like land use planning and the construction of disaster-resilient structures.

Japan experiences many disasters as a result of its natural climate and topography, but has long put into practice the concept of "build back better," or taking measures to ensure that recurring disasters will not cause the same type of damage in the future. Two specific examples of how this concept has been applied are presented below.

The Great Hanshin-Awaji Earthquake of 1995 was an inland earthquake that occurred directly beneath a densely populated urban area. The number of totally collapsed residential structures alone exceeded 100,000 units. Since then, thanks to the concerted efforts of those involved in disaster response, a disaster -resilient community has been reconstructed and earthquake-resistant buildings have been built. This disaster also triggered nationwide efforts to renovate homes and public buildings to make them more earthquake resistant.

The philosophy statement in the Miyagi Prefecture Plan for Recovery from the Great East Japan Earthquake calls for the "creation of a disaster resilient and safe community," "fundamental 'reconstruction' beyond mere 'reversion,'" and the "construction of a recovery model from devastating damage." This prompted efforts to relocate the entire community to a more elevated area, to increase the height of the seawall, and to construct a dual-purpose main road system that would allow it to also function as a seawall.

This "Build Back Better" principle is well reflected in the recovery and reconstruction from Typhoon Haiyan which caused devastating damage to the Philippines in 2013. The Government of Japan assisted the Philippines with the development of hazard maps, land use plans, and medium- to long-term plans for the development of disaster-resistant cities. Also, as part of a recovery program sponsored by the Japanese grant, the ground floors of public buildings along the coast are being designed to provide shaded sporting grounds and meeting places for everyday activities, while their second floors can function as emergency shelters in the event of a disaster. Given this aid from Japan, the phrase "Build Back Better" can be seen printed on the cover of the Philippines Government's Recovery Plan. Clearly this is a sign that lessons from Japan are being disseminated around the world.

The safety of the town was improved after roads were made wider (Photos at the same location)
Photo: Kobe City

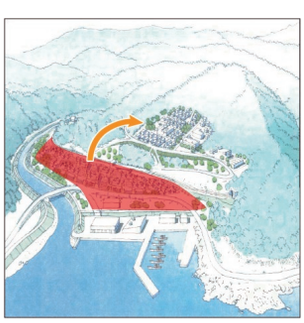


Image: "Relocation of a tsunami-disaster prone area to high ground"
Source: Reconstruction Agency

Special Feature: The Seventh World Water Forum

The Seventh World Water Forum was held in Daegu and Gyeongbuk, Republic of Korea on April 12-17, 2015. Organized by the host country and the World Water Council, headquartered in France, the World Water Forum is one of the largest water-related international conferences in the world. The Third World Water Forum was held in Kyoto, Shiga, and Osaka, Japan, in 2003. The Seventh World Water Forum focused on the theme of "Water for Our Future" and attracted more than 40,000 people from 168 countries. Intensive discussions took place on many issues related to water, including water disaster management. From Japan, the Minister of Land, Infrastructure, Transport and Tourism Akihiro Ota served as chair of the ministerial roundtable discussion on "Integrated Water Resource Management," and Hinako Takahashi, Parliamentary Vice-Minister for the Environment, gave a presentation during the ministerial roundtable discussion on "Sustainable Water Management and the Preservation of Biodiversity."

At a special session on water and disasters on April 12 (organizer: HELP*), the Crown Prince of Japan gave a lecture via video message on the topic of "Fulfilling People's Aspirations on Water: The Relationship between Water and People through Science and Technology." At the same session, Han Seung-Soo, Special Envoy on Disaster Risk Reduction and Water, government ministers, representatives of international organizations, and other participants discussed the necessity of advancing global efforts against water disasters. In addition, a special issue of Water Policy, a journal that highlights lessons learned from disaster response efforts around the world, was also published (http://www.iwaponline.com/wp/017S1/S1/default.htm).

The Ministerial Declaration adopted at the Ministerial Conference declared support for including water-related targets in the post-2015 development agenda and emphasized the pressing need to enhance resilience and preparedness for water-related disasters based on the outcomes of the Third WCDRR.

*HELP (High-level Experts and Leaders Panel on Water and Disasters): An international panel established in June 2013 with the goal of creating a UN system in which countries and international organizations jointly conduct activities to reduce water disasters. The panel is comprised of national ministers, representatives of international organizations, and other leading experts in the field of water disasters. (http://www.wateranddisaster.org/)

Video message by the Crown Prince of Japan in a special session on water and disasters. (From the Imperial Household Agency website)

Section 3: DRR Cooperation in the Asia-Pacific Region

3-1 Activities of the Asian Disaster Reduction Center (ADRC)

Based on the Yokohama Strategy adopted at the First WCDRR in 1994, which pointed out the need for regional cooperation in collecting and sharing disaster information, the Asian Disaster Reduction Center (ADRC) was established in July 1998 in Kobe, Hyogo Prefecture. It was established after investigations were conducted at ministerial and expert meetings held in countries throughout Asia to apply the lessons learned in Japan to disasters across Asia, including lessons from the 1995 Great Hanshin-Awaji Earthquake. As of June 2015, the ADRC had a network consisting of 30 member countries in Asia and five advisor countries. The organization actively coordinates with a variety of UN agencies, including the UNISDR, as well as other international agencies.

The ADRC pursues four priorities: (1) information sharing on disaster risk reduction, (2) human resource development in member countries, (3) capacity development of communities, and (4) cooperation among member countries, international agencies, regional organizations, and NGOs.

In FY 2014, the ADRC invited eight disaster-related officials as visiting researchers from its member countries, provided trainings for various national government officials, participated in the Sixth Asian Ministerial Conference on Disaster Risk Reduction (in Bangkok), and responded to 18 requests for emergency satellite observations following large-scale disasters.

In addition, in November 2014, the ADRC visited Sukabumi, located on western Java in an area of Indonesia where earthquakes and tsunamis are expected to occur in the future, and Banda Aceh, which was severely damaged by the 2004 Indian Ocean Tsunami. They conducted questionnaires and urban area surveys among 100 residents living in various areas, investigating the status of DRR countermeasures, disaster awareness among residents, and the implementation status of evacuation training.

On March 15, 2015, the ADRC held the Asian Conference on Disaster Reduction 2015 in Sendai as part of the Third WCDRR, attracting 180 people from member countries and international agencies. Co-hosted by the Cabinet Office and the UNISDR, the Asian Conference on Disaster Reduction has been held annually since 2003 with the goal of sharing information on disaster risk reduction in Asia. As this conference was held during the Third WCDRR, a focused discussion was held concerning the disaster experiences of member countries, the progress made on the HFA, and expectations for a new disaster risk reduction framework.

3-2 Disaster Risk Reduction Cooperation in APEC

Asia-Pacific Economic Cooperation (APEC) is a framework for economic cooperation comprised of 21 economies in the Asia-Pacific region. APEC economies account for approximately 50 percent of the world's total GDP and approximately 40 percent of the world's trade volume and population. APEC is a framework for economic cooperation, but its coverage area also happens to be one of the most disaster-prone in the world. Given that awareness of natural disasters is a factor that can impede sustainable development, in recent years the field of DRR has been positioned as one of those most important in the organization. One of the initiatives in this field is the Emergency Preparedness Working Group (EPWG), which is comprised of the member economies. Originally, the EPWG was organized as successor of a task force established in 2005 to deal with the Indian Ocean Earthquake and Tsunami which occurred in December 2004. The goal of the EPWG is to improve DRR capabilities in the APEC region and promote regional cooperation, with meetings being held once to twice per year. In addition, like the ministerial meetings addressing various issues, including the APEC leaders' meetings, each year the Senior Disaster Management Officials Forum (SDMOF) is held on a rotating basis within the region for sharing information and opinions regarding disaster case studies and disaster management in the area covered by APEC.

In August 2014, the eighth SDMOF was held in Beijing, China. It featured a discussion on "Strengthening Science and Technology in Disaster Risk Reduction," which focused on the application of science and technology to increase the efficiency of emergency response and disaster recovery. As part of this discussion, the Government of Japan presented information on the application of science and technology in the recovery from the Great East Japan Earthquake, the state of the recovery in the Tohoku region, and preparations for the Third WCDRR.

Ensuring Systems for the Continuity of Transnational Business Activities

More than 400 Japanese companies sustained water damage in the 2011 Thai floods, and local vendor factories and parts manufacturers suspended their production activities. This resulted in major economic damage. For example, launches of new digital camera products had to be delayed by two and a half months and local automobile production factories were forced to suspend production for about six months. The Great East Japan Earthquake that struck Japan also severely affected economic activities inside and outside Japan through the supply chain. Thus, Japanese companies with overseas locations as well as foreign companies and government organizations are showing greater interest in business continuity practices in Japan, where many natural disasters occur.

The Cabinet Office released the third edition of the Business Continuity Guidelines in August 2013. Given that it is imperative for Japan to actively communicate its knowledge related to business continuity overseas, these guidelines were translated and released in English in June 2014. In addition, in 2013, the Asian Disaster Reduction Center created a Business Continuity Planning (BCP) Guidebook for small and medium-size enterprises in Asian countries based on Japan's experiences during the Great East Japan Earthquake.

3-3 Other International DRR Initiatives in Asia and the Pacific

(1) Pacific Islands Leaders Meeting

The Pacific Islands Leaders Meeting has been held since 1997 to strengthen ties between Japan and other Pacific island nations. The Seventh Pacific Islands Leaders Meeting (PALM7) was held in May 2015 in Iwaki City, Fukushima Prefecture. Co-chaired by Prime Minister Abe and the President of Palau Tommy Esang Remengesau, the meeting was attended by leaders from 17 countries. At the Meeting, the "Fukushima Iwaki Declaration: Building a Prosperous Future Together" was adopted, promoting cooperation in seven fields such as disaster risk reduction, climate change, and the environment. Prime Minister Abe also announced Japan's intention to provide over JPY 55 billion in support over the next three years and to provide support for human resource development and exchange opportunities for 4,000 people.

(2) East Asia Summit

The East Asia Summit (EAS) was launched in 2005 to enable leaders to engage in open discussion concerning issues important to East Asia and the international community. Currently, 18 countries participate—the 10 ASEAN member states plus Japan, China, the Republic of Korea, Australia, New Zealand, India, the US, and Russia. Disaster risk reduction is seen as one of the priority cooperation fields of EAS. At the ninth EAS held in November 2014, Prime Minister Abe spoke about holding the Third WCDRR in Sendai in March 2015.

(3) Typhoon Committee

The Typhoon Committee (TC) was established in 1968 as an intergovernmental organization under the United Nations Economic and Social Commission for Asia and the Far East (UNESCAP) and the World Meteorological Organization (WMO) with the goal of reducing typhoon damage in the Asia-Pacific region. The TC is comprised of the Working Group on Meteorology (WGM), the Working Group on Hydrology (WGH), the Working Group on Disaster Risk Reduction (WGDRR), the Training and Research Coordination Group (TRCG), and the Advisory Working Group (AWG). Currently, 14 countries and territories participate (China, Hong Kong, Macao, Philippines, Japan, the Republic of Korea, North Korea, Vietnam, Cambodia, Laos, Thailand, Malaysia, Singapore, and the US). Each year a general meeting and integrated workshop are held to discuss such topics as the coordination of activities and the direction of future activities.

(4) Coordination and Cooperation with ASEAN Countries

a) The ASEAN-Japan Transport Partnership Project

The Ministry of Land, Infrastructure, Transport and Tourism (MLIT) is implementing various cooperative projects under the ASEAN-Japan Transport Partnership, a framework for cooperation between Japan and ASEAN in the field of transportation. Since 2013, under the Project to Promote Disaster Risk Reduction Cooperation in the Field of Transportation, the Ministry has invited experts from ASEAN nation ministries in charge of transportation to share their expertise on disaster management in the field of transportation. Additionally, the Ministry is in the midst of formulating a collection of DRR good practices in the field of transportation in Japan and ASEAN member states, which is scheduled for completion in 2015.

As part of the same project, the Ministry holds the ASEAN-Japan Port Technology Group Meeting. Starting in 2015, the Group will be implementing a three-year plan aimed at compiling Port Disaster Reduction Guidelines (provisional title). Focused on port disaster reduction, the Guidelines will share lessons learned from the Great East Japan Earthquake with ASEAN member states and will be referenceable when implementing initiatives concerned with port DRR in ASEAN nations.

b) International Symposium on Building the National Resilience of ASEAN Countries

Staff of the National Resilience Promotion Office in the Cabinet Secretariat attended a symposium on building national resilience sponsored by the Economic Research Institute for ASEAN and East Asia (ERIA) held in April 2015. This event was held to share Japan's expertise on and experience with building national resilience with the ASEAN nations, while trying to increase understanding of foreign countries and promote international contributions.

(5) Promoting Sentinel Asia to Share Disaster Information Throughout the Asia-Pacific Region

The decision was made to establish Sentinel Asia at the 2005 meeting of the Asia-Pacific Regional Space Agency Forum (APRSAF) hosted by the Ministry of Education, Culture, Sports, Science and Technology (MEXT) and the Japan Aerospace Exploration Agency (JAXA). The goal of Sentinel Asia is to contribute to disaster management and disaster mitigation utilizing data from satellite observations in the Asia-Pacific region. As of April 2015, the participants were comprised of 81 agencies from 25 nations and territories and 15 international agencies. Through cooperation between ADRC and agencies from countries and territories in possession of satellites (India, Thailand, Republic of Korea, Taiwan, and Singapore), Sentinel Asia has created a mechanism for providing satellite observation data through a website when requested by a disaster-stricken country. In 2014, Sentinel Asia provided emergency observations a total of 18 times, including observation images provided by Japan using the ALOS-2 (Advanced Land Observing Satellite-2) in response to the landslide disaster that occurred in central Indonesia in December of that year.

(6) Japan Holds Pan-Pacific INTERPRAEVENT 2014

To promote and disseminate scholarly research on the prevention and mitigation of disasters due to flooding, debris flows, landslides, and avalanches, the MLIT held the Pan-Pacific INTERPRAEVENT 2014 comprehensive international academic conference in Nara Prefecture in November 2014. It was attended by approximately 290 people from 25 countries and territories. In addition to sessions aimed at sharing Japan's advanced erosion control technologies and techniques, keynote speeches, oral presentations, and panel discussions were held to discuss disasters and countermeasures in various countries. The best approaches to research and development that must be taken by the international community were compiled into a proposal statement.

Establishment of the World Bank Disaster Risk Management (DRM) Hub, Tokyo (Japan–World Bank Program for Mainstreaming Disaster Risk Reduction in Developing Countries)

DRR is an important field indispensible to achieving the two World Bank missions of ending extreme poverty and promoting shared prosperity in one generation.

The World Bank has launched the Global Facility for Disaster Reduction and Recovery (GFDRR) to mitigate the threat of natural disasters and climate change for the most vulnerable communities in the world, and has conducted activities in line with the basic principles of the Hyogo Framework for Action (HFA).

In addition, to strengthen support utilizing Japan's DRR-related know-how and expertise, in April 2013 Japan and the World Bank announced the launch of the Japan–World Bank Partnership to Mainstream Disaster Risk Management in Developing Countries. In February of the following year, the World Bank DRM Hub, Tokyo was established at the Tokyo Office of the World Bank as the World Bank's base for DRR support. While coordinating with the regional offices of World Bank Headquarters and World Bank country offices around the world, the World Bank DRM Hub, Tokyo promotes the matching of DRR-related knowledge and technologies possessed by Japanese government organizations, companies, researchers, and other parties, with needs in developing countries. The World Bank DRM Hub, Tokyo provides support for designing and conducting DRR-related projects in developing countries, is building and maintaining a network linking DRR research bases around the world and in Japan, and is conducting PR activities.

Section 4: Bilateral Disaster Risk Reduction Cooperation

4-1 Japan's Overseas Emergency Disaster Support

To utilize Japan's experience in disaster relief overseas, the government began conducting international emergency assistance activities centering on the dispatch of medical teams in the latter half of the 1970s. The execution of the Act on the Dispatch of the Japan Disaster Relief Team (commonly known as the JDR Act) in 1987 and its revision in 1992 made it possible for Japan to dispatch relief teams, medical teams, expert teams, and Japan Self-Defense Force units overseas for the purpose of disaster relief. These four types of teams are dispatched separately or jointly depending on the type of disaster, its scale, and the requests of the disaster-stricken countries. The JDR relief teams have been evaluated by the United Nations as the top classification of "heavy." Further, Japan also provides emergency grants and emergency relief supplies.

In FY2014, for example, the Ministry of Foreign Affairs (MOFA) provided emergency relief goods (through JICA) to support the urgent daily life needs of disaster victims in response to the cyclone that occurred in Vanuatu in March 2015 and the flooding that occurred in Mozambique in January of that same year. In addition, the Ministry provided emergency grants in response to the flooding that occurred in northern India and northeastern Pakistan in September 2014 as well as grants for recovery from and risk reduction for typhoons and earthquakes.

In response to the earthquake that struck Nepal on April 25, 2015, Japan provided emergency relief supplies such as tents and blankets and provided approximately JPY 1.68 billion in emergency grants. In addition, the Government of Japan dispatched JDR teams—relief teams to disaster-stricken areas (a total of 70 people: one delegation leader from MOFA, 23 from the National Police Agency, 17 from the Fire and Disaster Management Agency, 14 from the Japan Coast Guard, and 15 from JICA) to engage in search and rescue activities, and medical teams (two teams comprised of 46 persons and 34 persons each) to provide medical support in disaster-affected areas. Further, the JDR teams included Japan Self-Defense Force units (114 people from medical aid units) to provide medical treatment and diagnosis in disaster-stricken areas.

4-2 Japan's International Cooperation in the Fields of Disaster Prevention and Recovery

Due to its geographical and climate conditions, Japan has long been vulnerable to all manner of disasters, including earthquakes, tsunamis, floods, storm surges, high waves, slope failures, volcanic eruptions, debris flows, and heavy snows, and has cultivated knowledge, systems, and technologies as a result of its numerous disaster experiences. Utilizing this expertise, Japan assists with improving the disaster management systems of developing countries through official development assistance (ODA) provided by MOFA, with JICA playing a central role, while also enlisting the cooperation of the active ministries and agencies. For example, the Ministry of Land, Infrastructure, Transport and Tourism cooperates in the field of river management, the Ministry of Internal Affairs and Communications cooperates in the field of information and communications systems, and the Ministry of Agriculture, Forestry and Fisheries cooperates in the field of agriculture.

Japan's cooperation in the field of DRR is characterized by the wide range of areas it covers, from the creation of organizations and systems to physical infrastructure and support for recovery. Japan's cooperation also follows the principles of the HFA's five Priorities for Action. Japan has conducted numerous initiatives to cooperate on Priority Action 4 "Reduce the underlying risk factors" and has helped introduce both structural and non-structural DRR measures in developing countries. Going forward, Japan will continue to support the creation of disaster-resilient communities through the "mainstreaming of DRR," which involves the incorporation of DRR perspectives into various aspects of development. It will remain focused on the SFDRR 2015–2030, formulated as the successor to the HFA, as it strives to end the repeating cycle of poverty and disaster and to achieve sustainable development through the reduction of disaster risks.

Special Feature: Overseas Development of DRR Technologies

Japan has long faced the threat of natural disasters and possesses much experience and many technologies derived from past disasters and the measures taken to combat them. Mobilizing its experience and technologies, Japan has contributed to improving DRR measures in developing countries.

In Indonesia, for example, Japan provided support to establish the Indonesian National Disaster Management Agency (BNPB) and to formulate a national disaster management plan to strengthen that country's national DRR capacity after the Indian Ocean Tsunami. To strengthen its provincial DRR capacity, Japan also provided support to formulate local disaster management plans based on the national disaster management plan and to conduct a pilot project for DRR activities at the community level. In addition, the knowledge and lessons learned through these activities were fed back from local communities to provincial governments and then to the central government to strengthen DRR capacity from both top-down and bottom-up approaches.

In the Philippines, the Japanese government undertook a long-term river improvement project to alleviate flooding on the Pasig–Marikina River, which flows through the Metro Manila area. As part of the project, Japan analyzed the disaster risk factors for typhoons and other disasters and conducted projects that combined structural as well as non-structural measures for disaster mitigation. In 2009, when a typhoon struck the Metro Manila area, flood control channels built with cooperation from Japan were used to control the volume of water flowing into downtown Manila, which is in the downstream area of the river. This contributed to the prevention of economic and social losses.

Peru frequently experiences large earthquakes and is at high risk of tsunami disasters. However, it has few tide indicators to measure tsunamis and faces challenges in communicating tsunami warnings to residents. The Japanese government is therefore developing a tide measurement system and providing the necessary support to build an emergency communication system similar to what is used in Japan, utilizing terrestrial digital broadcasting. By enabling the communication of early warnings for earthquakes and tsunamis, these systems are expected to help mitigate disaster damage in Peru.

Erosion control facility using Japanese technology (Indonesia)
Photo: JICA

Japanese tide measurement system introduced at a port (El Salvador)
Photo: JICA

4-3 Intergovernmental DRR Cooperation Initiatives

(1) Cooperation on Disaster Management Systems

a) Cooperation Between the Cabinet Office and the US Federal Emergency Management Agency (FEMA)

The Cabinet Office has had opportunities to visit the Washington DC headquarters and training facilities of the US Federal Emergency Management Agency (FEMA), to receive briefings from the FEMA Field Office in New York City, and to attend the APEC Senior Disaster Management Officials Forum (SDMOF), and has used these opportunities to exchange views on past disasters in the US and Japan, including the Great East Japan Earthquake in Japan and Hurricane Sandy in the US. They have also used these opportunities to discuss DRR organizational frameworks, human resource development and training, and other matters.

In December 2014, the Cabinet Office and FEMA signed a memorandum of cooperation to promote cooperation on DRR between the two organizations and to build a framework for sharing information and exchanging knowledge. To further political dialogue, State-Minister of the Cabinet Office Ryosei Akazawa met with FEMA Associate Administrator Elizabeth Zimmerman in January 2015 at the International Recovery Forum, and Eriko Yamatani, Minister of State for Disaster Management, held talks with FEMA Administrator W. Craig Fugate in May 2015.

Bilateral meeting between Minister of State for Disaster Management Yamatani and FEMA Administrator Fugate

b) Japan–China–Republic of Korea Trilateral Ministerial Meeting on Disaster Management

Based on the Trilateral Joint Announcement on Disaster Management Cooperation, released at the first Japan–China–Republic of Korea Trilateral Summit in 2008, the Ministerial Meeting on Disaster Management has been held once every two years on a rotating basis in China, Japan, and the Republic of Korea. The first Ministerial Meeting was hosted by Japan in 2009, followed by China in 2011 and the Republic of Korea in November 2013.

The Third Ministerial Meeting on Disaster Management was attended by the State-Minister of the Cabinet Office in Japan, a Vice Minister of Civil Affairs in China, and the Administrator of the National Emergency Management Agency in the Republic of Korea. At the meeting, Japan's State-Minister of the Cabinet Office spoke about the importance of sharing disaster knowledge and experience among the three countries. A joint statement on sharing DRR-related technologies and information as well as strengthening cooperative frameworks for education and training was issued. Japan also asked for its partners' cooperation in working toward the success of the Third WCDRR, requesting the attendance of minister-level officials from each country. The next Ministerial Meeting on Disaster Management is scheduled to be held in Japan in 2015.

In addition, under this framework, the three countries of China, the Republic of Korea, and Japan are conducting tabletop DRR exercises to improve their capacity to mutually provide and accept aid. The first exercise was held in the Republic of Korea, followed by a second exercise in Tokyo in March 2014. Relevant government organizations from China, the Republic of Korea, and Japan participated. Using a scenario of a major earthquake striking Tokyo, discussions were held on effective and efficient ways to give and receive support among the three countries. These exercises highlighted the importance of developing DRR cooperation among the three countries under non-emergency conditions and strengthening networks among relevant parties. The third round of tabletop exercises took place in April 2015 in Beijing, China, and was based on a scenario of a major disaster striking China.

c) Cooperation Between the MLIT and the EU's Humanitarian Aid and Civil Protection Department

In March 2013, based on correspondence between the Ministry of Land, Infrastructure, Transport and Tourism (MLIT) and the European Commission's Humanitarian Aid and Civil Protection department (ECHO), experts and practitioners have been exchanging knowledge and experiences for the purpose of upgrading both parties' DRR systems. The information exchanged covers a broad range of DRR fields such as governance systems, risk assessments, early warning systems, emergency response, human resource development and awareness raising, and major disaster emergency response. Thus far, two ministerial-level conferences as well as three conferences of experts and practitioners have been held. In addition, there have been mutual exchanges of staff to one another's DRR trainings and other events.

d) Asia International Forum on Fire and Disaster Management

Economic development and urbanization have progressed in Asia in recent years, yielding an increased need to upgrade fire and disaster management systems. Since FY 2007, the Fire and Disaster Management Agency has held the International Forum on Fire and Disaster Management, which broadly introduces Japanese firefighting technologies, systems, and organizations to countries in the Asian region to help them improve their firefighting and DRR capacity. In FY 2014, the forum was held in September in the city of Phnom Penh, Cambodia. There were opportunities for information sharing and a lively exchange of views on issues including strengthening fire disaster management capacity, human resource development for firefighting personnel, and fire prevention systems. As part of the effort to develop Japanese DRR and fire prevention infrastructure systems overseas, Japanese companies introduced and exhibited their firefighting products.

(2) Promoting the Overseas Sharing of Japanese DRR Technologies (Disaster Management Collaboration Dialogue)

The MLIT is helping to improve the DRR capacity of emerging countries, mainly in Asia, by utilizing leading Japanese technologies and knowledge related to DRR. In addition, industry, government, and academia in Japan and partner countries have been working together since 2013 to build ongoing cooperative frameworks for the purpose of developing Japanese DRR technologies overseas (currently, the partner countries are Vietnam, Thailand, Myanmar, Indonesia, Turkey, and South Africa). They are aiming to propose packaged solutions based on ongoing exchanges of views through the identification of needs, workshops, and other means using local field surveys, individual consultations, and other methods in each country.

They are also coordinating and conducting activities with the Japan *Bosai* Platform (JBP), whose participants include representatives from industry, academia, and government, to strengthen coordination among these sectors in Japan.

(3) Science and Technology Research Partnership for Sustainable Development (SATREPS)

The Ministry of Education, Culture, Sports, Science and Technology (MEXT) Japan Science and Technology Agency (JST), and Ministry of Foreign Affairs (MOFA)/ JICA are conducting the Science and Technology Research Partnership for Sustainable Development (SATREPS), which promotes joint international research leading to the resolution of global-scale issues in developing countries through the coordination of Japan's leading science and technology and ODA. In the field of DRR, 16 joint research and development projects are being conducted with 15 countries. Specifically, under a Research Project to Improve Technologies for Tsunami-Resilient Community Development, which is being implemented in cooperation with government organizations in Chile, efforts are being made to develop tsunami damage prediction and early warning system methodologies, and to conduct outreach activities for citizens based on lessons learned from the Great East Japan Earthquake. When a tsunami struck after the magnitude 8.2 Iquique earthquake struck off the coast of Chile in April 2014, residents quickly evacuated the area. Then in July 2014 when Prime Minister Shinzo Abe visited Chile, the Port and Airport Research Institute, which oversees the research, and five concerned governmental organizations in Chile signed a memorandum to promote research with a view to encompassing all of Central and South America.

(4) Forest Management Focused on Forest Disaster Risk Reduction and Mitigation Functions in Developing Countries

The Ministry of Agriculture, Forestry, and Fisheries (MAFF) has been conducting a field project since FY 2013 (year ending March 2014) through contributions to the Food and Agriculture Organization (FAO). It aims to improve resilience to disasters and to ensure stable water resources by establishing an efficient evaluation method for soil conservation and watershed protection functions contained by applicable forests in developing countries. Workshops have been held in the three countries of Nepal, Vietnam, and Mexico to increase use of the evaluation method developed in this project at forest management field sites.

(5) International Cooperation in Nuclear DRR: Participation and Cooperation in Japan–China–Republic of Korea on Nuclear Disaster Management Drills

The Top Regulators' Meeting (TRM) has been established for the nuclear regulatory agencies of Japan, China, and the Republic of Korea to exchange valuable information and views to improve shared issues and technologies related to nuclear safety. Under the TRM's initiatives, it has been established that Japan, China, and the Republic of Korea, when conducting nuclear disaster management drills in their own countries, will invite the other two countries to participate as observers and to exchange views on the drills. When disaster management drills were conducted at the Republic of Korea's Kori Nuclear Power Plant in November 2014, officials from Japan's Nuclear Regulation Authority and Chinese regulatory authorities participated. The countries are also building a tripartite information-sharing system for times of emergency.

(6) Joint Project with ITU Using Movable and Deployable ICT Resource Unit (MDRU)

Based on the lessons of the Great East Japan Earthquake, the Ministry of Internal Affairs and Communications has been conducting research and development on the Movable and Deployable ICT Resource Unit (MDRU), which is a communication unit that can be deployed to disaster-affected areas during a disaster to quickly restore communications.

Since FY 2014 (year ending March 2015), the Ministry of Internal Affairs and Communications (MIC) has been cooperating with the International Telecommunication Union (ITU) and the Philippines' Department of Science and Technology (DOST) to set up MDRUs on Cebu Island in the Philippines, which was affected by a large typhoon, and at city government offices and other areas to test voice and data transmissions using a wireless LAN network.

Special Feature: Hyogo's DRR Initiatives

Since the Great Hanshin-Awaji Earthquake, Hyogo has been taking steps to achieve "Creative Reconstruction" and to establish a mature, 21st-century society rather than merely settling for the restoration of pre-disaster conditions. During reconstruction, Hyogo received vast amounts of assistance from abroad. In an effort to repay this kindness, Hyogo now focuses on disseminating the experiences and lessons learned from the earthquake both at home and abroad, and on cooperating with local governments abroad on DRR initiatives.

Disaster Reduction and Human Renovation Institution (DRI)

Establishment and Operation of the Disaster Reduction and Human Renovation Institution (DRI)

Hyogo co-manages the Disaster Reduction and Human Renovation Institution (DRI) in cooperation with the national government as a base for sharing the experiences and lessons learned from the earthquake. It receives many visitors, both domestic and international. In addition to playing the role of an earthquake museum by collecting, preserving, and exhibiting earthquake-related resources, DRI conducts practical research on DRR using its unique research and survey functions. It trains DRR practitioners and deploys specialists to disaster-affected areas both at home and abroad to provide advice on disaster response activities. DRI takes advantage of the experiences and lessons learned from the earthquake in on -site disaster management and acts as an international hub for DRR activities.

Formation of the Disaster Reduction Alliance

Hyogo invited international DRR organizations such as the United Nations Office for the Coordination of Humanitarian Affairs (OCHA), the United Nations International Strategy for Disaster Reduction (UNISDR), the International Recovery Platform (IRP), the Asian Disaster Reduction Center (ADRC), the Japan International Cooperation Agency (JICA), and others to form the Disaster Reduction Alliance (DRA) and thus strengthen the relationships between these organizations. This work is coordinated by DRI. Thanks to the mutual cooperation of these organizations, Hyogo dispatches experts to disaster-affected areas overseas and accepts trainees from other countries. Furthermore, Hyogo supported the establishment of the Bursa Disaster Learning and Training Center, which is modeled after the DRI, in the Bursa Province of Turkey. In these ways, the lessons that Hyogo learned from the earthquake and subsequent reconstruction activities are being widely applied internationally.

International DRR Cooperation Based on Earthquake Experiences

Hyogo provided support to overseas disaster-affected areas after the earthquakes in Turkey (1999), Northern Taiwan (1999), Sichuan Province, China (2008), and other locations by dispatching specialists with vast knowledge of disaster response. Hyogo also provided practical support based on its experiences as a disaster-affected local government by sending milk bottles and diapers to the Philippines after Typhoon Haiyan in 2013. Hyogo continues to support disaster-affected areas overseas through citizen-funded "donation projects" developed for specific purposes (extending scholarships, reconstructing schools and/or hospitals, etc.) based on the needs of the affected areas.

DRR Cooperation Through UN Organizations

Hyogo Prefecture hosted the Second WCDRR in Kobe City in 2005, the result of which was the adoption of the HFA as an international DRR guideline. Hyogo was recognized as the world's first role model for the "Making Cities Resilient" campaign started in 2010 by the UNISDR. In addition, Governor Toshizo Ido of Hyogo was designated as a Champion (DRR Leader) for his leadership and engagement in important activities, such as advocating the importance of DRR. During the Third WCDRR, Governor Ido, the sole Champion from Japan, introduced lessons learned from the reconstruction efforts that have been implemented in the 20 years since the earthquake and also shared recommendations regarding the adoption of a new DRR framework. New suggestions included the promotion of creative reconstruction, the pursuit of international DRR cooperation among local governments, and the empowerment of local governments to increase their DRR capacity.

Part II:

Status of Disaster Management Measures in Japan

Part II Status of Disaster Management Measures in Japan

Due to its natural conditions, Japan is prone to virtually every type of natural disaster. A variety of natural disasters occurred in 2014, including heavy snowfalls, sediment disasters, volcanic eruptions, and earthquakes. Part II of this report focuses on recent natural disaster risk reduction measures, in particular the status of policies implemented with priority status in 2014.

Chapter I Status of Disaster Management Policies

Section 1: Disaster Management Systems and Disaster Preparedness

1-1 Government's Approach to Crisis Management Organization

Revisions in the government's approach to its crisis management organization are being investigated in the Supplementary Provisions to the Act for Establishment of the Nuclear Regulation Authority 2012 and the Supplementary Resolution relating to a Bill for Partial Amendment of the Disaster Countermeasures Basic Act of 2013.

Since it is therefore necessary for the Cabinet Office to investigate the most appropriate crisis management organization for Japan by reviewing the current system, including related ministries and agencies, and making comparisons with the crisis management systems adopted by other major countries of the world, an assembly of the Senior Vice-Ministers of the related ministries and agencies was held in August 2014, chaired by the Senior Vice-Minister of the Cabinet Office, and compiled its final report in March 2015.

While the final report indicates that it is difficult, under present circumstances, to discern a need for a fundamental revision of organizations and systems at the central level, such as the establishment of unified ministries and agencies for dealing with crisis management, it also notes that it is extremely important, in times of crisis when a large-scale natural disaster has occurred, to establish a system that fully demonstrates the strengths of relevant organizations at the national and local levels. Specific responses that would fulfill this objective would include:

- Ensure sufficient staff, including replacements, are dispatched to the Disaster Management Headquarters and provide training to ensure that they can respond appropriately when a natural disaster occurs.
- Develop systems that will allow the integrated implementation of prompt and accurate information sharing and disaster response by the national government and affected local governments. For example, investigate frameworks to enable staff from the organizations of each ministry and agency dispatched to the municipalities, as representatives of the national government, to gather information and respond as needed, and do this in combination with efforts to delineate the chain of command and to strengthen the systems of each ministry and agency.
- The Disaster Management Headquarters, which are established in response to natural disasters, and the Nuclear Disaster Response Headquarters, which are established in response to nuclear accidents, should effectively function in a unified manner to manage for complex disasters.

When a large-scale natural disaster occurs, it is very important that the necessary staff and organizations are mobilized promptly and that systems are established to enable them to function. In the case of complex disasters (in particular where nuclear power disasters are combined with natural disasters), the following measures will be adopted.

- For the initial response, hold a joint meeting between the Extreme Disaster Management Headquarters and the Nuclear Disaster Management Headquarters
- Implementation of "hard" developments such as the reciprocal introduction of information sharing networks across both Headquarters and the dispatch of reciprocal liaison officers
- Information sharing through close cooperation between both on-site headquarters
- Integrated implementation of operations such as the coordination of tactical organizations and the support of disaster victims
- Strengthening of cooperation between related organizations through drills that are based on the occurrence of complex disasters

While investigating the state of development and the fruits of such efforts, and without excluding the revision of organization systems, future efforts must be made to provide for the examination and implementation of necessary structures and to produce a better crisis management and response system.

Fig. II-1-1 Overview and Comparison of Crisis Management Organizations in Various Countries

Country	Japan	United States	United Kingdom
Name of organization	Cabinet Office (Director General for Disaster Management)	Department of Homeland Security (DHS) FEMA (Federal Emergency Management Agency)	Cabinet Office CCS (Civil Contingencies Secretariat)
Established	1984	1979 (moved under DHS in 2003)	2001
Leader	Minister of State for Disaster Management	Administrator	
Staff	92 (quota)	FEMA: 7,672 full time employees (10,600 emergency response personnel)	About 60
Ordinary structure	8 offices, responsible for: - Disaster Management - Disaster Response Operations - Communities/Drills - Surveys/Policy Planning - Disaster Victims Administration - Disaster Preparedness, Public Relations and International Cooperation - Disaster Management Planning - Project Promotion	Organization of FEMA - Protection and National Preparedness Office - Response and Recovery Office - Federal Insurance and Mitigation Administration Office - U.S. Fire Administration - Mission Support In addition, the US is divided into 10 blocks, with a regional office established in each block	Organization of CCS - Assessments Department - Operations Department - Policy Department
Structure following a natural disaster	In the event of an extreme disaster that cannot be handled at the prefectural level, establishment of an Major Disaster Management Headquarters led by the Minister of State for Disaster Management (or in the event of an extraordinary and violent natural disaster, establishment of an Extreme Disaster Management Headquarters led by the Prime Minister)	In the event of a large-scale natural disaster or incident, state governor would request a declaration from the President. In the event of a large-scale disaster that exceeds the capacity/resources of the state or regional government, or it is judged that there is a state of emergency with a risk of a enormous damage, a declaration of a large-scale natural disaster or a state of emergency is made by the President. If a state of emergency is declared, a Senior Federal Coordinator is appointed to coordinate the activities and resources of the federal and regional governments, and federal aid is initiated, centered on FEMA, as defined in the Stafford Disaster Relief and Emergency Assistance Act and the national response framework.	In the event that the circumstances of a state of emergency are severe or its effects are wide-reaching, a Cabinet Office Briefing Rooms (COBR or COBRA) meeting is held, and the national response plan is investigated by the Civil Contingency Committee.
Cross-ministerial response	Depending on the type of emergency situation, there are basic laws which will apply. Based on these, several ministries coordinate with the principle ministries and agencies to respond to the emergency situation. Natural disasters, large-scale fires, accidents → Disaster Countermeasures Basic Act (Cabinet Office); nuclear power disaster →Act on Special Measures Concerning Nuclear Emergency Preparedness (Nuclear Regulation Authority); new influenza →New Influenza Special Measures Act (Cabinet Secretariat); armed attack →Civil Protection Law (Cabinet Secretariat) *Following a disaster, a disaster management headquarters comprised of the entire Cabinet and heads of all ministries/agencies will be established pursuant to the relevant law, and coordination work will be handled by this headquarters.	An Emergency Support Function (ESF) is established by the government, and it designates each ministry or agency to serve as the coordinating institution, chief institution, or support institution for the 15 areas of operations implementation. In the event that mutual coordination between the institutions becomes difficult, FEMA will devise a mechanism to plan the ultimate coordination.	Several ministries and agencies will coordinate to respond to emergency situations, lead by a Lead Government Department (LGD) which is designated according to the emergency situation. Other ministries support the response of the LGD (although the LGD does not have the authority to issue commands to the other ministries).
All hazard assumptions	Each ministry and agency is granted powers based on each individual basic law, and depending on the type of emergency situation. *Regardless of whether the hazard is a natural disaster, nuclear power disaster, new influenza, or other type of disaster, unified general coordination in the initial response phase will be carried out by the Deputy Chief Cabinet Secretary for Crisis Management (responsible for cabinet secretariat emergency response/crisis management).	Fundamentally an "all hazards approach" is used (however, for particular events such as biohazards, cyber attacks, or nuclear power/radioactivity accidents, the ministry that has the appropriate specialized knowledge will lead the response).	The Civil Contingencies Act addresses far reaching emergency situations such as natural disasters or epidemics, acts of terrorism, and other events which threaten serious damage to social infrastructure. (However, an LGD is stipulated for each event, and the CCS is the organization that has responsibility for coordinating each institution).
Budget	JPY 5.29 billion (as of the start of 2014)	Approx. USD 13.6 billion (as of 2013) (Of this, USD 3.6 billion is for flood insurance)	Budget for responding to emergency situations is borne by each ministry and agency; CCS budget is for response in ordinary times only
Local government organizations	There is no regional organization for disaster risk reduction during ordinary times. Following the occurrence of a disaster, depending on the scale of the disaster, National On-site Disaster Management Headquarters and on-site contact offices will be set up.	Across the country there are 10 permanent regional offices. In the event of a natural disaster, staff are dispatched from these offices to the site of the disaster, and they handle communication and coordination between the federal government and state governments.	In 2010, the regional government offices were abolished. In the event of a disaster, emergency staff would be dispatched to the site, and could carry out communication and coordination with community and regional representatives of the Ministry of Home Affairs.

Note: Compiled by the Cabinet Office from the Report on the “Survey of Government Systems for Disaster Risk Reduction, Security, and Crisis Management" and the websites of each institution.

Germany	France	Republic of Korea	Taiwan
BBK (Federal Office of Civil Protection and Disaster Assistance)	Ministry of the Interior DSC (Directorate of Civil Defence and Security)	Ministry of Public Administration and Security NEMA (National Emergency Management Agency)	Executive Yuan (Executive branch) Office of Disaster Management
2004	1975	2004	
Federal Minister of the Interior	Minister of the Interior	Administrator of NEMA (Minister of Public Administration and Security)	
344		435	
Organization of BBK (1) Emergency Administration Division (2) Emergency Response/Important Social Foundation/International Cooperation Division (3) Research Technology/Health Protection Division (4) Civil Protection Drills and Risk Management/Emergency Planning/ Civil Protection Academy Division Also, a Federal Agency for Technical Relief (THW) has been established to provide technological support for relief in civil protection and disaster risk reduction	At the national level, the Minister of the Interior, through all the regions within France, prepares assistance measures such as regional/public facilities for use in the event of a disaster, and coordinates resources in emergency situations.	Organization of the NEMA: - Planning and Coordination Authority - Prevention and Security Bureau - Fire Prevention Policy Bureau - Disaster Management Bureau	
In the event that a large disaster occurs that exceeds the coping capacity of a state or causes damage that crosses state boundaries, an organization to coordinate between ministries and agencies is established within the Ministry of the Interior.	The initial rescue activities and recovery activities following a natural disaster are conducted by the local government of each municipality; depending on the scale of the disaster, this may be taken to a higher level.	In times of emergency, a Central Disaster Security Measures Headquarters is established within the Ministry of Public Administration and Security, with the Minister of Public Administration and Security as its head. This head can issue dispatch requests to the service staff and staff of disaster management institutions, and can request the National Director of Defense to mobilize the military.	In the event that a major natural disaster occurs or is anticipated, a Central Disaster Response Center is established.
In the event that the above organization is established, the Ministry of the Interior, working with other federal ministries and other states, has the role of coordinating assistance to the affected area.	(Repeated) At the national level, the Minister of the Interior, through all the regions within France, prepares assistance measures such as regional/public facilities for use in the event of a disaster, and coordinates resources in emergency situations.	The Ministry of Public Administration and Security has jurisdiction over the Police Agency as well as NEMA, and coordinates the activities of both firefighters and police.	The institution that will take responsibility is designated according to the type of disaster. - Typhoon, earthquake, fire → Ministry of the Interior - Flood, drought, related to essential utilities or infrastructure → Ministry of Economic Affairs - Cold snap, landslide → Council of Agriculture - Aircraft accident, traffic accident → Ministry of Transportation
According to the German constitution, in ordinary times, the states are responsible for dealing with any disaster. There are no structural differences between the different types of disaster. (The federal government is only fully responsible for civil defense in times of war. The 16 states are responsible for disaster response and mitigation during peacetime. In addition, since all of the responses within each state are delegated to the counties or municipalities, the actual natural disaster activities are carried out at the county and municipality level.)		NEMA is concerned with natural disasters such as typhoons, earthquakes, and human-induced disasters such as fires, explosions and traffic accidents. Furthermore, the Radiation Disaster Management Bureau of the Nuclear Power Safety Committee plays the central role in nuclear disaster risk reduction.	Disaster prevention institutions and response activity institutions are designated for each disaster, but the government as a whole is involved in the anticipation of an "all hazards" situation. (In the event that no institution is designated, the Central Disaster Prevention/Response Committee will designate the lead institution).
		Approx. USD 300 million	
	The whole of France is divided into 7 districts, and disaster response plans are adopted by each district. The head of each district coordinates resources in an emergency situation within their district.	The fire service/police which are the active responders at the site of a disaster are under the direct jurisdiction of the Ministry of Public Administration and Security. In times of emergency, a chief on-site information administrator may also be dispatched to the disaster site.	In the event of a disaster, a forward command post may be established at the disaster site with the consent of the director of the Central Disaster Response Center, and depending on the circumstances of the natural disaster. This post carries out the status confirmation of the disaster site, the coordination of support materials, and rescue activities.

Note: Compiled by the Cabinet Office from the Report on the Survey into Government Systems for Disaster Risk Reduction, Security, and Crisis Management" and the websites of each institution.

1-2 Efforts in Human Resource Development and Disaster Management Drills

(1) Human Resource Development

In a prompt and appropriate response to a natural disaster, much depends on the knowledge and experience of the disaster management officials who implement that response. For this reason, the Cabinet Office has been working since 2013 to provide Disaster Risk Reduction Specialist Training to national and local government officials to cultivate people who can respond promptly and appropriately to crisis situations and people who can form national and local networks. In 2014, it also implemented Training to Experience Cabinet Office Operations, Training at the Ariake no Oka Core Region-wide Disaster Management Base Facility, and Comprehensive Disaster Management Training by Region for national and local government officials.

The Training at the Ariake no Oka Core Region-wide Disaster Management Base Facility includes a “General Management Course” for staff who play a key role in the operation of the disaster management headquarters, “Individual Policy Course” for expert staff who are engaged in responding to specific individual issues, and “Disaster Risk Reduction Foundation Course” for staff newly appointed to disaster management departments. Training enables the acquisition of the skills necessary for carrying out disaster risk reduction activities.

Fig. II-1-2 **Disaster Risk Reduction Activities Carried out by Disaster Risk Reduction Specialists**

	Prevention		Response		Rehabilitation/Recovery	
General coordination	1	Planning				
	2	Public information				
	3	Operation coordination				
	4	Execution management				
Response to individual issues	5	Disaster-resistant national development, community development	11	Measures for dealing with the period immediately prior to a disaster	22	Decisions regarding basic course of community rehabilitation/recovery
	6	Prevention of accidents and disasters	12	Establishment of systems for information collection and communication and activity immediately following a disaster	23	Methods for rapidly returning to normal conditions
	7	Promoting disaster risk reduction activities among citizens	13	Prevention of escalation or secondary disasters and emergency response and rehabilitation activities	24	Methods of systematic recovery
	8	Promoting research and observations relating to disasters and disaster risk reduction	14	Rescue, first aid, medical care, and firefighting activities	25	Support for victims in rebuilding their daily lives
	9	Implementation of measures to prevent recurrence of accidents and disasters	15	Securing roads for emergency transport, emergency transport activities	26	Reconstruction of small and medium-sized companies that have been victims of the disaster, other support for economic reconstruction
	10	Preparation for swift and seamless disaster response measures against disasters as well as recovery and reconstruction	16	Evacuee accommodation and information dissemination activities		
			17	Procurement and supply of goods		
			18	Activities relating to preservation of health and hygiene, disease control, and disposal of bodies, etc.		
			19	Activities relating to preservation of social order, stabilization of commodity prices, etc.		
			20	Activities relating to education on response		
			21	Acceptance of voluntary support		

Items 1-4: Established as the most important activities common to prevention, response, and rehabilitation/recovery
Items 1-3: Established with reference to the National Preparedness Goal
Item 4: Added to items 1-3 due the importance of evaluation/improvement in the PDCA cycle
Items 5-26: Established from the issues in the measures common to all disasters in the second edition of the Basic Disaster Management Plan

Disaster risk reduction activities primarily highlighted by the Cabinet Office

Source: Cabinet Office

The Comprehensive Disaster Management Training by Region offered training for the acquisition of knowledge and attitudes necessary for responding to natural disasters by establishing and implementing themes which cover the special characteristics of the natural disasters that occur in each region.

These courses shall continue to be implemented in 2015, together with investigations into various frameworks for human resource development. These include the development of standard textbooks, which would provide a common foundation for the implementation of training.

At the same time, when a large-scale natural disaster of unimaginable proportions occurs, those who spearhead disaster response activities will have to make prompt and appropriate decisions to protect citizens. For this reason, a National Disaster Risk Reduction - Crisis Management Top Seminar was held in 2014, co-sponsored by the Fire and Disaster Management Agency. This training was intended for first-term mayors or mayors with no natural disaster experience, and covered principles of disaster response, disaster preparedness, and measures that can be taken both immediately prior to and immediately after a natural disaster.

Special Feature: About the Mayor's Summit on Flood Disasters

The Mayor's Summit on Flood Disasters is organized by the Flood Management Summit Executive Committee Office (promoters: Mayor of Sanjo City, Niigata Prefecture, Mayor of Mitsuke City, Niigata Prefecture, Mayor of Fukui City, Fukui Prefecture, and Mayor of Toyooka City, Hyogo Prefecture), and has been held every year since 2005. It aims to allow municipal mayors from local governments all across the country who have experienced flood disasters to discuss their experiences with one another and to disseminate information nationwide about flood countermeasures and future challenges.

One of the specific initiatives of the Summit has been the production of a publication entitled "What Could and Could Not be Done at Flood Damage Sites: Know-How on Disaster Risk Reduction, Disaster Mitigation, and Restoration from Affected Areas" (published by the Flood Management Summit Executive Committee Office). This publication details the difficulties of implementing flood countermeasures and outlines response measures. It also includes "The 11 Must-Do Items for Leaders at the Time of a Natural Disaster."

At the 10th Mayor's Summit on Flood Disasters held on June 3, 2014, local governments shared their experiences and lessons learned from dealing with flood disasters, focusing on topics such as efforts to avoid the erosion of disaster risk awareness gained from experiencing a natural disaster.

The 11 Must-Do Items for Leaders At the Time of a Natural Disaster
(excerpt from the Mayor's Summit on Flood Disasters
website: http://www.mlit.go.jp/river/suigai/index.html, partially abbreviated due to space constraints)

1. Saving lives must be your first priority, and you must not hesitate to issue evacuation orders to residents.
2. Delays in decision-making cost lives. Above all else, as a leader you must make decisions quickly.
3. We have learned that people will not flee. Be aware in advance that people tend to avoid fleeing.
4. Set up a volunteer center immediately.
5. Leaders must make themselves as visible as possible to residents via mass media, and encourage the victims by demonstrating that "City (Town) Hall is doing all it can."
6. Leaders must understand the suffering and sadness of the residents, and communicate that understanding to them.
7. Hold a press conference every day at a designated time, and continue to share information. Do not hide any information.
8. There will be a vast quantity of waste. Immediately prepare a large provisional area for waste disposal. Ask residents to separate it as best they can into *tatami* matting, domestic appliances, tires, etc. (and dispose of the waste quickly after the event).
9. Financial matters can be sorted out afterwards. You must take resolute action to do what needs to be done for residents. Above all, immediately after the occurrence of the natural disaster, you must tell your staff unequivocally "Do not worry about money. The mayor will sort it out somehow. Just do everything you have to do."
10. Even if you are busy, ungrudgingly allow inspections to be performed.
11. Continue to express your gratitude to the people who have come to provide support and relief. Your staffs are victims, too. Express your gratitude to your staff and their families.

(2) Disaster Management Drills

In the event of a natural disaster, national government institutions, local governments, public agencies, and other institutions involved in disaster management must work as one, in cooperation with residents, to respond to that disaster. For this reason, institutions involved in disaster management implement disaster management drills based on the Disaster Countermeasures Basic Act, Basic Disaster Management Plan, and other regulations to verify and confirm the emergency measures to be taken when a natural disaster strikes and to enhance residents' awareness of disasters.

The basic policy for disaster drills that are conducted by national and local governments, as well as an overview of the drills that are carried out at the national level, are determined every year by the Central Disaster Management Council in the Comprehensive Disaster Management Drill Framework. In 2014, the following drills were carried out based on the 2014 Comprehensive Disaster Management Drill Framework.

- Drills on the establishment and management of the Extreme Disaster Management Headquarters, with the participation of all cabinet ministers, to confirm procedures for the declaration of an emergency and the determination of basic policies relating to the emergency disaster response measures.
  (Government Headquarters Operations Drill on September 1, 2014, "Disaster Preparedness Day")
- Relevant local governments and private companies were invited to conduct drills, including tsunami evacuation drills, around Tsunami Preparedness Day on November 5. Tsunami evacuation drills were conducted together with communities in eight locations nationwide.
  (Community Earthquake and Tsunami Disaster Drills, November 1-9, 2014)
- Classroom learning and basic tabletop exercises for personnel of the secretariat of the Extreme Disaster Management Headquarters, aimed at improving their knowledge and proficiency.
  (June 13, 2014, Extreme Disaster Management Headquarters Secretariat Personnel Tabletop Exercise)
- Tabletop exercises in a role-playing format to investigate the effectiveness of the functions and manuals of the Extreme Disaster Management Headquarters Secretariat.
  (February 9, 2014, Government Tabletop Exercise)
- Drills on the establishment and management of On-site Extreme Disaster Management Headquarters held in three locations across Japan.
  (November 5, 2014 (Aichi Prefecture), January 16, 2015 (Kagawa Prefecture), February 1, 2015 (Osaka Prefecture), On-site Extreme Disaster Management Headquarters Establishment and Management Drill)
- Comprehensive drills to support regional medical transportation, such as the transport of disaster medical assistance teams (DMAT) and patients, and the establishment and management of regional transport bases and provisional medical facilities.
  (August 30, 2014, Regional Medical Transport Drill)
- Practical drills to clarify issues relating to the provision of medical functions using civilian vessels.
  (November 25, 2014)

The 2015 Comprehensive Disaster Management Drill Framework was established on March 31, 2015 based on both the disaster management drills that were conducted in 2014 and on recent disasters. The basic approaches to the drills the government plans to conduct, are outlined below.

- Implement the government headquarters management drill on Disaster Preparedness Day on September 1 using the scenario of a Tokyo Inland Earthquake
- Urge local governments and private companies to conduct drills around Tsunami Preparedness Day on November 5, encourage the implementation of drills, and conduct large-scale earthquake early warning drills and earthquake/tsunami disaster drills
- Conduct On-site Disaster Management Headquarters management drills in every region
- Conduct sediment disaster/nationwide disaster drills involving residents
- Conduct drills involving residents, hikers, and tourists based on the evacuation plans formulated by the Volcanic Disaster Management Councils
- Conduct comprehensive disaster management drills that envision a complex disaster involving both a natural disaster and a nuclear power disaster
- Conduct drills to practice road clearance and the removal of abandoned vehicles to rapidly secure emergency transportation routes (Figs. II-1-3, II-1-4)

When the 2016 Comprehensive Disaster Management Drill Framework is created, a mid-term disaster management drill plan with a mid-term perspective will also be devised in order to ensure the implementation of planned and systematic drills.

Fig. II-1-3 2015 Perspectives on Creating a Comprehensive Disaster Management Drill Framework

1	Meeting of related senior vice-ministers, study meeting for crisis management	Add strengthening of communication between disaster management organizations in normal times, including strengthening of relations between national and local governments, to disaster management drill goals
		Provide examples of region-wide drills, simulation drills conducted in partnership with local governments
2	Act on the Promotion of Tsunami Countermeasures (2011)	Add stipulations on making efforts to include local governments and private companies, and promoting the implementation of drills
3	Revision of the Sediment Disasters Prevention Act (Hiroshima Landslide Disaster)	Add sediment disaster and nationwide disaster management drills
4	Investigation into revising the Act on Special Measures for Active Volcanoes (Mt. Ontake Eruption)	Conduct drills based on evacuation plans formulated by Volcanic Disaster Management Councils
5	Three year revision investigation team (Completion/strengthening of nuclear management system)	Implement comprehensive disaster management drills assuming a complex disaster involving a natural disaster and a nuclear power disaster
6	Revision of Disaster Countermeasures Basic Act (abandoned vehicles measures) (Yamanashi Prefecture Snow Storm)	Add drills for opening roads and removing abandoned vehicles so as to rapidly establish emergency transportation routes

Source: Cabinet Office

Fig. II-1-4 2015 Outline of Comprehensive Disaster Management Drills

○ Objectives of disaster management drills

○ Verify effectiveness of institutions related to disaster risk management
○ Strengthen mutual coordination with institutions involved in disaster risk management during ordinary times to strengthen relations between national and local governments
○ Continuously improve disaster management plans
○ Raise awareness and improve knowledge of DRR among residents

○ Comprehensive government-run disaster management drills

(1) Earthquake and tsunami drills

A. Comprehensive "Disaster Prevention Day" disaster management drills
- "Disaster Prevention Day" government headquarters management drill
  Drill for activating the Disaster Management Headquarters Meeting attended by all Cabinet Ministers including the Prime Minister
- Site survey drill at a disaster-stricken area (Tokyo) in conjunction with a joint disaster drill by nine local governments (prefectures and cities)
- Assembly drill in the government office, each Cabinet Minister walking

B. Earthquake and tsunami drills on "Tsunami Preparedness Day"
Promote drills, encourage local governments and private companies to participate
- Earthquake Early Warning drill
- Earthquake and tsunami disaster management drills

C. Government tabletop exercises
- Government tabletop exercise for a Nankai Trough earthquake
- Tabletop exercise based on plans by staff of Extreme Disaster Management Headquarters Secretariat supposing a Tokyo Inland Earthquake
- Drill to practice management of On-site Disaster Management Headquarters
- Joint disaster drills with Self-Defense Forces
- Drills to practice the transmission of information based on a Tokai Earthquake

D. Regional block drills
Regional practical and tabletop exercises implemented mainly by a council comprised of relevant ministries and local governments in regional blocks
- Joint disaster drill by nine local governments
- Regional disaster drills for the Tokai region
- Joint disaster drill among the Kinki prefectures
- Kyushu Block Council Joint Disaster Drill to prepare for a Nankai Trough Megaquake

E. Practical drills in coordination with local governments
Drills carried out by Police Disaster Response Units, Emergency Fire Fighting Assistance Corps, TEC-FORCE, Self-Defense Forces, and DMAT in coordination with relevant local governments
- Joint defense drills with regional emergency assistance teams conducted by police bureaus in each jurisdiction
- Nationwide joint drills by the emergency firefighting assistance corps and joint drills by regional block
- Comprehensive disaster management drills in each prefecture

(2) Flood disaster management drills
- Comprehensive flood prevention exercises
- Landslide disaster/national disaster management drills
- Large-scale tabletop exercises for flooding

(3) Volcanic eruption disaster management drills
Drills based on evacuation plans formulated by Volcanic Disaster Management Councils

(4) Drills for disasters caused by accidents
- Aviation disaster tabletop exercises
- Oil-spill control drills

(5) Nuclear power comprehensive disaster management drills
Comprehensive disaster drills to address a hypothetical combined disaster involving a natural disaster and a nuclear power disaster

(6) Drills to verify business continuity plans
- Tabletop exercises for information transmission and government office assembly
- Drills to confirm effectiveness of business continuity plans (staff safety confirmation drills and emergency assembly drills)
- Sector-specific (industry-based) drills

(7) Emergency medical treatment drills
- Drills for medical treatment activities following a large-scale earthquake
- Drills to verify medical treatment functions using ships

(8) Drills to ensure emergency transport
Road clearance and abandoned vehicle removal drills for rapidly securing emergency transport routes

(9) Drills for the procurement and supply of goods
- Practical and tabletop exercises for fuel supply based on the Emergency Oil Supply Coordination Plan
- Regional transport drills at core regional disaster management bases

(10) Disaster drills in coordination with US forces stationed in Japan

Source: Cabinet Office

(3) Tsunami DRR Efforts

Many precious lives were lost in the tsunami disaster generated by the Great East Japan Earthquake that occurred in March 2011. Based on this a lesson, and with the aim of protecting lives, health, and property from tsunami disasters in the future, the Act on the Promotion of Tsunami Countermeasures was enacted in June of the same year. Under this law, November 5 was designated as "Tsunami Preparedness Day," and it was established that efforts would be made to hold events to deepen people's understanding of and interest in tsunami preparedness measures.

*There is a tale known as "The Fire of *Inamura*," which tells the story of November 5, 1854, when a tsunami hit Wakayama Prefecture following the Ansei Nankai Earthquake. A man set light to bundles of rice that had been harvested (*inamura*) and helped villagers who were struggling to evacuate in the darkness to flee to high places, saving their lives. November 5 was thus designated "Tsunami Preparedness Day."

In 2014, the Cabinet Office encouraged local governments and private enterprises throughout Japan to conduct earthquake/tsunami disaster drills, including tsunami evacuation drills, around "Tsunami Preparedness Day" on November 5, since human causalities can be dramatically reduced by prompt and efficient evacuation. It also sponsored community earthquake/tsunami disaster drills in eight locations around the country.

Approximately 300 groups and 796,000 people participated in the tsunami drills, and many companies and groups took steps to raise awareness, putting up posters, for example, and engaging in other activities. On Tsunami Preparedness Day itself, a meeting on tsunami preparedness attended by the Prime Minister was held at the Prime Minister's Official Residence. The media was invited to cover the event, emphasizing the importance of tsunami disaster preparedness.

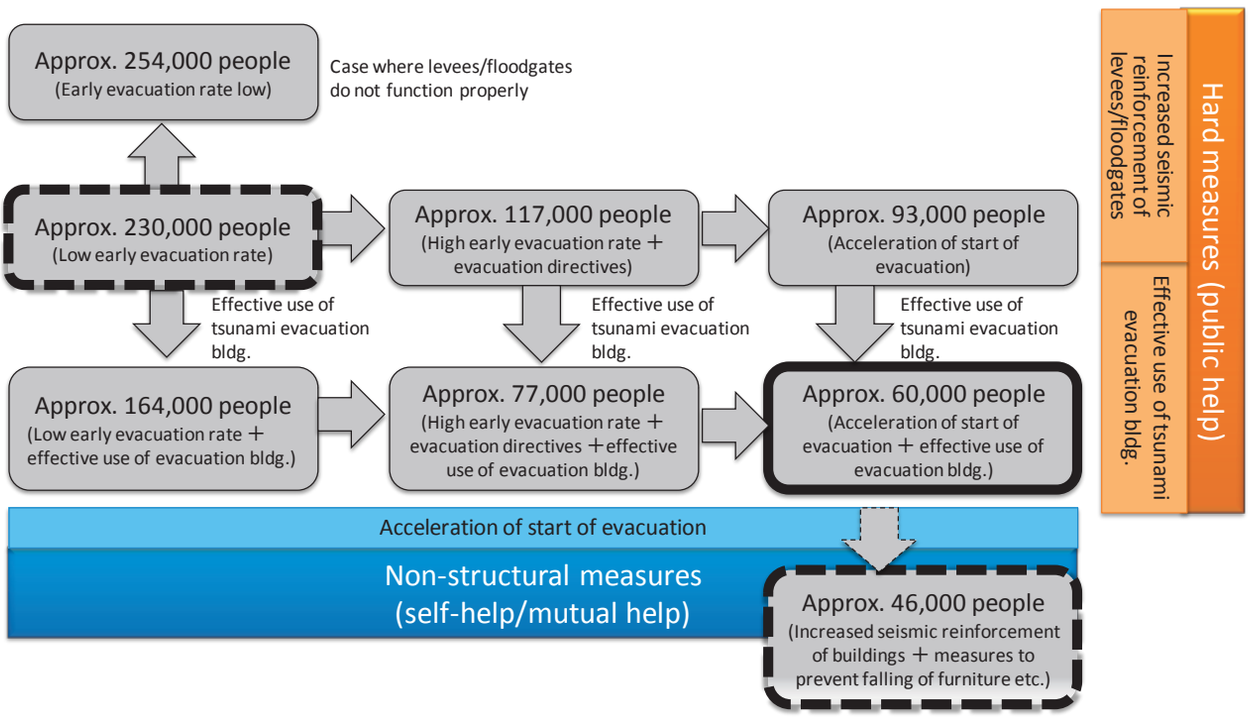
In 2015, as well, initiatives will be promoted to raise citizen interest in tsunami preparedness through drills that physically instill correct evacuation behaviors and through public outreach activities, and efforts will be made to ensure that such initiatives become well established as national campaigns.

Community Earthquake and Tsunami Evacuation Drill (Hamanaka-cho, Hokkaido)

Tsunami Evacuation Drill (Hokkaido Railway Company)

Fig. II-1-5 Effects of Tsunami DRR Measures

Scenario involving mass casualties in the Tokai area due to a Nankai Trough earthquake



Source: Cabinet Office

1-3 Implementation of Disaster Risk Reduction (DRR) Education in Communities

To promote DRR education nationwide, the Cabinet Office and Disaster Reduction Education Challenge Plan Committee developed a Manual for the Implementation of Disaster Risk Reduction (DRR) Education in Communities in March 2015. This manual was developed by organizing and analyzing knowledge and know-how needed for the seamless promotion of DRR education, and by examining best practices that can be instructive for those who are trying to start a DRR education program for the first time. It contains tips for solving the various challenges that arise in the process of implementing DRR education programs. This manual is outlined below (Fig. II-1-6).

(1) Clarification of the Purpose and Significance of DRR Education

- The manual stipulates that DRR education is designed "to strengthen the DRR capacity (the ability to prevent disasters before they occur, to prevent the exacerbation of damage caused by disasters once they occur, and to recover from disasters) of communities by raising disaster awareness among individual community members and cultivating connections within communities."
- To demonstrate the effects of DRR education, the manual presents the example of Kamaishi Higashi Junior High School in Kamaishi City, Iwate Prefecture during the Great East Japan Earthquake of March 2011, highlighting the significance and importance of expanding the reach of DRR education.

(2) Outline of 18 Key Points for DRR Education

- The manual divides DRR education efforts into three stages (preparation, implementation, and follow-up) and establishes 18 key points in promoting these efforts. It further classifies these points into six groups (people, management, places, budgets, resources, and skills).

(3) Introduction to Best Practices from Around Japan

- The 18 points are presented with practical examples, in an easy-to-read and easy-to-understand format. Website links and other resources prepared by various organizations are provided for reference, enabling users to obtain detailed information that is not included in the manual.

Fig. II-1-6 **Outline of the Manual to Implement Community DRR Education**

This manual, compiled to broaden the scope of DRR education throughout Japan, establishes "knowledge to promote initiatives" taken from examples of best practices, and provides tips for solving the various challenges that arise in the process of implementing DRR education programs.

1. Intended Audience

This manual is principally for those who are tackling DRR education for the first time, not only in educational or welfare groups (schools, kindergartens, day care centers, etc.), but also in community groups, volunteer groups, and local governments.

2. Implementing DRR Education

(1) Purpose of DRR education

The purpose is to strengthen the community disaster resilience (i.e., the ability to prevent natural disasters, to avoid the escalation of damage when a natural disaster does occur, and to plan recovery efforts following a disaster) by improving the DRR awareness of every single person who lives in a given community and promoting cooperation within that community.

(2) Five important points for the implementation of DRR education

1) Know the characteristics and problems of the area and past disaster experiences
   - Ascertain the community's vulnerabilities, understand the anticipated disaster risks

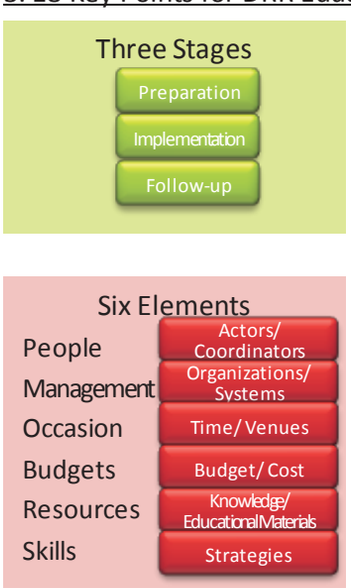
2) Act first, experience things first hand
   - Start by taking action yourself, then show those around you what you're doing

3) Carry out initiatives that are right for you
   - Do not overdo things, do not bite off more than you can chew, but advance initiatives within parameters that are suitable for your group

4) Carry out positive exchanges with stakeholders who have different perspectives
   - You can gain new insights by cooperating and working together with stakeholders around you

5) Keep things cheerful, fun, and easy-to-do
   - Develop activities that can easily be continued as part of daily life

3. 18 Key Points for DRR Education



Stages	Elements	Key Points for DRR Education
Preparation	People (actors)	Decide who is responsible
	People (coordinators)	Connect with key people in the community
	Management (organizations)	Organize implementing agencies
	Management (systems)	Do not overextend the scope of activity
	Occasion (time)	Secure time for preparations
	Occasion (venues)	Secure a venue for activities
	Money (funding)	Secure funding for activities
	Resources (knowledge)	Gather knowledge and information
	Resources (educational materials)	Create educational materials (a program) suited to the purpose
Implementation	People (coordinators)	Secure advisors with a wealth of experience
	Management (systems)	Gain the understanding of the community, connect with relevant institutions
	Occasion (time)	Secure time for activities
	Money (cost)	Reduce cost
	Skills (strategies)	Interact with other organizations implementing DRR education
Follow-up	People (responsible individuals)	Cultivate successors
	Resources (educational materials)	Turn wisdom and experience into explicit knowledge
	Skills (strategies)	Announce results to the public
	Mgmt, Resources, Skills	Continuously review and revise activity contents

Source: Cabinet Office

1-4 Construction of Business Continuity Systems Across Sectors

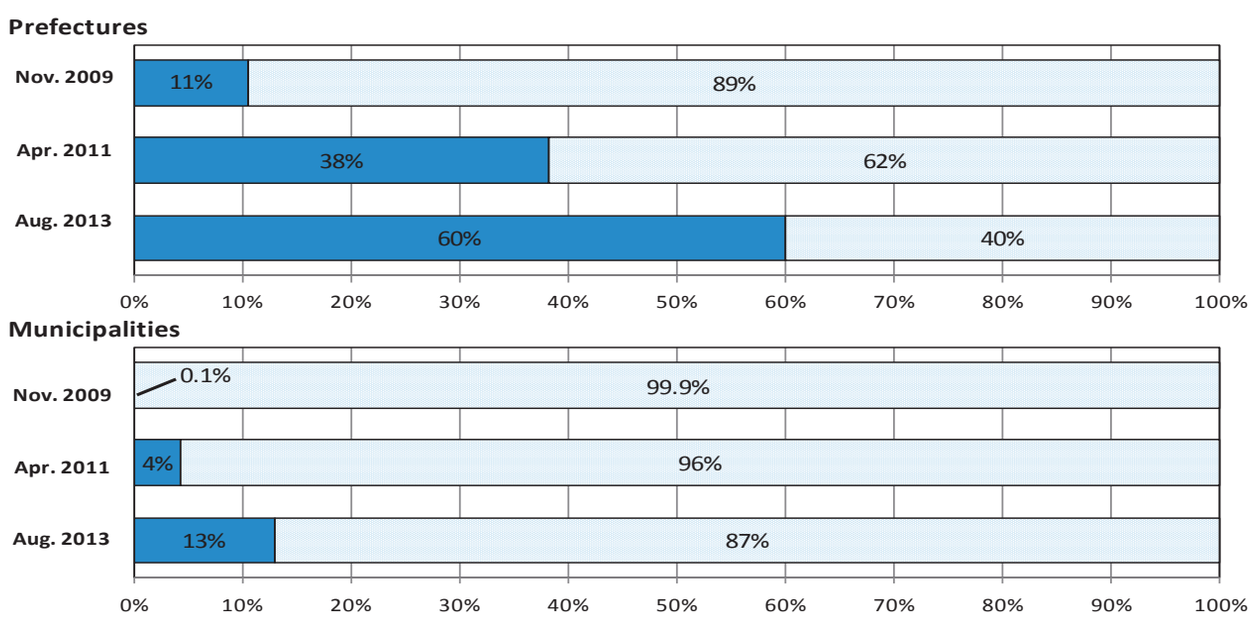
(1) Business Continuity Systems of Government Organizations

The central government's ministries and agencies have formulated their own agency-specific organization continuity plans for the purpose of ensuring the continuity of the pivotal functions of the capital in the event of a Tokyo Inland Earthquake. In March 2014, the Central Government Business Continuity Plan (Measures for a Tokyo Inland Earthquake) was approved by the Cabinet pursuant to the Act on Special Measures against Tokyo Inland Earthquake (Act No. 88 of 2013). The central government ministries and agencies then revised their own business continuity plans based on that document. The Cabinet Office created evaluation criteria and methods, based on the opinions of experts, to ensure that this plan can be used to evaluate the effectiveness of government business continuity plans. In the future, government business continuity plans will be evaluated by experts using these evaluation criteria and methods, and revised as needed based on the results. The manual thus establishes a system of business continuity to ensure that the government can seamlessly maintain its operations in the event of a Tokyo Inland Earthquake.

Local governments need to play a leading role in disaster emergency response activities as well as recovery and restoration activities, and will need to be able to continue performing their ordinary tasks, which are essential to their communities. The Great East Japan Earthquake and subsequent tsunami severely damaged many local government buildings, turning both leaders and public employees into disaster victims themselves. This has highlighted how important it is for local governments to build their own business continuity plans. The Cabinet Office has supported the business continuity efforts of local governments with its Business Continuity Manual for Local Governments During Earthquake Disasters (First Edition). Nonetheless, business continuity plan formulation rates, though growing in recent years, have remained stuck at low levels. As of August 2013, formulation rates were reported to be at 60% among prefectures and 13% among municipal governments (Fig. II-1-7).

For this reason, the Cabinet Office produced Business Continuity Plan Formulation Guidelines for Municipalities in May 2015, and is continuing to support the enhancement and strengthening of the business continuity systems of local governments.

Fig. II-1-7 **Current Status of Formulation of Business Continuity Plans by Local Governments**



Source: *November 2009* *Survey of Business Continuity Plans Based on an Earthquake Disaster (Cabinet Office (Disaster Management) and Ministry of Internal Affairs and Communications, Fire and Disaster Management Agency Survey)*
April 2011 *Local Government Information Management Report (March 2012) Ministry of Internal Affairs and Communications Local Administration Bureau Regional Information Policy Office Survey*
August 2013 *Ministry of Internal Affairs and Communications, Fire and Disaster Management Agency Survey (BCP Formulation Rate for Large-Scale Earthquakes and Other Natural Disasters (preliminary figures))*

(2) Efforts by the Private Sector

If a company's business operations are disrupted by a major disaster, the impacts will extend far beyond the company itself, affecting the company's vendors, suppliers, and the entire local economy. It is therefore extremely important for companies to be able to continue their business activities after a disaster.

The Cabinet Office had revised its Business Continuity Guidelines for the private sector based on the principles of Business Continuity Management (BCM) ssuch that they not only recommend the formulation of plans, but establish BCM as a type of management strategy. Efforts have been made to disseminate information on the formulation of business continuity plans (BCP) by, for example, formulating instruction manuals for enhancing the understanding of BCM among management, and creating an English version of its business guidelines as a means of sharing information about Japanese BCM efforts overseas. As of the end of March 2014, the data on BCP formulation indicates that formulation efforts are well under way, with over 70% of large companies reporting that they either "have already formulated" or "are in the process of formulating" plans. Among medium-sized companies, this percentage is over 40%.

The Sendai Framework for Disaster Risk Reduction 2015-2030, which was adopted at the Third UN World Conference on Disaster Risk Reduction held in March 2015, calls for private companies to play a role in DRR. A symposium conducted at the Bosai Industry Fair in Sendai, a related event held at the same conference, acknowledged the need to further improve DRR capabilities grounded in the advanced technologies and know-how possessed by Japanese private companies. Opinions expressed by participants reflected the need to create forums for information sharing between public and private sector stakeholders.

1-5 Communicating Lessons Learned from Disasters

In the Omoe-Aneyoshi neighborhood of Miyako City in Iwate Prefecture, a monument carved with lessons from the Showa Sanriku Earthquake (1933) has been built. Its carvings exhort local residents: "Do not build houses below this point." As indicated by the fact that houses built at elevations higher than this monument were not damaged by the tsunami following the Great East Japan Earthquake, passing down lessons from past disasters is an important way to mitigate disaster damage.

Monument of the Great Tsunami (Aneyoshi, Miyako-city, Iwate)

Since March 2013, the Ministry of Internal Affairs and Communications and the National Diet Library have been operating a portal site (the National Diet Library Great East Japan Earthquake Archive (Hinagiku)) that allows users to centrally search for and use digital data related to the Great East Japan Earthquake. It was designed to help pass down all records and lessons from the Great East Japan Earthquake to future generations and to serve as a resource for recovery and restoration projects, as well as future DRR efforts, in the affected areas.

In February 2015, the Cabinet Office held a Meeting on the Collection, Preservation, and Use of Large-Scale Disaster Information to investigate approaches to the collection, preservation, and use of disaster information, and to examine issues related to the frameworks that exist for collecting and preserving information on large-scale disasters.

Section 2: Disaster Response and Preparedness

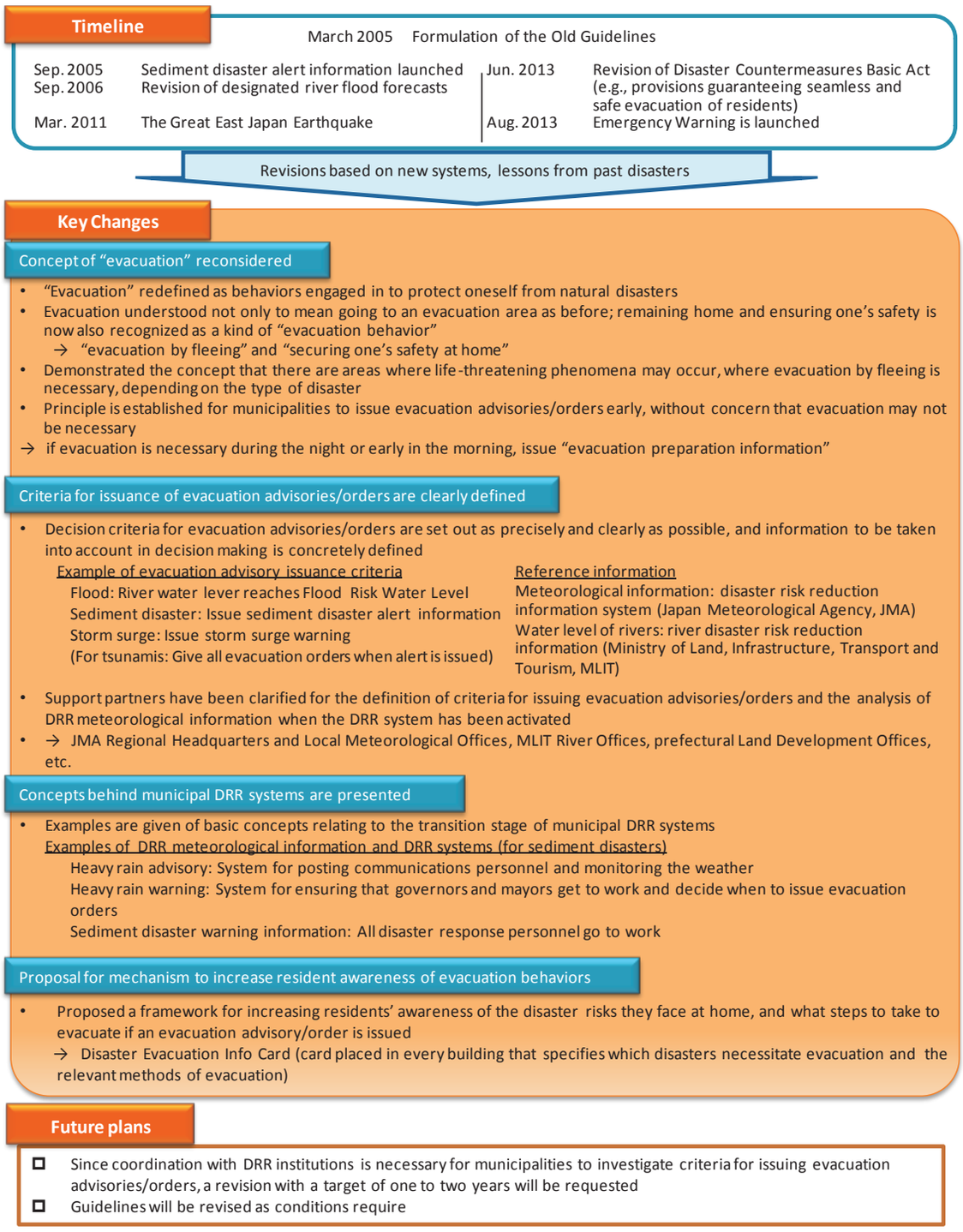
2-1 Evacuation Directive Decision Making and Communication

The Cabinet Office revised its Guidelines for Producing a Decision and Dissemination Manual for Evacuation Advisories and Orders in April 2014 given the use of new information, such as Sediment Disaster Alert Information, and based on the lessons learned from disasters like the landslide disaster that occurred on Izu Oshima Island in October 2013. They recommended that municipalities issue evacuation advisories, orders, and other directives without fear that they might be unnecessary, and had planned to disseminate the Guidelines through explanatory meetings organized for prefectures and municipalities (Fig. II-1-8) .

However, following the sediment disaster that occurred in Hiroshima in August 2014, and based on reports that the timing of evacuation directives had been an issue, in September that year the Cabinet Office and the Fire and Disaster Management Agency requested that all local governments in Japan reexamine their decision-making criteria for the issuance of evacuation directives for sediment disasters.

On the other hand, consider the situation of the sediment disaster that occurred in Tanba City, Hyogo Prefecture. Although the disaster occurred in the middle of the night, authorities referred to the Landslide Disaster Warning Information and the natural disaster information provided by the prefectures, issued its evacuation orders early,

Fig. II-1-8 Outline of the Manual to Implement Community DRR Education



Source: Cabinet Office

before the disaster had occurred, and thus were able to minimize the number of human casualties.

Thus, although the Guidelines still have not sufficiently been shared at all levels, there are actual examples of governments issuing evacuation directives based on the decision-making criteria established in these Guidelines and of damage having been reduced as a result. Thus, the Cabinet Office plans to continue to disseminating the Guidelines in coordination with relevant institutions.

To ensure that residents can take the appropriate evacuation actions when an evacuation directive is announced, and given the need for residents to know what actions to take for various types of natural disasters (e.g., where to go if there is a need to evacuate, and what information to pay attention to in the case of an evacuation), the Guidelines propose a system whereby a "Natural Disaster Evacuation Card" containing this information is installed at every address and building. This card would help residents understand what local risks exist that might threaten their life. Going forward, there are plans to improve the DRR awareness of residents through initiatives aimed at disseminating general knowledge of the Guidelines as well as the "Disaster Evacuation Info Card" (Fig. II-1-9).

Fig. II-1-9 **Disaster Evacuation Info Card**

Disaster	Evacuation action	Key information	Dangerous conditions
River A	2nd floor of home	Level of rainfall at XX observation station	XX mm
River B	XX building	Water level at XX observation station	X.X m
Landslide disaster	XX gymnasium	Level of rainfall at XX observation station	XX mm
Tsunami	None		
Storm surge	None		

Source: Cabinet Office

2-2 Designated Emergency Evacuation Sites and Evacuation Shelters

When the Great East Japan Earthquake struck in March 2011, a clear distinction was not necessarily made between "evacuation sites" to which people could flee to escape the dangers of the imminent disaster and "evacuation shelters" where they could live in places of refuge following the disaster. Furthermore, the evacuation sites were not designated according to the type of natural disaster for which they were intended. Thus, some people fled to evacuation sites immediately after the earthquake only to have these facilities destroyed by the tsunami. This was one cause of damage escalation.

Given this, revisions were made in June 2013 to the Disaster Countermeasures Basic Act establishing new provisions relating to "Designated Emergency Evacuation Sites" and "Designated Evacuation Shelters." These revisions distinguished between places for emergency evacuation at the time of a natural disaster, and schools and community centers where people could stay for a specific period and live as evacuees. These are outlined below.

(1) Designated Emergency Evacuation Sites

A Designated Emergency Evacuation Site is a place where residents can flee to when the tsunami or flooding risk is imminent. The purpose of these sites is to guarantee the safety of residents. Under the Disaster Countermeasures Basic Act, municipal mayors must make an overall assessment of the maintenance conditions, configuration, geological features, and other attributes of DRR facilities. When necessary, mayors must designate facilities or locations that meet certain criteria as Designated Emergency Evacuation Sites, so as to ensure efficient and rapid evacuations in the event of a natural disaster.

The Fire and Disaster Management Agency conducted a survey on the designation status of Designated Emergency Evacuation Sites. The results as of October 1, 2014 are shown in Fig. II-1-10.

Fig. II-1-10 **Current Designation Status of Designated Emergency Evacuation Sites**

Item	Type of unusual phenomenon								Total
	Flood	Sediment disaster	Storm surge	Earth-quake	Tsunami	Large-scale fire	Heavy rainfall	Volcanic eruption	
No. of designated sites (sites)	**21,459**	**19,468**	**5,936**	**24,888**	**14,099**	**15,179**	**13,995**	**3,809**	**37,181**
Estimated no. of people accommodated (10,000 people)	**3,363**	**3,713**	**1,791**	**5,937**	**2,571**	**5,262**	**2,397**	**745**	**8,333**

Source: Created by the Cabinet Office based on the Current Status of Regional Disaster Risk Reduction Administration by the Fire and Disaster Management Agency

(2) Designated Evacuation Shelters

A Designated Evacuation Shelter is a facility where residents who have fled due to the dangers of a natural disaster may stay for as long as is necessary until the dangers of that natural disaster have receded. The purpose of these facilities is to offer temporary shelter for residents who are unable to return home due to the natural disaster. Shelters are designated by the municipal government.

At the time of the Great East Japan Earthquake, when many victims were forced to live as evacuees for long periods, authorities observed the mental and physical functional decline of victims as well as the outbreak and worsening of

various diseases. Many persons requiring special care experienced problems with the physical elements of the structures or struggled in their relations with other evacuees, leaving them no choice but to return to life at home.

Given these lessons, the Disaster Countermeasures Basic Act was partially revised in June 2013. To provide for sure access to an appropriate facility where victims could stay in the event of a disaster, a system for the designation of Designated Evacuation Shelters by municipal mayors was provided for in Article 49-7. Also, a system for designating some evacuation shelters as Welfare Evacuation Shelters was stipulated in Article 20-6-1-5 of the Enforcement Order of that Act. Articles 86-6 and 86-7 of the Act, meanwhile outlined the matters that local governments must take into consideration in the development of the living environments at Designated Evacuation Shelters.

Further, since the development of the living environment at evacuation shelters was newly provided for in the Revised Disaster Countermeasures Basic Act, Guidelines for Ensuring Satisfactory Living Conditions at Evacuation Shelters were formulated and published in August 2013, as a reference tool to promote efforts in dealing with evacuation shelters under both emergency and non-emergency conditions.

In 2014, to promote evacuation shelter initiatives based on the revised law and the Guidelines above, a survey was conducted to promote initiatives to manage the evacuation shelters and welfare evacuation shelters operated by the municipalities. This was posted online and was circulated among the prefectures and municipalities. Further, at a meeting of those responsible for matters related to the Disaster Relief Act held in May 2014, the Guidelines were explained to the prefectural officials responsible for DRR and welfare services, and information was shared on systems for introducing examples of advanced initiatives.

Fig. II-1-11 Current Designation Status of Designated Evacuation Shelters

	Designated Evacuation Shelter	Subset of Designated Welfare Evacuation Shelter
Number designated	48,014	7,647

Source: Study on the Current Status of Evacuation Shelter Management (Oct. 1, 2014, Cabinet Office)

2-3 Measures for Handling Abandoned or Stranded Vehicles

In the snow storms of February 2014, many stranded vehicles were left on the roads. These created obstacles for snow-clearing work and caused traffic to be blocked for several days. In December 2013, a proposal entitled “Damage Estimates and Countermeasures for a Tokyo Inland Earthquake” was formulated by the Central Disaster Management Council’s Working Group to Investigate Tokyo Inland Earthquake Measures. This paper demonstrated that damage to the roads themselves, abandoned vehicles, and the increased load on road traffic caused by railway closures could all work together to create severe traffic congestion and impede roadway traffic significantly.

In light of this, and to ensure that a response can be carried out quickly when a natural disaster occurs, the Act to Partially Revise the Disaster Countermeasures Basic Act (Act No. 114 of 2014, hereinafter called the “Revised Act”), which strengthens measures that may be taken against abandoned and stranded vehicles at the time of a natural disaster, was unanimously approved and passed on November 14, 2014. It was promulgated and brought into force on November 21 of that year. An outline is provided below.

(1) Outline of the Revised Act

a) Movement of cars after a natural disaster

- To ensure the transit of emergency vehicles in the event of a natural disaster, a road administrator may identify a section of roads that he administers for special treatment, and may order the owners of vehicles and objects that have fallen from vehicles, such as cargo (hereafter, “vehicles and cargo”), that are obstructing the passage of emergency vehicles, to move such vehicles and cargo out of the road, and to take measures to move their vehicles and cargo into any vacant space between other cars.
- If the owner who has been ordered to take such measures fails to do so, or if the owner is absent, the road administrator may, in addition to taking measures to move the vehicles and cargo themselves, may damage the vehicle and cargo to the extent that it is unavoidable for such measures to be taken.
- The road administrator may, to the extent that it is unavoidable, temporarily use another person’s property to remove the obstruction.

b) Instructions from the Minister of Land, Infrastructure, Transport and Tourism and Prefectural Governors

- If the whole route to the site of a disaster is surveyed, and it appears that measures need to be taken to ensure the passage of emergency vehicles through the network, the national government may instruct the prefectures or municipalities, and the prefectures may instruct the municipalities, to take the necessary measures.

c) Demands of the Prefectural Public Safety Commissions

- The Prefectural Public Safety Commissions may, if necessary in order to carry out road closures, ask a road administrator to take necessary measures to enact a road closure, identifying the section of roads to be closed.

d) Loss Compensation

- In the event that a road administrator, an agency, or a regional road corporation unavoidably damages any vehicles or cargo, they must compensate the owner for said damage.

(2) Practical Application of the Revised Act

From December 5-6, 2014, snow fell across a wide area from northern to western Japan, with heavy snowfall along the Sea of Japan coast and the mountain ranges. Along National Route 192, which joins Ehime Prefecture and Tokushima Prefecture on the island of Shikoku and ordinarily sees very little snow, approximately 130 cars became stranded due to the heavy snowfall. Measures were taken to move the stranded cars in the first application of the Revised Act. Further, approximately 60 vehicles became stranded along National Route 54, which joins Hiroshima Prefecture and Shimane Prefecture, and vehicle movement measures were implemented pursuant to the Revised Act (Fig. II-1-12).

Since the Revised Act made it possible to issue “Orders to Drivers to Move their Vehicles” and allowed “Movement of Vehicles by Road Administrators,” the time required for moving vehicles was reduced, and snow removal could be implemented effectively. This facilitated the early lifting of the road closures. In the past, the consent of the driver had to be obtained, and vehicles had to be moved with care so as not to cause damage. With abandoned cars whose owners were absent, drivers were located and presented with demands to move their vehicles. However, the compulsory movement provisions included in the Revised Act makes it possible to achieve a more rapid response.

As of 2014, the Revised Disaster Countermeasures Basic Act has been effectively applied to 48 sections of expressway and national road.

Fig. II-1-12 Snowstorm Response on National Route 192

- **December 5 (Fri.)**
  - **4:50** Confirmation of stranded vehicles
  - **5:20** Closure of National Route 192 (16.9 km stretch)
  - **8:40** Designation of area pursuant to the Revised Act (National Route 192: 18 km)
  - **10:00** Request for support made from the local governments to the Chugoku and Kinki Regional Development Bureaus, assessment of the number of stranded vehicles (approximately 130)
  - **11:40** Enlargement of designated area pursuant to the Revised Act (National Route 192: 38 km; National Route 32: 54 km)
  - **12:00** Beginning of food distribution, safety confirmation efforts
  - **13:00** Completion of safety confirmation work
  - **18:20** Completion of snow removal on Ehime side, completion of removal of stranded vehicles
  - **22:00** Completion of snow removal on Tokushima side, completion of removal of stranded vehicles (moved in approximately 17 hours)
- **December 6 (Sat.)**
  - **0:20** Tractor used to begin removing abandoned trailers (containers) pursuant to the Revised Act
    "Notice of Removal" affixed to container and guard rail
  - **0:40** Completion of removal of abandoned trailer (moved to holding site 900 m away)
  - **7:30** Lifting of road closure, cancellation of designation of areas under Disaster Countermeasures Basic Act

Moving a vehicle stranded on the road

Notice announcing the forced removal of a vehicle left on the road

2-4 Measures to Assist Stranded Persons

The Great East Japan Earthquake that occurred in March 2011 left approximately 5,150,000 persons in the metropolitan area stranded, highlighting the need to prepare for the occurrence of a Tokyo Inland Earthquake in the future and to strengthen measures for addressing the needs of stranded persons.

The measures required to deal with stranded persons are many and varied, and include controlling the flow of people all returning home at once, guaranteeing temporary shelter facilities, providing information to those stranded, preventing crowding around railway stations, providing support to those travelling home on foot, and providing transportation for stranded persons. A Tokyo Inland Earthquake will make it particularly difficult to deal with stranded persons given the many casualties and evacuees that are expected to have to be managed. Since there is a limit to the "public help" that the government can provide, it will be essential to think in terms of a combined response, which presupposes that people will have to rely on themselves as much as possible ("self-help), with "mutual help" being provided where possible.

For this reason, the Council on Measures for Stranded Persons Following a Tokyo Inland Earthquake was established in September 2011 to strengthen policies to tackle the problem of stranded persons. Its final report was compiled in September 2012. In light of this report, the Coordinating Council on Measures for Stranded Persons Following a Tokyo Inland Earthquake was established in January 2013. This Council carried out ongoing practical investigations into the guarantee of temporary shelter facilities, and revised the Guidelines on the Guarantee and Operation of Temporary Shelter Facilities in February 2015 (Fig. II-1-14).

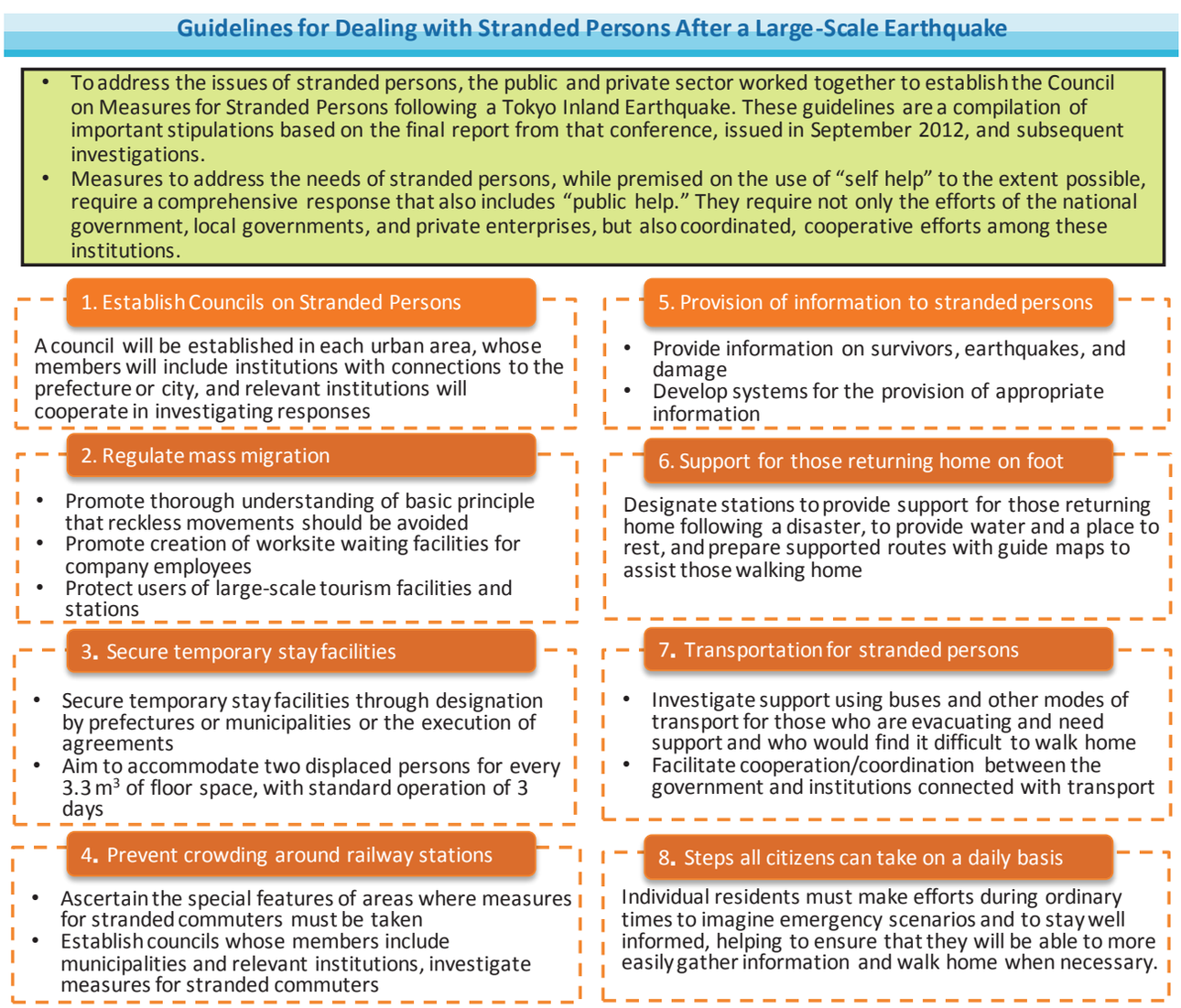
Fundamentally this revision stipulates that temporary shelter facilities are set up and operated from a “public help” perspective, but it demonstrates again the basic need for cooperation, especially from the private sector. It also stipulates the scope of responsibility with regard to the operation and management of temporary shelter facilities and outlines approaches to emergency situations.

Based on this, each facility manager can effectively set up and operate their temporary shelter facilities by signing an agreement relating to the intake of stranded persons at temporary shelter facilities, conducting building safety inspections, and display and signing on to the conditions for the intake of stranded persons.

Based on the final report of the Council on Measures for Stranded Persons Following a Tokyo Inland Earthquake, the matters considered to be of particular importance were compiled, and in March 2015, Guidelines for Dealing with Stranded Persons After a Large-Scale Earthquake were formulated. These are intended to serve as reference material for the joint investigation by the private and public sector into measures for handling stranded persons in large urban areas, where massive numbers of people are expected to be stranded (Fig. II-1-13).

It is hoped that the level of response that can be provided by society as a whole in this area will be raised by active efforts by the national government, local governments, private companies, and individual citizens to address the needs of stranded people with reference to these Guidelines.

Fig. II-1-13 **Guidelines for Dealing with Stranded Persons After a Large-Scale Earthquake**



Source: Cabinet Office

Fig. II-1-14 Key Changes in the Guidelines for Securing and Operating Temporary Shelters

(1) Presentation of an agreement form

- Provide forms containing basic stipulations regarding agreements on the acceptance of stranded persons at temporary stay facilities
- Key stipulations should include the purpose, definitions, publication, establishment, acceptance, details of support, operation, termination of intake, responsibility for costs, damages, and drills.

(2) Completion of check sheet for safety inspections

- The Cabinet Office has drawn up and published "Guidelines on Emergency Inspections by Facility Administrators Immediately following Large-Scale Earthquakes"
- Safety inspections should be carried out by each facility administrator with reference to these guidelines

(3) Presentation of and sign off on the conditions of acceptance

Those who are taken in should be asked to follow the conditions of acceptance following their consent and signature

- The facility administrator is operating the facility out of good will, from a perspective of mutual help
- The user shall follow the instructions of the facility administrator
- In the absence of intention or gross negligence, the facility administrator is not responsible for accidents or other incidents that occur within the facility
- In the absence of intention or gross negligence, the facility administrator will not be responsible even in the event that those staying at the facility become ill
- The facility administrator will not look after property belonging to those staying at the facility
- The facility may occasionally be closed by the decision of the facility administrator if the building is unsafe or if there is a change in conditions in the surrounding area
- There are some matters, including the medical treatment of the wounded, that cannot be dealt with by the facility

(4) Additional notes of caution for acceptance

- Avoid using locations where there is a risk of things falling from the ceiling
- Avoid dark and crowded places, and consider security issues
- Where tenant buildings or mixed-use buildings are used, administrator and owner must cooperate and strive to secure operational staff
- When distributing food stores, confirm best before dates, and carefully investigate the distribution of any stored foods that have passed their best before date
- Where facility users help in the operation of the facility, carry out the same security obligations as with employees

(5) Government support policies

- Prefectures and municipalities should strive towards the dissemination of and education on the following points with respect to temporary stay facilities:
  - Temporary stay facilities are operated by facility administrators out of good will, from a perspective of mutual help
  - There are matters that the facilities cannot address
- The national government, prefectures, and municipalities actively cooperate in addressing any situation in which a facility administrator has sustained or may sustain damages in connection with their operation of a temporary stay facility

Source: Cabinet Office

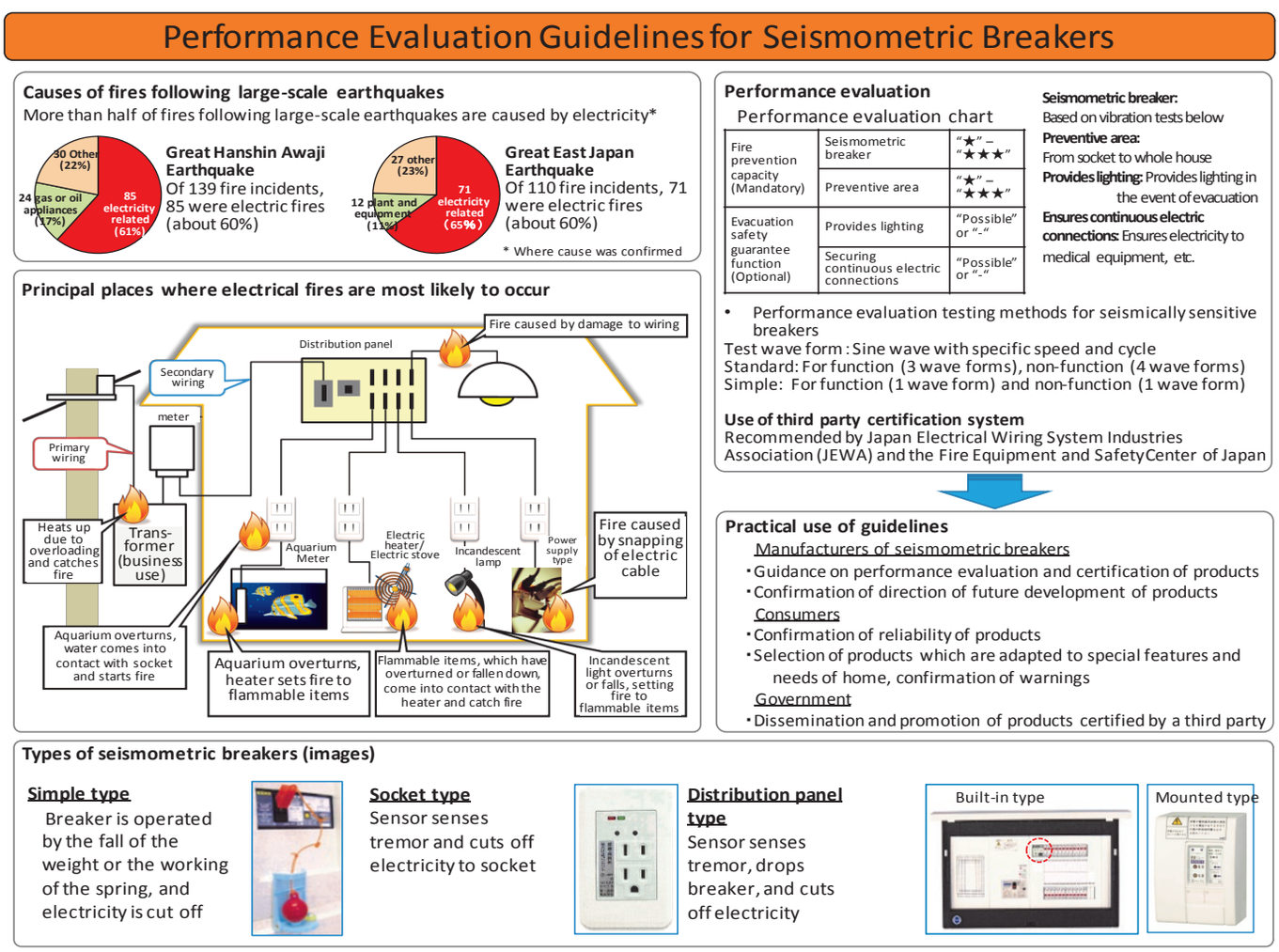
2-5 Inspections for Controlling the Outbreak of Electrical Fires During Large-Scale Earthquakes

A report entitled “Damage Estimates and Countermeasures for a Tokyo Inland Earthquake (Final Report)” was released by the Central Disaster Management Council’s Working Group to Investigate Tokyo Inland Earthquake Measures in December 2013, once again showed the risk of fires occurring simultaneously in many places where wooden houses are crowded together in urban areas. Further, since more than half of the fires that have occurred following major earthquakes in recent years were caused by electricity, this is a problem that clearly needs to be addressed. In light of this, the Basic Plan for the Promotion of Tokyo Inland Earthquake Emergency Countermeasures which was adopted by the Cabinet in March 2014 (hereafter, the “Basic Plan”) promoted technical investigations to ensure the effectiveness and reliability of seismometric breakers and outreach efforts to educate people about these devices.

In September 2014, the Investigative Committee on Controlling the Outbreak of Electrical Fires During a Large-Scale Earthquake was set up by the Cabinet Office, the Fire and Disaster Management Agency, and the Ministry of Economy, Trade and Industry. It conducted an investigation on the performance evaluation and installation of seismometric breakers, and carried out shaking experiments using mock living rooms. In February 2015, this Committee published guidelines compiling important points regarding the performance evaluation and installation of seismometric breakers (Fig. II-1-15). An Investigative Committee Report compiled in March 2015 called for the dissemination of these guidelines to certain priority areas, particularly the crowded urban areas which pose a high risk of fire propagation. These included the emergency measure areas identified in the Act on Special Measures against Tokyo Inland Earthquake and the areas for disaster management promotion identified in the Act on Special Measures for the Promotion of Nankai Trough Earthquake Disaster Management. It also recommended that the guidelines be disseminated to 25% or more of households over a 10 year period. Based on these recommendations, the Cabinet established the same disaster mitigation targets in the Basic Plan.

In light of the Basic Plan and the Report, authorities will investigate a model survey centered on densely built wooden housing developments in urban areas, and relevant parties shall work together towards the development of measures to control the outbreak of electric fires following a large-scale earthquake.

Fig. II-1-15 Performance Evaluation Guidelines for Seismometric Breakers



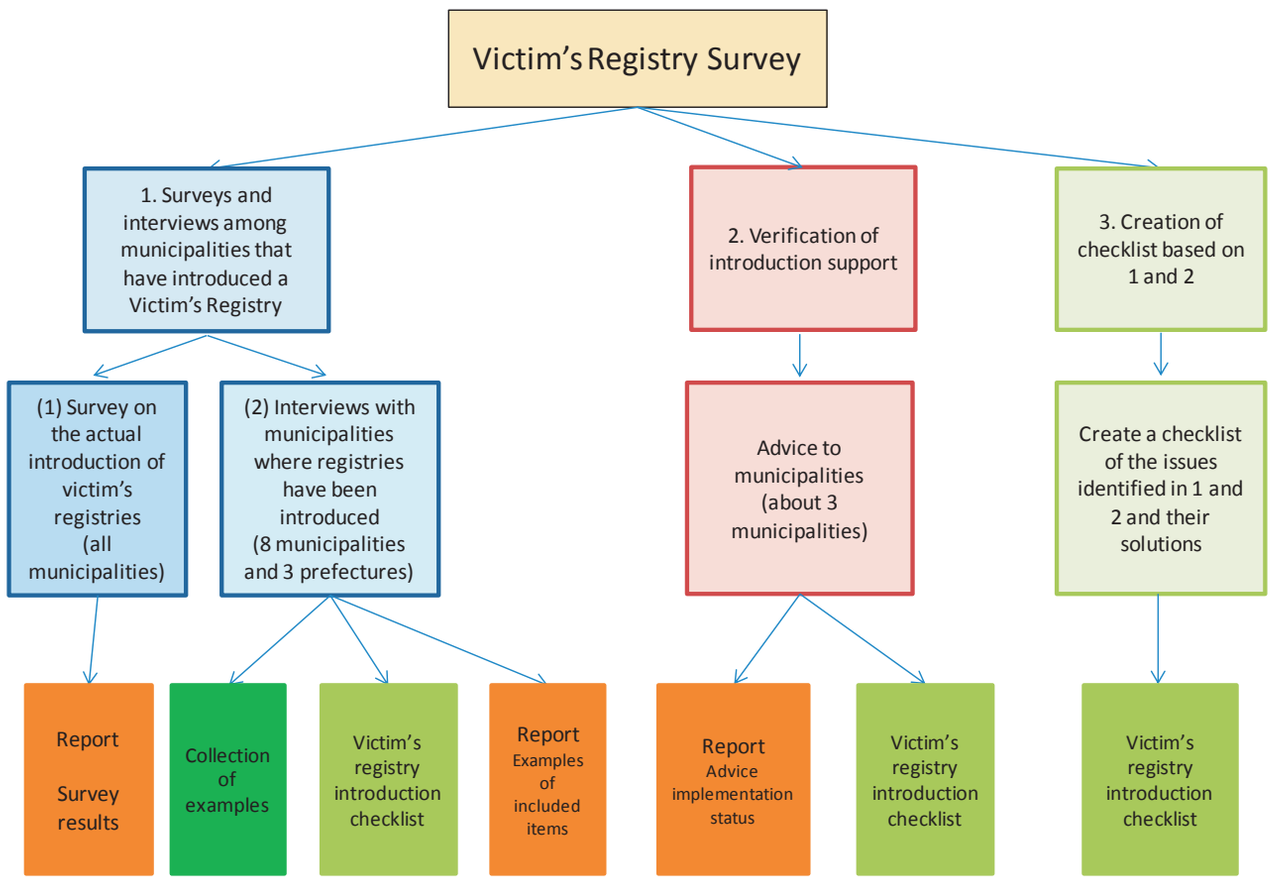
Source: Cabinet Office

Section 3: Initiatives to Support Disaster Victims

3-1 Development and Promotion of a Victim's Registry

Revisions to the Disaster Countermeasures Basic Act were made in June 2013 to eliminate gaps in support and procedural redundancies when it comes to providing support for disaster victims. These revisions created a victim's registry system to comprehensively and efficiently provide victim support in the medium to long term and to collect in one central location information on the victim's status with regard to the damage sustained, support provided, and particular issues that may need to be taken into consideration. The Cabinet Office conducted a 2014 Victim's Registry Survey to seek the further development and promotion of this victim's registry (Fig. II-1-16).

Fig. II-1-16 **Victim's Registry Survey**



Source: Cabinet Office

Survey Details

(1) Surveys and hearings on registry adoption by municipalities

1. Implementation of survey on registry adoption among all municipalities
2. Based on the survey results, hearings were implemented in a preliminary group of eight municipalities

(2) Trial introduction of a victim's registry system

Advisors dispatched to governments that had not yet introduced a system; support for the construction of interdepartmental systems within government offices

*Following a national call for proposal, Fuchu City and Hachijomachi in Tokyo and Fukui City in Fukui Prefecture were selected

Survey Results

(1) Collection of examples of the introduction of a victim's registry system

- Compilation of important points regarding the introduction of a victim's registry system from municipalities where they had been introduced; effects of introduction.
- Compilation of processes relating to the construction of interdepartmental organizations for creating a victim's registry in government organizations which joined the trial introduction.

(2) Checklist for system development in municipalities

- To create a victim's registry, confirming the relevant departments is part of the important preparations to be completed during ordinary times. Procedures should be created in checklist format for constructing interdepartmental organizations.

(3) Sample data headings

- Prepare sample data headings to control variance in data headings used by different municipalities, to promote information sharing between local governments following a large-scale natural disaster, and to support the smooth implementation of victim support by support staff from different municipalities.

(4) Provide simple files (provide Access or Excel versions of the victim's registry)

(5) Formulate "Practical Guidelines for the Creation of a Victim's Registry (Municipality Edition)" (guidelines aimed principally at those responsible for items (2), (3) and (6) on this list)

(6) Bolster the information posted on the Cabinet Office Disaster Risk Reduction website

In light of the above results, efforts will continue to be made to develop and promote the victim's registry system.

Section 4: Promotion of DRR Activities in Coordination with Various Stakeholders

4-1 Initiatives to Develop an Environment for DRR Volunteers

In the period following the Great East Japan Earthquake until the end of January 2015, more than 1,410,000* volunteers carried out various activities in the disaster-affected areas. However, since no coordination structure was established immediately following the disaster among the support organizations or between the support organizations and the government or NPOs, there was clear dysfunction in the efforts to match the providers of assistance with those requiring assistance.

Given this, the Disaster Countermeasures Basic Act was revised in 2013 to include provisions relating to the coordination between the national government, local governments, and volunteers. The Cabinet Office, in addition to investigating how the coordination between NGOs and the national and local governments would work in the event of a large-scale natural disaster, also carried out drills in Kochi Prefecture and Shizuoka Prefecture in 2013, and Tokyo in 2014, which focused on how coordination between non-governmental support organizations ought to be implemented in the event of a large-scale natural disaster.

*Investigation by the Japan National Council of Social Welfare. Number of volunteers who were active through disaster volunteer centers set up by the Council of Social Welfare in each municipality.

Disaster management exercise for collaboration of DRM volunteers using the scenario of a Tokyo Inland Earthquake

4-2 Strengthening the DRR Capacity of Communities

Since the “limits of public help” following a large-scale natural disaster are clear, and initiatives based on self-help and mutual help are very important, the Community Disaster Management Planning System has been established to support voluntary DRR activities by community residents.

The Cabinet Office has been implementing model district projects since 2014 to disseminate the Community Disaster Management Planning System and support planning activities.

It has published the outcomes of the efforts thus far, so that they can be used as reference by communities that formulate plans in the future.

<u>Examples of Key Initiatives from the 2014 Model District Project</u>

Interprefectural Evacuation Plan proposed by the Miki District, Kaga City, Ishikawa Prefecture

The urban area in this district, located in Ishikawa Prefecture, extends all the way to the Yoshizaki District of Awara City in Fukui Prefecture. In the event of a tsunami, an evacuation area has been designated at an elementary school in Awara City to which people may evacuate. Although each prefecture has differing tsunami expectations, both districts need to cooperate on formulating their evacuation plans. Thus, efforts have been made to create evacuation plans and community–led hazard mapping that cross prefectural borders.

The evacuation area was set up in an elementary school across the prefectural border

Neighborhood of Fuji City Station South, Shizuoka Prefecture Works on DRR Activities Focused on an Independently Operated Evacuation Shelter

This neighborhood tackled the problem of establishing its own independently operated evacuation shelter. Under this initiative, a DRR subcommittee was established within the Community Development Council. To lighten the burden of the voluntary disaster management organizations, all of the residents other than the readers of each ward’s voluntary disaster management organizations were at the center of the implementation of the activities. Even prior to this, a framework was created for selecting the evacuation shelter management staff from among evacuees, and drills for opening and setting up the center were conducted in coordination with local elementary schools. Now, they are working towards the adoption of a plan, strengthening efforts to set up evacuation shelters, taking everyday measures to mitigate disasters and respond to emergencies when disaster strikes, creating organizations to enable the continuation of activities, and strengthening ties with voluntary disaster management organizations.

Evacuation Shelter Set Up Drill (Participants include local residents and elementary and junior high school students)

Special Feature: Everyday Efforts in Hakuba Village

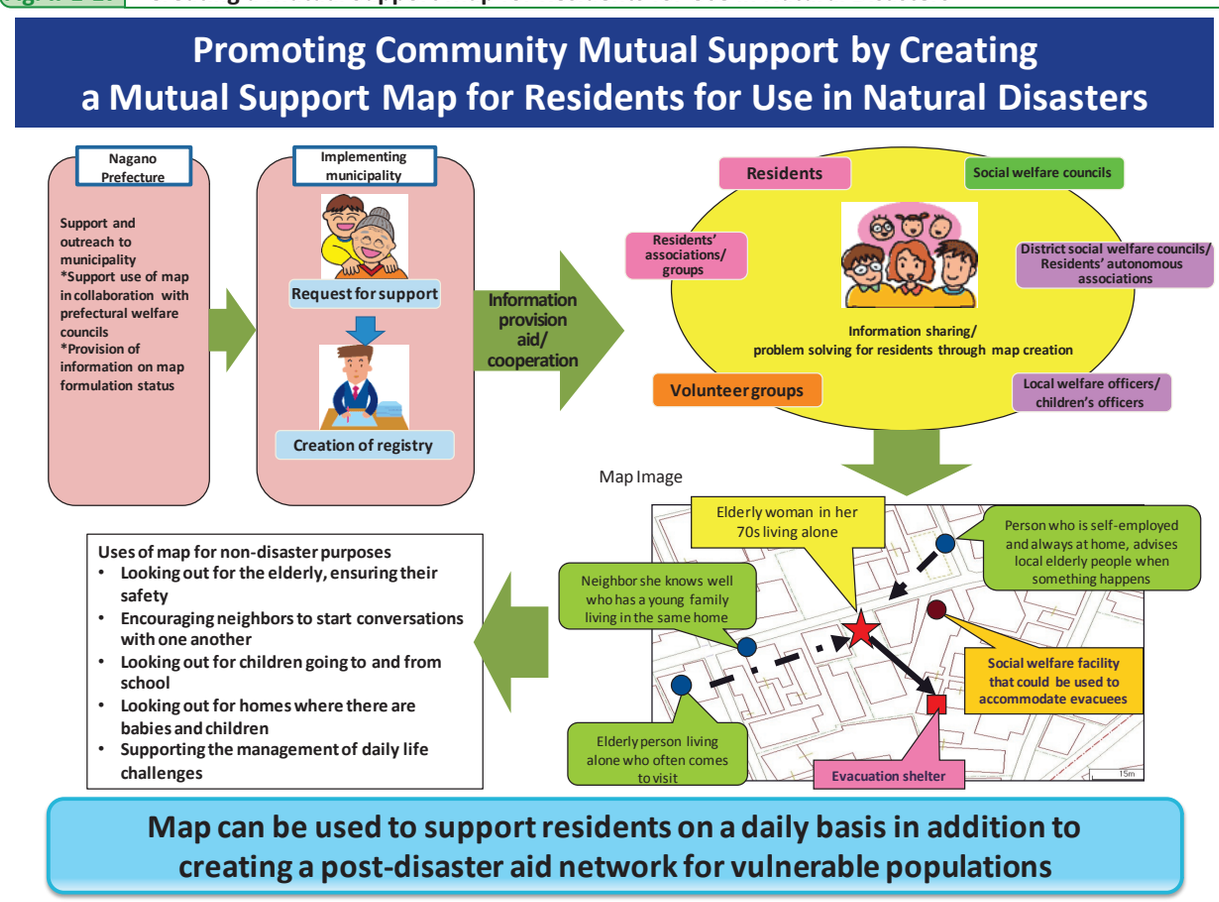
The Northern Nagano Prefecture Earthquake that struck on November 22, 2014 left 50 houses completely destroyed and 91 houses half-destroyed. Thanks to the mutual aid activities provided by local residents to their neighbors, however, there were no fatalities caused by the collapse of homes, although some were buried under the collapsed houses.

In the neighborhood of Kamishiro Horinouchi in Hakuba Village, which sustained particularly severe damage, community residents and fire corps volunteers worked together, without waiting for help from the police or firefighters, to conduct rescue activities. They used chainsaws, which are ordinarily used by residents to cut wood, and large jacks like those used when changing tires, to rescue people who had become trapped in collapsed houses Also, because the neighborhood evacuation facilities could not be used, they worked in collaboration with the local government office to quickly secure other evacuation facilities, thereby providing evacuation support for the elderly. Rescue and evacuation activities were approached during this emergency situation out of a spirit of helping one another because of the regular interactions between people in the community on a daily basis. For example:

a) Efforts are made to promote regular communication between local residents, including the local government office, and cooperative relationships are promoted through community events.
b) Thanks to the activities of the fire corps volunteers and their work in the community, there is an underlying awareness of the importance of disaster management.
c) The community fosters a sense of responsibility not only among community leaders, but also among ordinary residents, who take responsibility for supporting one another.

It is recommended that communities in Nagano Prefecture, including Hakuba Village, create Citizen Mutual Aid Maps During Disasters to enable community residents to help one another in providing evacuation support for the elderly and other vulnerable populations that may have difficulty evacuating (Fig. II-1-17).

Fig. II-1-17 **Creating a Mutual Support Map for Residents for Use in Natural Disasters**



Source: Nagano Prefecture

Section 5: Recovery and Reconstruction Measures

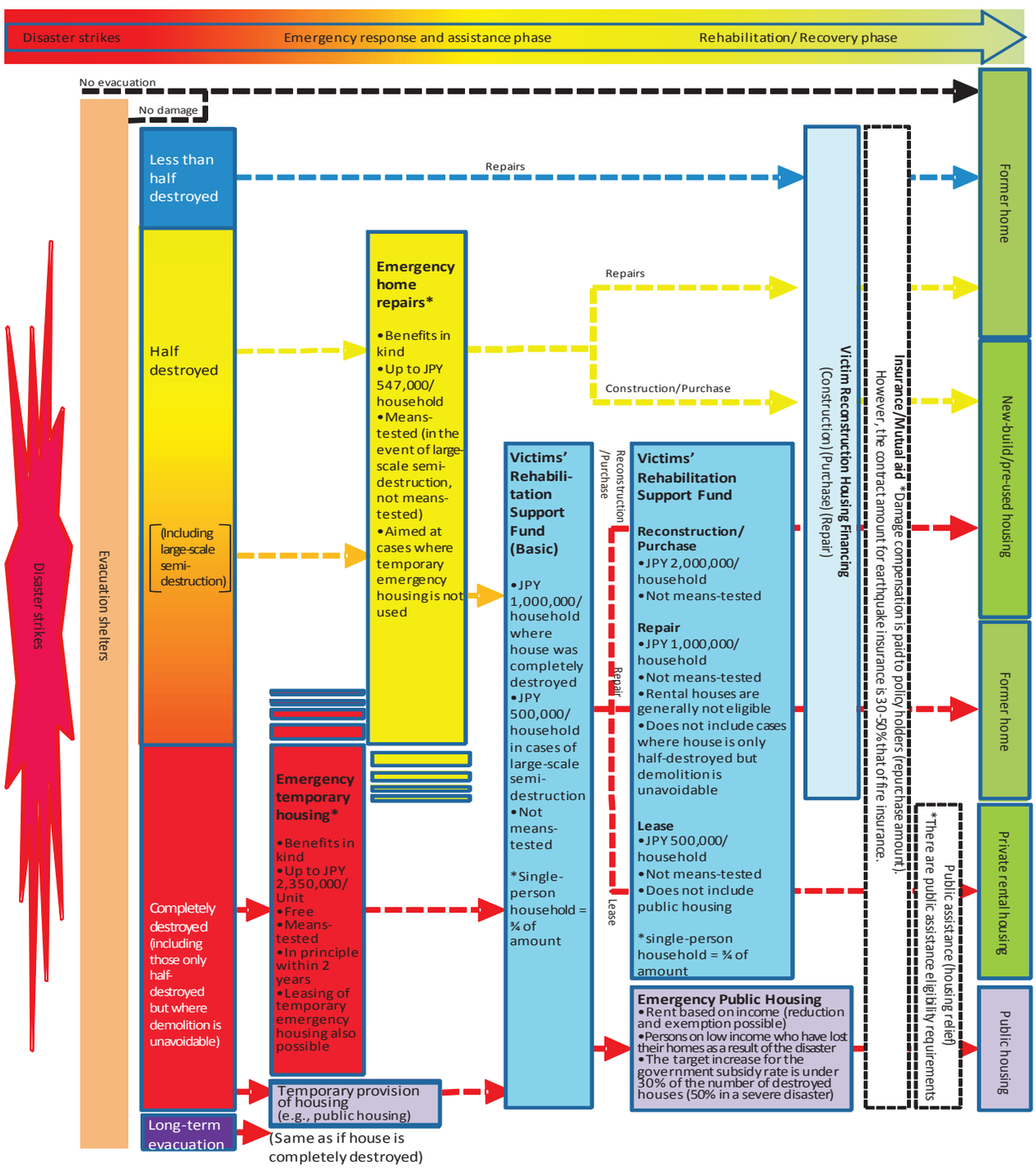
5-1 Investigating Measures to Secure Housing for Victims

(1) Current Status of Securing Housing for Victims

Under the present system of disaster victim housing, those whose homes have been completely destroyed by a natural disaster will first live as evacuees in evacuation shelters, before provisionally moving into vacant units of existing public housing or into temporary emergency housing. After that, necessary housing will be secured as individual victims rebuild or purchase their own homes or move into private rental housing or public disaster housing.

Victims whose homes have been only partially destroyed may use the provisions regarding emergency housing repairs in the Disaster Relief Act to repair their homes and continue living in them without having to move into emergency

Fig. II-1-18 **Flow from Natural Disaster to Permanent Housing (house-owning household)**



*Special standards may be established if necessary for the appropriate implementation of relief.

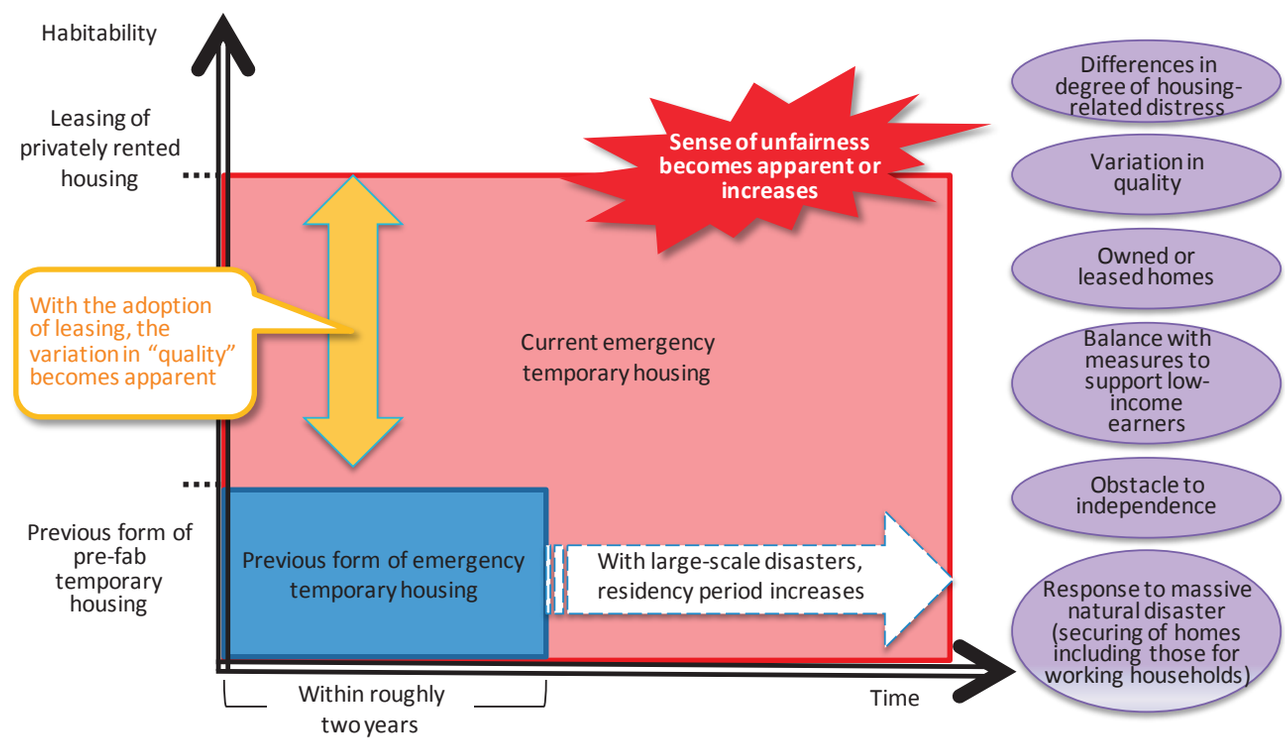
Source: "Committee Findings on Securing Housing for Disaster Victims" by the Working Group for Securing Housing for Disaster Victims under the Committee on National Support for Disaster Victims (August 2014, Cabinet Office)

temporary housing. There are various ways in which housing may be secured, depending on the level of damage to the home and the status of the victim. These may include a secondary evacuation from an evacuation shelter to an inn or a hotel, followed by the reconstruction of the home, or the new purchase of a home.

(2) Investigative Committee on National Support for Victims

It was pointed out after the Great East Japan Earthquake that immediately after the quake, victims were unclear about the process from initial impact until the point when they would be able to secure permanent housing. Furthermore, the purpose of emergency temporary housing had become dissociated from the existing scheme of emergency temporary assistance under the Disaster Relief Act, suggesting that it was necessary to reexamine this entire system.

Fig. II-1-19 **Securing Housing for Victims (Problems with Current Emergency Temporary Housing)**



Source: Cabinet Office

Thus, based on lessons learned from the Great East Japan Earthquake, the Cabinet Office established the Investigative Committee on National Support for Disaster-Affected People in October 2013 to carry out a broad investigation into victim support challenges and effective practices in this area.

As this Investigative Committee proceeded with deliberations into effective practices for victim support as a whole, a working group of experts began conducting investigations on efficient and effective access to housing following a natural disaster. In August 2014, the Interim Report was released, addressing the following:

- The definition of temporary emergency housing and approaches to handling in-kind donations
- Balance between conditions for funding and other measures (e.g., measures for low income earners)
- Approaches to the transition to permanent housing
- Approaches to emergency housing repairs

Since these matters impact victims significantly, our approaches to emergency temporary housing need to be reconsidered by stimulating broad discussion of the topic in every area and on every level, and by carrying out further investigations on topics including the judicial system. Comprehensive support aimed at a smoother transition to permanent housing must also be implemented.

Furthermore, given concerns about the occurrence of a Nankai Trough Earthquake or a Tokyo Inland Earthquake, the following matters must be promptly addressed so that authorities will be able to respond to the massive demand for emergency temporary housing that will result from either of these scenarios:

- Bolster efforts during ordinary (non-emergency) times
- Actively use private rental housing and select methods of granting housing in accordance with the characteristics of each disaster
- Promote proactive collaboration with the private sector
- Build systems for consultation and information provision relating to the procurement of housing for victims

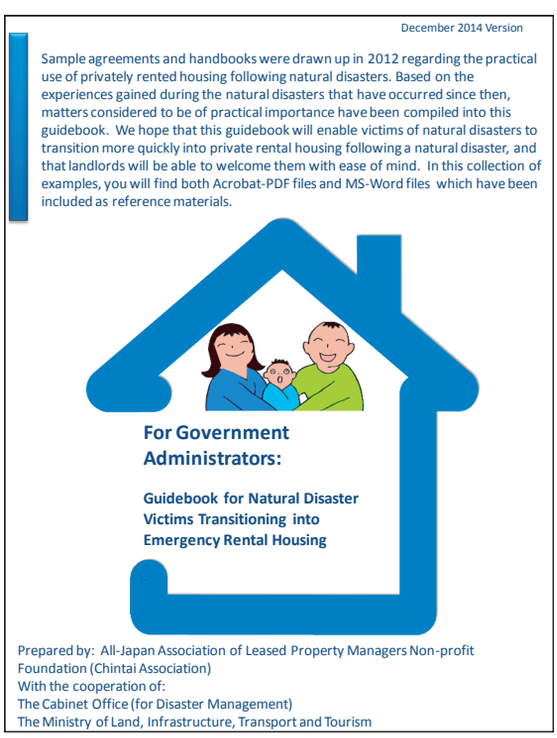
(3) Bolster Efforts to Secure Homes for Victims

With respect to the above matters that "must be taken forward immediately," in March 2015, the Cabinet Office developed important points regarding initiatives to be taken when large-scale disasters occur and in ordinary times in preparation for the occurrence of large-scale disasters, and communicated them to prefectural governments nationwide. In addition, it created and disseminated a "Collection of Examples of Initiatives for Securing Housing for Victims."

To efficiently provide temporary emergency housing and support for emergency housing repairs and for the transition to permanent housing, this Collection of Examples includes cases from natural disasters that have occurred since the Great East Japan Earthquake. These examples cover advance preparations, such as the selection of proposed sites for emergency temporary housing and the execution of agreements with related organizations, the establishment of standards regarding the specifications and methods of providing emergency temporary housing, provisions regarding the specific procedures for making emergency housing repairs, and the establishment of systems for information sharing and providing consultation services to victims.

Further, when a relatively small-scale disaster occurs in a region where there are vacant houses or vacant units in privately leased buildings, or when a large-scale disaster occurs such that it is not possible to respond to the disaster with emergency temporary housing alone, these units could be actively used as emergency rental housing. Thus, a guidebook has been compiled and disseminated to government officials, in cooperation with leasehold property related associations, to outline the key issues that must be taken into consideration when using emergency rental housing (Fig. II-1-20).

Fig. II-1-20 **Guidebook for Natural Disaster Victims Transitioning into Emergency Rental Housing (All-Japan Association of Leased Property Managers Non-profit Foundation)**



Section 6: Efforts to Promote National Resilience

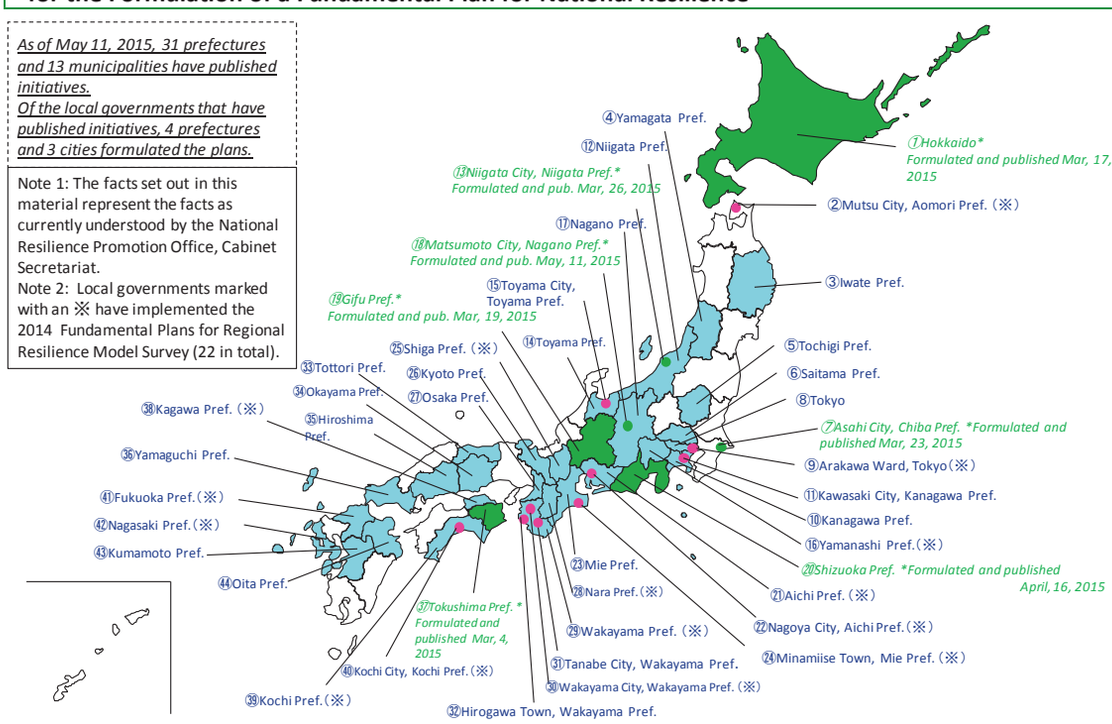
The Fundamental Plan for National Resilience (hereafter in this section, the "Fundamental Plan") was adopted by the Cabinet on June 3, 2014 pursuant to the Basic Act for National Resilience Contributing to Preventing and Mitigating Disasters for Developing Resilience in the Lives of the Citizenry (Act No. 95 of 2013) to address issues of national toughness. The Action Plan for National Resilience 2014 was adopted on the same day at the National Resilience Promotion Headquarters. Based on these, each ministry and agency is currently promoting initiatives relating to national resilience.

The Action Plan 2014 identifies a group of measures (hereafter, "programs") for avoiding 45 "worst-case scenarios that must not occur" which were established in the Basic Plan. Of these, 15 programs have been selected as key programs to be given priority attention. We are planning to promote national resilience by assessing and evaluating the progress made on each program, and repeatedly applying the plan-do-check-act (PDCA) cycle. Key Performance Indicators (KPIs) have been established for each program, and they are being used to quantitatively ascertain and evaluate progress.

Furthermore, in order to assess and evaluate program progress, and to optimize program implementation, Action Plan 2015 is currently being formulated. The Action Plan 2015 will add an Integrated Progress Index (IPI) in addition to the Action Plan 2014 framework, which will be applied to ascertain the state of progress of the programs as a whole and to compare the states of progress across different programs.

Guidelines for Formulating Fundamental Plans for Regional Resilience are being compiled to enable local governments to more easily formulate their own Fundamental Plans for Regional Resilience (hereafter, "Regional Plans"). Support is also being provided to local governments through the implementation of model surveys. Further, a report entitled "Support by Relevant Government Ministries and Agencies for Initiatives Implemented Based on Regional Plans" was compiled in January 2015, in coordination with related government ministries and agencies, and has been published. As of May 11, 2015, 31 prefectures and 13 municipalities were working on formulating their Regional Plans, while four prefectures and three cities had already completed their plans (Fig. II-1-21).

Fig. II-1-21 **Local Governments that have Published Initiatives (Including Planned Initiatives) for the Formulation of a Fundamental Plan for National Resilience**



Source: National Resilience Promotion Office, Cabinet Secretariat

In terms of international relations, a US-Japan National Resilience Workshop was held to share the experiences of Operation Tomodachi, which was mobilized at the time of the Great East Japan Earthquake, and to promote information sharing and discussions on national resilience. Staff involved in national resilience in both Japan and the US were invited to attend. Further, Japan's initiatives to further national resilience were actively publicized both within Japan and abroad through the forum on national resilience publicity and outreach conducted at the Third United Nations World Conference on Disaster Risk Reduction, which was held in coordination with the Economic Research Institute for ASEAN and East Asia (ERIA), and through the international symposium on national resilience in the ASEAN nations, which was held in Indonesia.

Chapter II Status of Disaster Management Measures for Each Type of Potential Disaster

Section 1: Earthquake and Tsunami Disaster Management

1-1 Nankai Trough Earthquake Measures

(1) Examination of Damage Estimates

The government has drafted plans and developed individual measures to prepare for major earthquakes occurring along the Nankai Trough, which stretches from Suruga Bay through the sea off of Shikoku to the Sea of Hyuga. They divide these earthquakes into Tokai earthquakes and Tonankai/Nankai earthquakes based on differences including the imminent risk of occurrence.

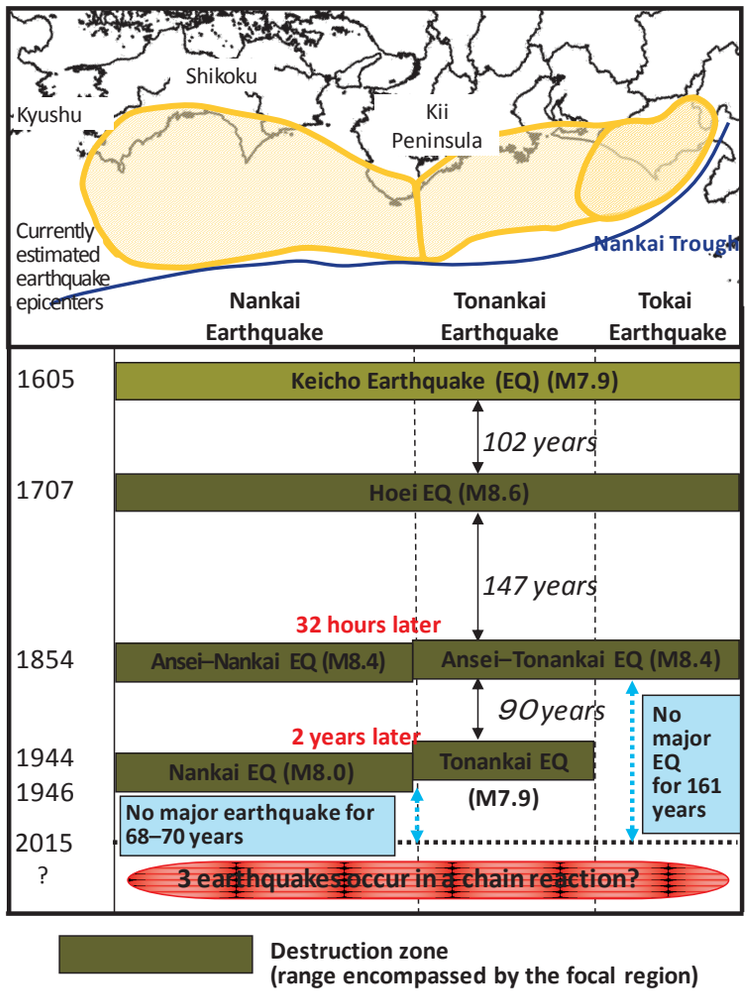
Given this context and the lessons learned from the Great East Japan Earthquake of March 2011, there is a clear need to approach future predicted earthquakes and tsunamis by studying “the largest-class of megaquakes and tsunamis, taking all possibilities into account." Therefore, the Committee for Modeling a Nankai Trough Megaquake was set up in the Cabinet Office in August 2011. Since that time it has been studying megaquake and tsunami models developed based on the latest scientific knowledge.

The Committee established four regions (cases) where strong shaking would be generated to serve as megaquake fault models for estimating seismic intensity distribution. These models were based on the Central Disaster Management Council’s (2003) model and the characteristics of earthquakes including the Great East Japan Earthquake. The Committee then estimated seismic intensity for each case. For tsunami fault models to estimate characteristics including tsunami height and the area of flooding, the Committee set 11 cases of mega-tsunami source models with large or very large slip regions based on factors including the characteristics of the Great East Japan Earthquake and other megaquakes from around the world. The Committee then estimated tsunami height, inundation area, and other characteristics for each case.

Upon receiving the Committee’s findings, the Nankai Trough Megaquake Countermeasures Working Group, set up in April 2012 in the Central Disaster Management Council, studied damage estimates and measures against a Nankai Trough megaquake. Its findings were compiled in a final report published in May 2013.

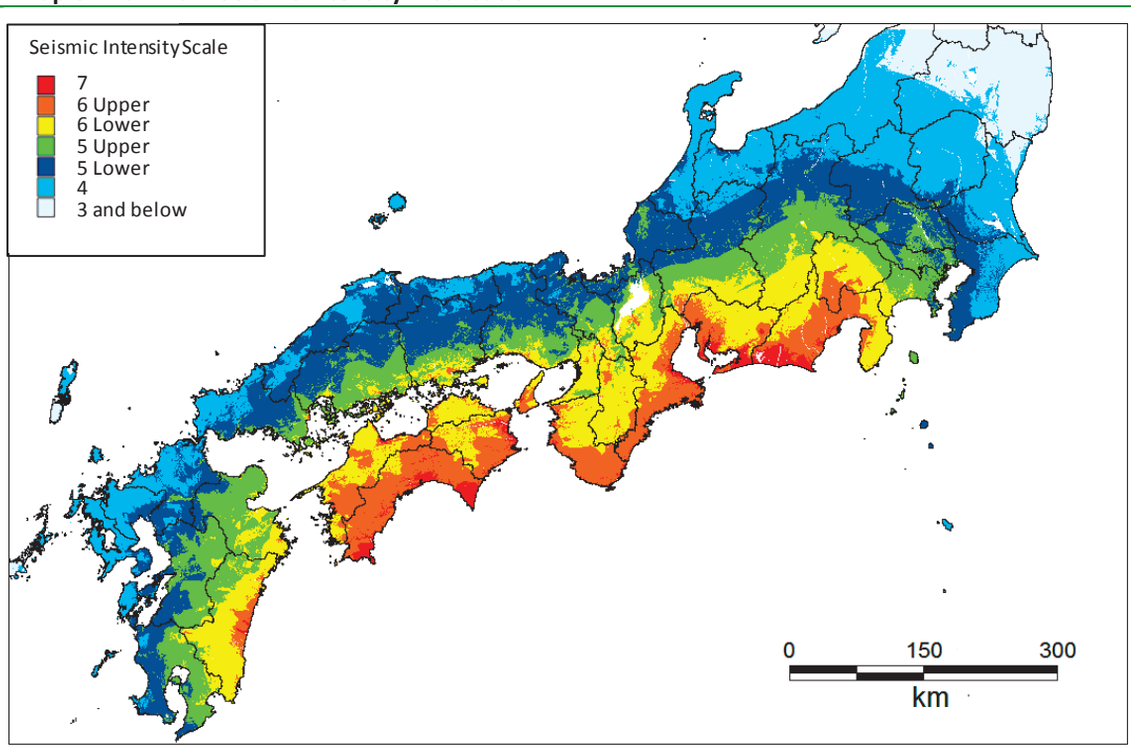
An overview of the damage estimates is as follows (Figs. II-2-1 to II-2-5).

Fig. II-2-1 Large Earthquakes Along the Nankai Trough Since 1600



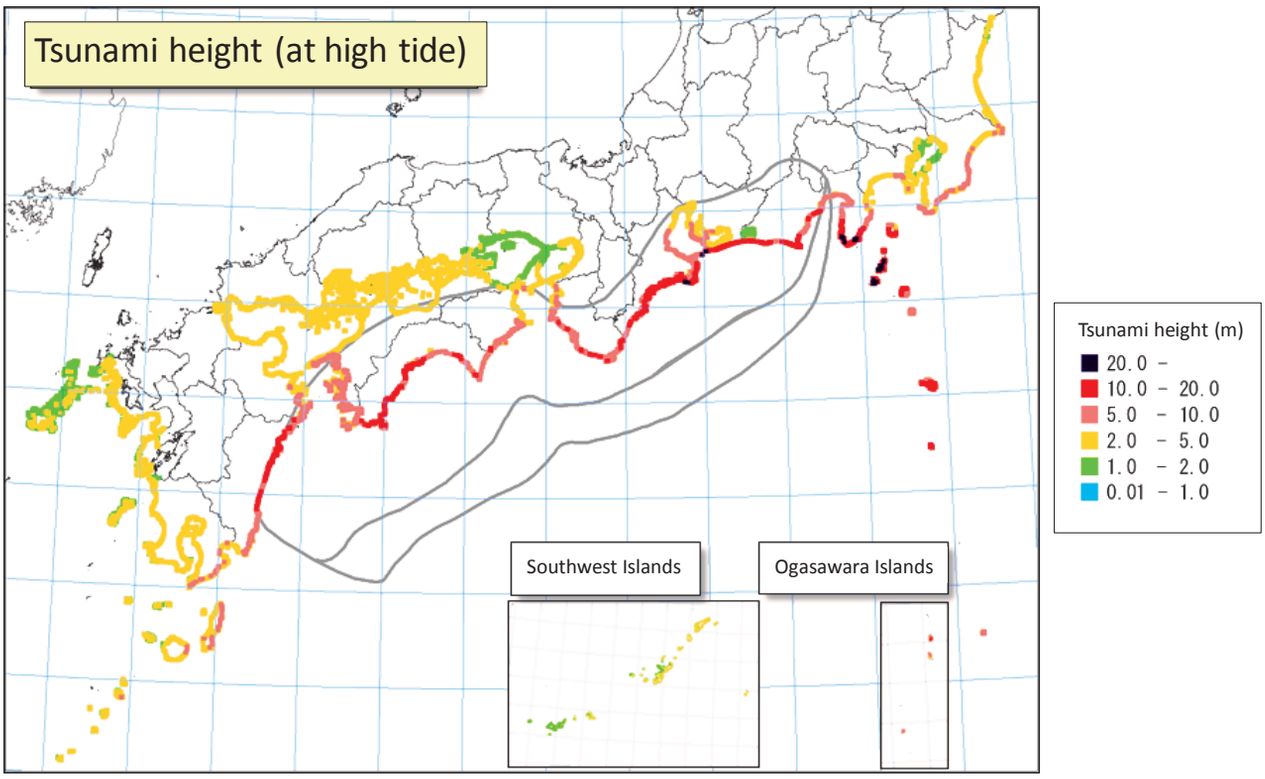
Source: Cabinet Office

Fig. II-2-2 Map of Maximum Seismic Intensity Distribution



* The results of multiple case were combined to show the maximum intensity in a given area.
Source: Committee for Modeling a Nankai Trough Megaquake, Cabinet Office

Fig. II-2-3 **Maximum Height of Tsunami**



* The results of multiple case were combined to show the maximum height in a given area.
Source: Committee for Modeling a Nankai Trough Megaquake, Cabinet Office

Fig. II-2-4 **Estimates of Fatalities and Damage to Structures (August 2012)**

	Number of structures destroyed and/or burned down	Fatalities
○ **If major damage sustained in Tokai region**	954,000–2,382,000	80,000–323,000
○ **If major damage sustained in Kinki region**	951,000–2,371,000	50,000–275,000
○ **If major damage sustained in Shikoku region**	940,000–2,364,000	32,000–226,000
○ **If major damage sustained in Kyushu region**	965,000–2,386,000	32,000–229,000

Source: Cabinet Office

Fig. II-2-5 **Estimates of Economic Impact (March 2013)**

	Estimated value of damage
○ **Damage to assets (affected regions)**	JPY169.5 trillion
• Private sector	JPY148.4 trillion
• Quasi-public sector (electricity, gas, telecommunications, railways)	JPY0.9 trillion
• Public sector	JPY20.2 trillion
○ **Impact on economic activity (all of Japan)**	
• Due to lower production, service levels	JPY44.7 trillion
• Due to disrupted transportation (estimated independently from the above) Road, railway disruptions	JPY6.1 trillion

Source: Cabinet Office

(2) Special Measures Act on Measures for Nankai Trough Earthquakes

After the release of reports including damage estimates of a Nankai Trough megaquake, the Special Measures Act on Measures for Tonankai and Nankai Earthquakes (Act No. 92 of 2002) was amended in November 2013 to comprehensively advance earthquake DRR measures in both structural and non-structural aspects including tsunami evacuation measures, which is the biggest issue from the standpoint of protecting human life. The amendment expanded the legally defined area of potential earthquakes from Tonankai/Nankai earthquakes to Nankai Trough earthquakes and added special measures including those concerning public funding to expand and reinforce tsunami evacuation measures (Fig. II-2-6).

The Nankai Trough Megaquake Measures Council was established for the purpose of strengthening mutual coordination among relevant bodies, including the national government, local governments, and lifeline and infrastructure business operators. However, as the Nankai Trough Earthquake DRR Promotion Council gained legal positioning upon the enactment of the Special Measures Act to Promote Measures for Nankai Trough Earthquakes , the relevant parties are coordinating to transition to the legally mandated council in the future.

Fig. II-2-6 Outline of the Act on Special Measures for the Promotion of Nankai Trough Earthquake Disaster Management

Designation of Areas for Promoting Nankai Trough Earthquake Measures

As the occurrence of a Nankai Trough earthquake could generate a massive earthquake disaster, the areas that needs to promote earthquake DRR measures have been designated by the Prime Minister based on the assumption of an earthquake of the largest scale scientifically conceivable.

Basic Plan Formulation — Drafted by the Central Disaster Management Council

Promotion Plan Formulation

The heads of the designated government institutions and designated public institutions make stipulations regarding the following matters (Promotion Plan) in their disaster management operations plans and prescribe the goals of tsunami evacuation facilities development, as well as the timeline for meeting those goals

- Development of facilities and other matters that should be urgently developed for earthquake DRR, including evacuation sites, evacuation routes, firefighting facilities, etc.
- Protection from tsunamis, efforts to ensure orderly evacuations, and facilitation of rapid rescue operations
- Stipulations related to DRR drills
- Stipulations related to coordination and cooperation among the central government, local governments, and other relevant stakeholders

Local disaster management councils (prefectural and municipal) shall work to prescribe the above matters in their local disaster management plans, and municipal disaster management councils may also prescribe matters that should form the basis of Emergency Tsunami Evacuation Project Plans.

DRR Plan Formulation

Managers of medical facilities, department stores, and other facilities in the DRR promotion area where large numbers of people come and go on a regular basis shall formulate and submit to the prefectural governor plans for ensuring an orderly tsunami evacuation process. This shall be done within six months of designation as an area for DRR promotion.

Nankai Trough Earthquake Disaster Management Promotion Council

Designation of Areas for Special Reinforcement of Nankai Trough Earthquake Tsunami Evacuation Measures

Within the areas for DRR promotion, the Prime Minister designates areas that should undergo special reinforcement of tsunami evacuation measures for tsunamis occurring with a Nankai Trough earthquake as Areas for Special Reinforcement of Nankai Trough Earthquake Tsunami Evacuation Measures (Areas for Special Reinforcement).

Drafting of Emergency Tsunami Evacuation Project Plans

Municipal mayors listen to the opinions of prefectural governors, obtain the consent of the Prime Minister, and draft plans related to the development of facilities (Emergency Tsunami Evacuation Projects) listed below. They also establish goals and timelines for these plans.

- Evacuation facilities and other evacuation sites for evacuation from tsunamis
- Evacuation routes directing users to evacuation sites
- Facilities prescribed in government ordinances and used by vulnerable populations including the elderly, disabled persons, infants, toddlers, children, and students, whose relocation is deemed necessary by or in connection with the Projects for Promoting Collective Relocation.

Special Exception in Central Government Funding and Subsidies for Emergency Tsunami Evacuation Projects

- Special cases of the central government funding and subsidizing a portion of the expenses required for an Emergency Tsunami Evacuation Project
- Fiscal considerations for facility relocation in connection with the Projects for Promoting Collective Relocation

Special Measures for Collective Relocation Promotion Projects Based on an Emergency Tsunami Evacuation Project Plan

- Special treatment under the Agricultural Land Act (relaxation of requirements to permit agricultural land appropriation)
- Special treatment under the Act on Promoting Collective Relocation (e.g., subsidies for expenses required to obtain land for use in collective housing)
- Consideration for consultations through the National Land Use Planning Act
- Special treatment under local fiscal laws (allocation of local bonds for facility removal)

*Measures based on revisions to the Act on Special Measures for the Promotion of Nankai Trough Earthquake Disaster Management

Source: Cabinet Office

(3) Nankai Trough Earthquake Measures Promotion Areas and Special Reinforcement Areas

Based on seismic intensity distribution, tsunami height, and other characteristics of Nankai Trough megaquakes, 707 municipalities in 29 prefectures were designated as Nankai Trough Earthquake Measures Promotion Areas, where earthquake DRR measures for Nankai Trough earthquakes should be promoted. In addition, 139 municipalities in 14 prefectures were designated as Nankai Trough Earthquake and Tsunami Evacuation Special Reinforcement Areas where tsunami evacuation measures should be strengthened specifically for a tsunami accompanying a Nankai Trough earthquake. Specifically, for each of the 11 cases of earthquake models used for estimating damage from a Nankai Trough megaquake, areas receive the designation if they meet one of the criteria below in the event of an earthquake. However, even areas that do not receive the designation still need to take sufficient DRR measures since major damage from strong shaking, fires, and other factors is anticipated (Figs. II-2-7, II-2-8).

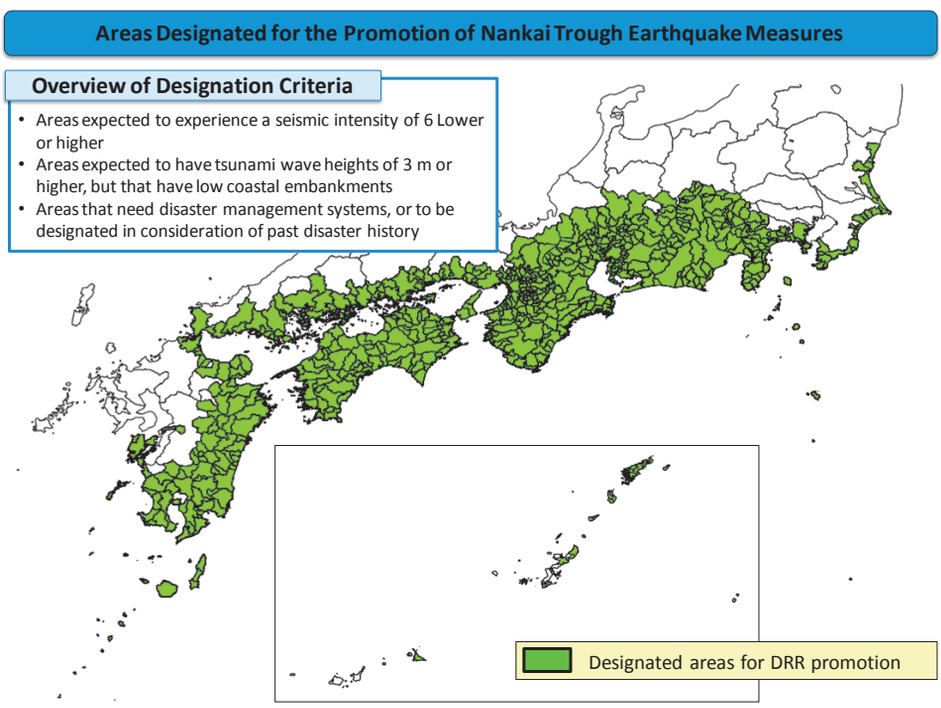
Nankai Trough Earthquake Measures Promotion Areas

- Areas expected to experience a seismic intensity of 6 Lower or higher
- Areas expected to have tsunami wave heights of 3 m or higher, but that have low coastal embankments
- Areas deemed to merit designation to ensure the integrity of regional DRR systems or in consideration of past disaster history

Nankai Trough Earthquake and Tsunami Evacuation Special Reinforcement Areas

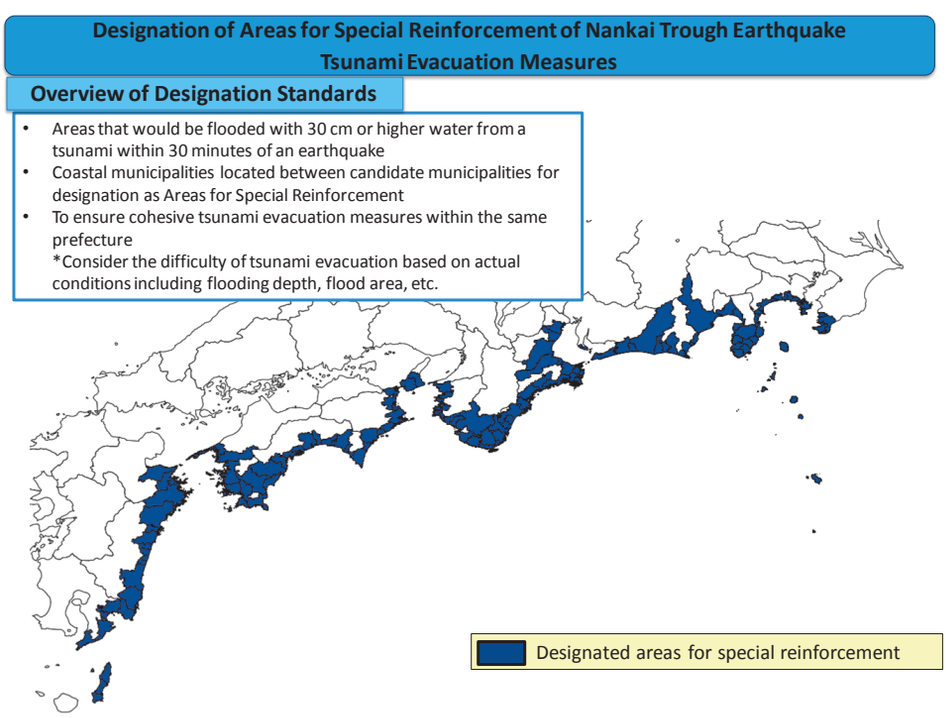
- Areas that would be flooded with 30 cm or more water from a tsunami within 30 minutes of an earthquake
- Coastal municipalities between candidate municipalities for designation as communities for special reinforcement
- Areas where designation is desirable from the standpoint of ensuring cohesive tsunami evacuation measures within the same prefecture

Fig. II-2-7 Areas Designated for the Promotion of Nankai Trough Earthquake Measures



Source: Cabinet Office

Fig. II-2-8 Areas for Special Reinforcement of Nankai Trough Earthquake Tsunami Evacuation Measures



Source: Cabinet Office

(4) Basic Plan to Promote Nankai Trough Earthquake Measures

On March 28, 2014, the national government, via the Central Disaster Management Council, approved the Basic Plan for the Promotion of Nankai Trough Earthquake Disaster Risk Reduction Countermeasures based on the Act on Special Measures for the Promotion of Nankai Trough Earthquake Disaster Management (Fig. II-2-9). This plan, as the basic policy for Nankai Trough earthquake DRR measures, calls for the national government, public organizations, local governments, business operators, private citizens, and various other actors to coordinate to systematically and quickly promote comprehensive DRR measures combining both physical and non-physical aspects based on the characteristics of Nankai Trough earthquakes, including strong shaking and a massive tsunami across a very wide area. The Basic Plan also sets the disaster reduction goals of reducing the number of fatalities by about 80% and reducing structural damage by about 50% over the next 10 years. It also presents specific activities to achieve the DRR objectives, such as improving structures' earthquake and fire resistance, creating tsunami hazard maps, and improving communities' DRR capacity, and stipulates the objectives and execution periods of these activities.

Based on the Basic Plan, local governments and other actors are drafting Nankai Trough Earthquake DRR Promotion Plans and Emergency Project Plans for Tsunami Evacuation Measures, and private facility operators and others are drafting Nankai Trough Earthquake DRR Plans. The Cabinet Office is striving to advance cohesive Nankai Trough earthquake DRR measures with the relevant actors by providing advice and other necessary assistance to facilitate the prompt formulation of these plans. It is also conducting follow-up on the Basic Plan as appropriate.

Fig. II-2-9 Overview of Basic Plan for the Promotion of Nankai Trough Earthquake Disaster Risk Reduction Countermeasures

Chapter 1. Matters related to significance of effectively and quickly promoting earthquake DRR measures for Nankai Trough earthquakes

- It is important to study DRR and emergency response measures and to steadily promote them to mitigate damage. We must keep in mind a worst-case scenario of the damage without making assumptions.

Chapter 2. Basic Guideline for Promoting Earthquake DRR Measures for Nankai Trough Earthquakes

Based on the characteristics of Nankai Trough earthquakes, the central government, local governments, community residents, and various other actors will cooperate to systematically and rapidly promote the following DRR measures (1–9).

Characteristics of Nankai Trough Earthquakes

(1) Strong shaking and massive tsunami over a very wide area is generated
(2) Tsunami reaches some areas very quickly
(3) Multiple massive earthquakes may occur hours apart
(4) Damage from (1)–(3) is massive and spans a wide area
(5) If the largest estimated earthquake occurs, the affected area will be very extensive and will cause damage unlike that of past earthquake estimates

1. **Respond to massive damage of every type**
2. **Safeguard human life from the tsunami**
3. **Respond to damage across a very wide area**
4. **Avoid massive impact on domestic and international economies**
5. **Respond to occurrences at different times**
6. **Respond corresponding to level of external force**
7. **Strengthen strategic efforts**
8. **Improve how measures are conducted through drills and other measures**
9. **Gather and use scientific knowledge**

Chapter 3. Basic Policies for Earthquake DRR Measures for Nankai Trough Earthquakes

Conduct the following activities 1–7 based on the Basic Policy of Chapter 2. In conjunction with this, establish specific objectives and execution periods for each activity.

Disaster Reduction Objectives (next 10 years)
Estimated fatalities: Reduce the approx. 332,000 by about 80% or more
Estimated structures destroyed: Reduce the approx. 2.5 million by about half or more

1. Earthquake measures
(1) Seismic retrofitting of structures (2) Firefighting measures (3) Measures for landslides, ground damage, liquefaction (4) Seismic retrofitting of lifeline/infrastructure facilities
2. Tsunami measures
(1) Construction of community structures resistant to tsunamis (2) Ensure safe and reliable evacuations
3. Comprehensive DRR framework
(1) Enhanced DRR education/drills (2) Coordination with volunteers (3) Improved comprehensive DRR capacity (4) Measures against long-period ground motion
4. Advance preparations for disaster response
(1) Construction of disaster response framework (2) Rescue/first aid measures (3) Medical measures (4) Firefighting activities (5) Securing transportation for emergency shipments/emergency transport activities (6) Procurement of food, water, necessities, and other goods (7) Fuel supply measures (8) Response to evacuees and others (9) Management of stranded persons (10) Restoration of lifelines/infrastructure (11) Health/sanitation/epidemic prevention measures (12) Measures for human remains (13) Handling of disaster waste and other materials (14) Collecting disaster information (15) Provision of disaster information (16) Securing/stabilizing public order (17) Effective use of diverse spaces (18) Establishment of wide area cooperation/support frameworks
5. Preventing confusion inside and outside disaster-affected areas
(1) Securing key transportation networks
(2) Securing business continuity of private companies
(3) Securing operational continuity of the central and local governments
6. Response to diverse modes of occurrence
7. Response to various local issues
(1) Securing the safety of high-rise buildings, underground areas, department stores, railway stations, etc. (2) Securing the safety of sea-level zones (3) Securing the safety of nuclear power plants (4) Securing the safety of oil industrial complexes and their environs (5) Response to villages at high risk of becoming cut off (6) Damage reduction and prevention for local industry/logistics in coastal areas (7) DRR measures for cultural properties

Chapter 4. Basic Guidelines for Conducting Emergency Response Measures After a Nankai Trough Earthquake

When a disaster occurs, execute emergency response measures in consideration of 1–12 below based on Nankai Trough earthquake characteristics

1. **Promptly ascertain damage information**
2. **Respond to emergency evacuation from tsunami**
3. **Respond to nuclear power plants**
4. **Secure transportation for rescue/first aid and emergency transport**
5. **Implement tsunami and firefighting measures**
6. **Provide medical treatment to many injured people**
7. **Address absolute shortages of goods**
8. **Handle massive numbers of evacuees**
9. **Share information appropriately both domestically and internationally**
10. **Consider secondary disaster measures for facilities, equipment**
11. **Work on restoration of lifelines/infrastructure**
12. **Establish a region-wide support framework**

Chapter 5. Basic Stipulations of Nankai Trough Earthquake DRR Promotion Plans

Stipulations to be included in Promotion Plans contained in the Disaster Management Operation Plans established by designated government and public institutions, and in the Local Disaster Management Plans established by relevant prefectural and municipal local disaster management councils.

1. Matters related to facilities that should be urgently developed for earthquake DRR
Define facilities that should developed, including retrofitting of buildings and structures, tsunami protection facilities, tsunami evacuation buildings, other evacuation sites, and evacuation routes, and define the specific goals and timelines for development projects
2. Matters related to protection from tsunamis, ensuring orderly evacuations, and rapid rescue operations
(1) Protection from tsunamis (include stipulations on the management, automation, and reinforcement of seawalls, floodgates, and other structures)
(2) Ensure orderly evacuations (include stipulations on the communication of information to local residents and others, ensuring evacuation behaviors, and measures to be taken by relevant institutions)
(3) Rapid rescue operations (include stipulations on the framework for conducting rescue/first aid activities through firefighting organizations)
3. Matters related to securing coordination and cooperation with relevant parties
Include stipulations on the allocation of equipment, materials, people, and resources, the storage and procurement of supplies, and measures for stranded persons
4. Matters related to disaster drills
Include stipulations on conducting joint drills with other organizations and measures for promoting resident participation
5. Matters related to education and public information necessary in earthquake DRR
Include stipulations on education and public outreach on topics including what to do when an earthquake/tsunami strikes, the stockpiling of supplies, etc.
6. Matters to form the basis of the Emergency Tsunami Evacuation Project Plans
Include stipulations on goals and timelines for Basic Guidelines and Measures for the Promotion of Tsunami Evacuation Policies. These should form the basis of any Emergency Tsunami Evacuation Projects that require higher levels of government contributions.

Chapter 6. Basic Stipulations for Nankai Trough Earthquake DRR Plans

Situations to be included in Disaster Management Plans established by managers and operators of the designated facilities in the promotion areas

1. Persons who should draft Disaster Management Plans and take DRR measures related to Tsunamis
In areas where a tsunami is estimated to cause flooding of 30 cm or higher:
- Managers and operators of hospitals, theaters, department stores, and other facilities that regularly serve large numbers of people
- Managers and operators of facilities for refining, storing, treating or handling oil
- Entities involved in transporting passengers (e.g., railway operators)
- Managers and operators of schools and social welfare facilities
- Water, electricity, and gas utilities, telecommunications and broadcasting business operators

2. Stipulations for ensuring orderly evacuations from tsunamis
3. Stipulations on disaster drills
4. Stipulations on education and public information necessary in earthquake DRR

Source: Cabinet Office

(5) Plan for Specific Emergency Response Activities in a Nankai Trough Earthquake (Basic Plan)

On March 30, 2015, the Central Disaster Management Council voted to approve the Plan for Specific Emergency Countermeasures and Activities for a Nankai Trough Earthquake (Fig. II-2-10). This plan specifically defines the details of activities related to emergency transportation routes, rescue, firefighting, medical activities, goods procurement, fuel supplies, and disaster management bases for disaster emergency response by the national government. These detailed activities are based on the results of estimates of seismic intensity distribution and tsunami heights for a megaquake and tsunami as predicted by the Committee for Modeling a Nankai Trough Megaquake. They are based on the latest scientific knowledge and damage estimation reported by the Nankai Trough Megaquake Countermeasures Working Group. An outline of each field of activity is as follows.

a) Emergency Transportation Route Plan
This plan defines the roads for which passage should be secured in advance to facilitate seamless and rapid transport of people, goods, and fuel from around Japan with a focus on safeguarding human life, including transporting forces and other groups across a wide area beginning immediately after a disaster. Even though ascertaining the totality of the damage is expected to take time when a disaster occurs, it is necessary to narrow down and select the minimum necessary emergency transportation routes in advance. Then when a disaster occurs, information about whether these roads are passable (and information about detours when roads are not passable) needs to be collected, before working on other roads. Information must be promptly shared with DRR-related organizations, and passage on these roads must be quickly secured. In preparation for this, the plan aims to ensure that information, including map details, is broadly shared among DRR-related organizations in advance, and defines specific procedures for sharing information during a disaster.

b) Plan for Rescue, First Aid, and Firefighting
The first 72 hours after a disaster will be crucial to rescue efforts aimed at saving lives amidst the massive damage that a Nankai Trough earthquake will cause. Thus, the maximum number of forces from police and firefighting organizations within the disaster-affected prefectures must be mobilized for rescue, first aid, firefighting, and other first response activities immediately after a disaster strikes. In addition, the national government must bring in support forces from around the country as quickly as possible to the areas where extensive damage is predicted. Therefore, the plan defines the policy on deploying forces as well as specific procedures for the initial response phase. In addition to the police and firefighting forces within the affected prefectures being mobilized within the disaster-affected areas, these forces must also include disaster relief and emergency forces from police and firefighting organizations nationwide, as well as Self-Defense Forces deployed for disaster relief missions.

c) Plan for Medical Activities
A Nankai Trough Earthquake will produce a large number of casualties caused by collapsed buildings and other damage, and damage to medical facilities will also necessitate moving a large number of patients to other hospitals. This will cause medical needs to drastically increase, and the medical resources within the disaster-affected areas alone are not expected to be able to meet these needs. Therefore, the plan stipulates that support operations be promptly conducted by medical teams, including disaster medical teams mobilized from around Japan, that medical systems be established that can manage the minimum necessary lifesaving activities, including stabilizing people within the disaster -affected region, and that patients with serious conditions not treatable in the disaster-affected region be transported to other areas.

d) Plan for Goods Procurement
In a Nankai Trough Earthquake, supplies stockpiled by local governments and households will run out in a matter of days. Meanwhile, it will take disaster-affected local governments time to ascertain accurate information in the initial phase of the disaster, and the ability of the private sector to secure supplies will also be impeded. This means that disaster-affected local governments alone will likely not be able to quickly procure the needed supply volumes. Therefore, the plan stipulates that the national government will procure the goods estimated to be necessary mainly to support people at evacuation shelters, and arrange for the emergency transport of goods to the disaster-affected region without waiting for specific requests from disaster-affected prefectures. It also details procedures for goods procurement and supply based on this push-type assistance conducted immediately after a disaster.

e) Plan for Fuel Supplies
A Nankai Trough Earthquake will cause damage to many oil refineries, oil depots, LP gas import bases, and similar facilities. Even so, while securing national fuel supplies, it is necessary to quickly and seamlessly secure supplies of fuel needed for emergency response activities and to continue operations at key facilities. Therefore, the plan defines (1) an approach for an oil supply framework in times of disaster based on the group BCPs of oil refiners and other corporations as well as the Oil Supply Coordination Plan in Disasters per the Oil Stockpiling Act, (2) procedures for prioritizing continued supply to oil-supplying facilities at disaster management bases and other locations, and to preferentially supply key facilities whose business continuity is specifically needed, and (3) the roles and other responsibilities of disaster-affected prefectures and relevant government agencies to develop a fuel transport and supply framework for disasters.

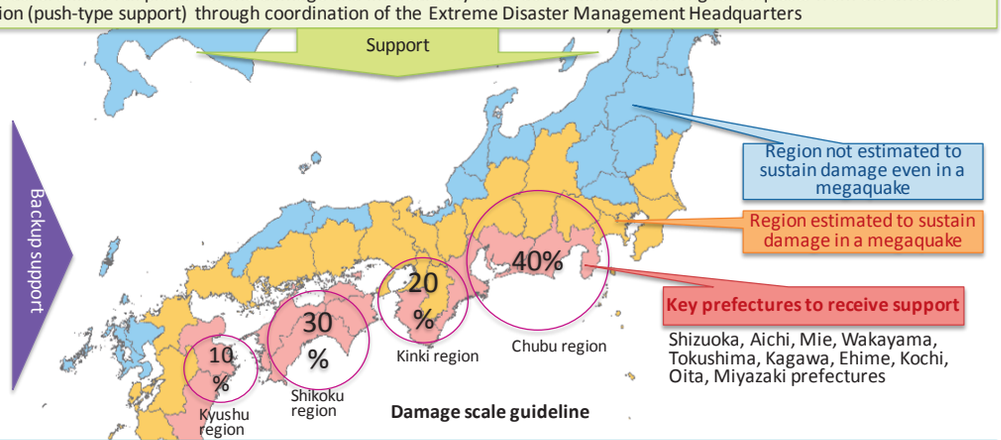
Fig. II-2-10 Outline of Plan for Specific Emergency Response Activities in a Nankai Trough Earthquake

Rescue/First Aid, Firefighting	Medical Care	Goods	Fuel
◎Deploy region-wide support forces from 37 prefectures not part of the prefectures requiring priority support (maximum figures) ・Police: 16,000 people ・Firefighters: 17,000 people ・Self-Defense Forces: 110,000 people ◎ 620 airplanes, 470 ships	◎Request deployment of DMAT (1,323 registered teams), assemble them at land/air routes, logistics support, mission conferral ◎ Support for continuity/restoration of affected medical facilities (staffing, supply of goods/fuel, etc.) ◎ Transport patients with serious conditions through local and region-wide medical transport	◎ Procure the necessary relief goods 4–7 days after a disaster and transport them to bases in the affected prefectures ・Water: 460,000 m^3 emergency supply ・Food: 72 million meals ・Blankets: 6 million ・Diapers: 4.8 million ・Portable toilets: 54 million uses	◎ Establish supply structure transcending oil industry groups ◎ Prioritize continuous supply to core SS, etc. on emergency transport routes ◎ Preferential supply based on requests to key facilities including base hospitals

The central government ascertains a full picture of the damage and immediately takes action without waiting for requests from the affected region (push-type support) through coordination of the Extreme Disaster Management Headquarters

Emergency transport routes, disaster management bases

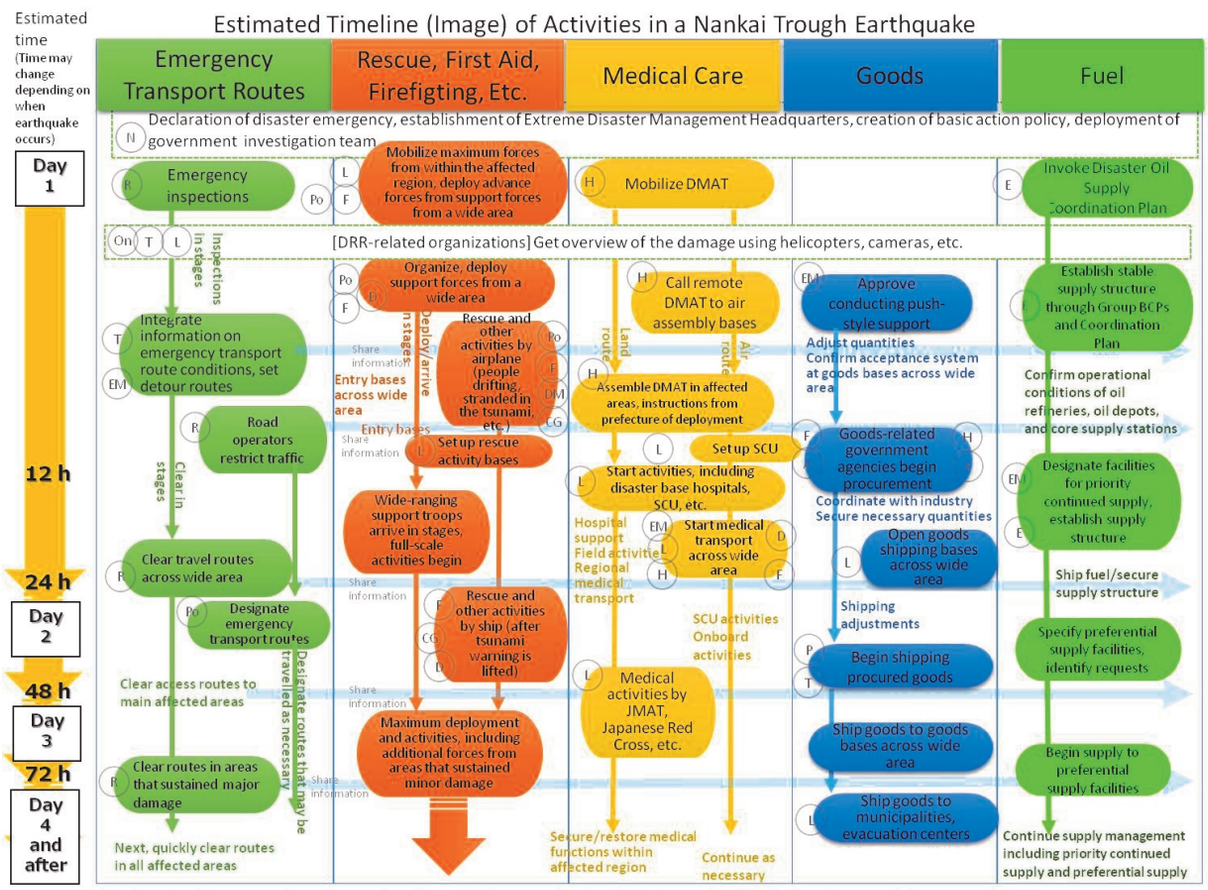
◎ Establish emergency transport routes for people/goods, rapidly secure passage on routes when a disaster occurs
◎ Establish disaster management bases for activities in each field, rapidly secure bases when a disaster occurs



Points of specific plans

1. Keeping in mind that the first 72 hours are crucial to saving lives, establish a timeline and target actions in the fields of emergency transport routes, rescue operations, medical care, goods, and fuel (Ex.: Secure routes for movement across a wide area within 24 hours, have support forces from a wide area arrive in stages, etc.)
2. Place priority on deploying support forces from a wide area and support DMAT from around Japan to areas with massive damage (10 key prefectures to receive support)

Estimated Timeline (Image) of Activities in a Nankai Trough Earthquake



The above timeline was made using examples of activities by DRR-related organizations and may differ based on actual damage conditions.

Note: N = National government/ L = Prefectural government/ R = Road management authority/ T = Ministry of Land, Infrastructure, Transport and Tourism/ Po = National Police Agency/ F = Fire and Disaster Management Agency/ EM = Extreme Disaster Management Headquarters/ D = Ministry of Defense/ CG = Japan Coast Guard/ On = Onsite team/ H = Ministry of Health, Labour and Welfare/ A = Ministry of Agriculture, Forestry and Fisheries of Japan/ E = Ministry of Economy, Trade and Industry/ P = Private sectors

Source: Cabinet Office

1-2 Tokyo Inland Earthquake Measures

(1) Examination of Damage Estimates

Government ministries and agencies, local governments, business operators, and others have developed various types of activities to prepare for earthquakes occurring directly in the Tokyo Metropolitan Area based on the Outline of the Tokyo Inland Earthquake Measures approved by the Central Disaster Management Council in September 2005.

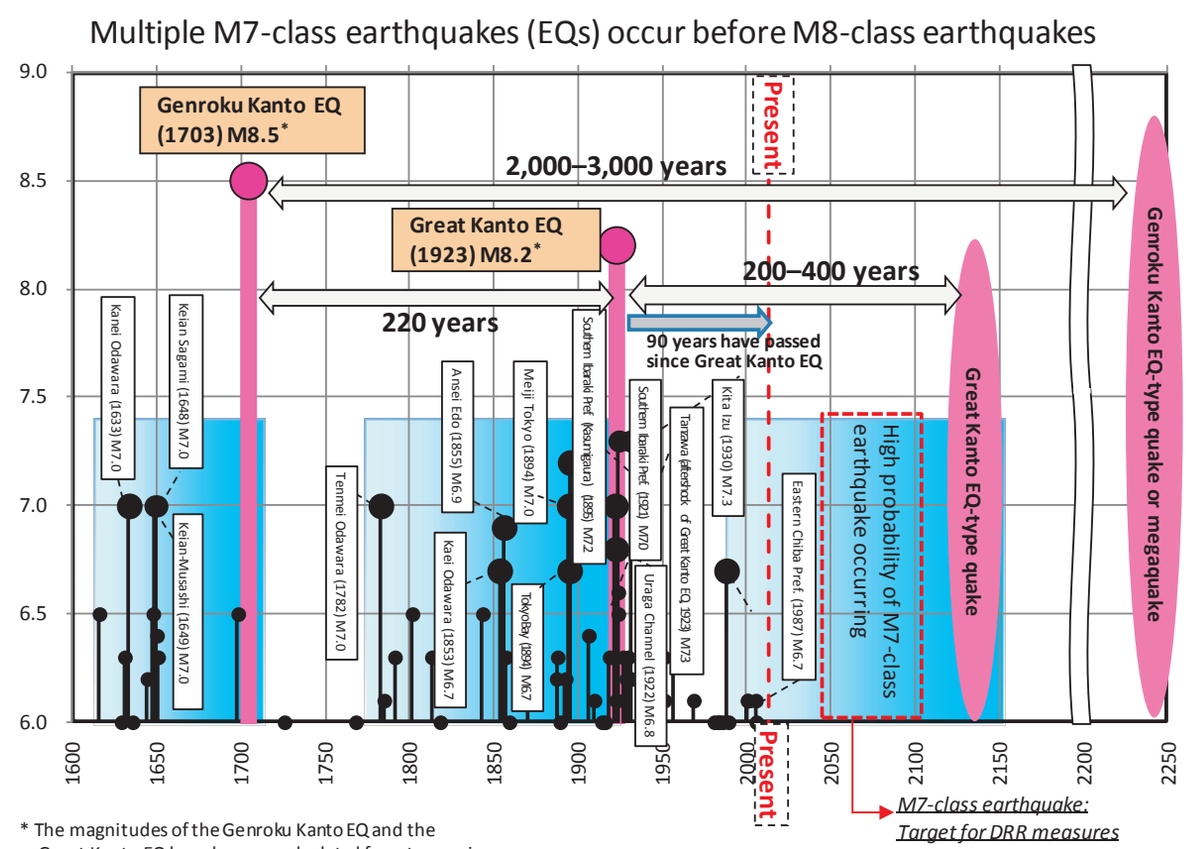
It is within this context, and based on the lessons of the Great East Japan Earthquake of March 2011, that the Committee for Modeling a Nankai Trough Megaquake was set up in the Cabinet Office in May 2012 in recognition of the clear need to approach future predicted earthquakes and tsunamis by studying "the largest class of megaquakes and tsunamis taking all possibilities into account." To date, the Committee has studied earthquake and tsunami models based on the latest scientific findings, including the possibility of a large earthquake along the Sagami Trough, which had not previously been the target of Tokyo Inland Earthquake scenarios.

In response to its findings, the Tokyo Inland Earthquake Measures Working Group, which was set up under the Central Disaster Management Council in April 2012, studied damage estimates and countermeasures for earthquakes occurring directly under Tokyo, and compiled its findings in a final report in December 2013.

The Working Group set the earthquake scenario targeted for disaster management and risk reduction measures as the highly imminent scenario of an M7-class earthquake occurring directly under Tokyo (Fig. II-2-11). This scenario is based on the fact that a massive (M8-class) trench-type earthquake along the plate boundaries of the Sagami Trough occurs at an interval of 200–400 years, and 90 years have passed since the most recent Taisho Kanto Earthquake. The scenario is also based on the fact that an earthquake of the Genroku Kanto Earthquake type or a megaquake, occurs at an interval of 2,000–3,000 years, with the most recent Genroku Kanto Earthquake having occurred approximately 300 years ago. Various types of earthquakes are estimated to be able to cause an M7-class earthquake directly under Tokyo, and where such an earthquake will occur is impossible to know. However, in calculating a number of specific estimates, the Working Group set up a scenario in which an earthquake is centered directly under southern Tokyo in Tokyo's 23 wards. It is expected that such a scenario would cause massive damage and would seriously affect pivotal functions of the capital.

An overview of the damage estimates is shown below. (Fig. II-2-12)

Fig. II-2-11 History of Earthquakes Along the Sagami Trough



* The magnitudes of the Genroku Kanto EQ and the Great Kanto EQ have been re-calculated from tsunami simulations by this study group

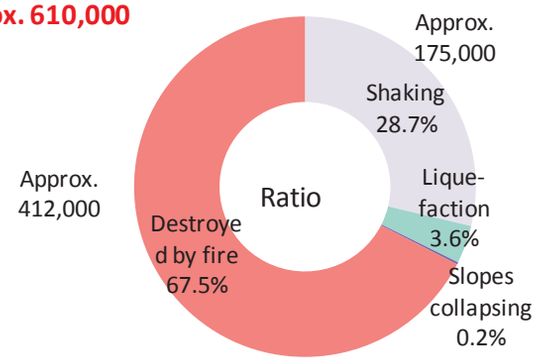
Great Kanto EQ type earthquake: Almost 0–2% in the next 30 years
Genroku Kanto EQ type earthquake: Almost 0% in the next 30 years

Source: Cabinet Office

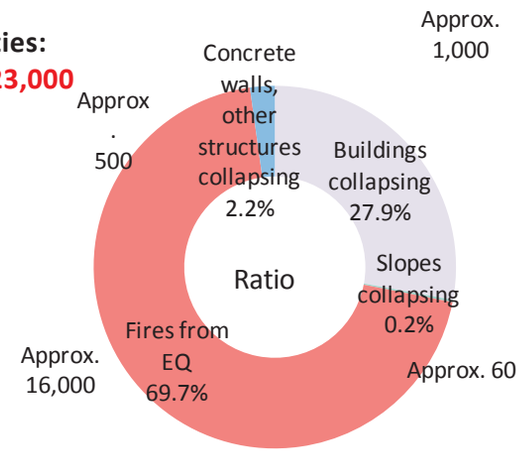
Fig. II-2-12 **Overview of Damage Estimates (December 2013)**

- **Estimated earthquake: M7-class earthquake directly under Tokyo (earthquake directly under southern Tokyo)**
- **Estimated conditions at time of earthquake: Winter, evening, wind of 8 m/s**

(1) Number of structures burned down/destroyed:
Approx. 610,000

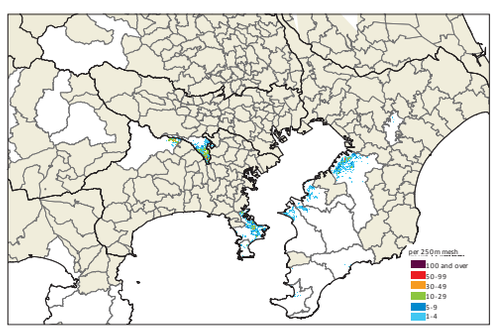


(2) Fatalities:
Approx. 23,000



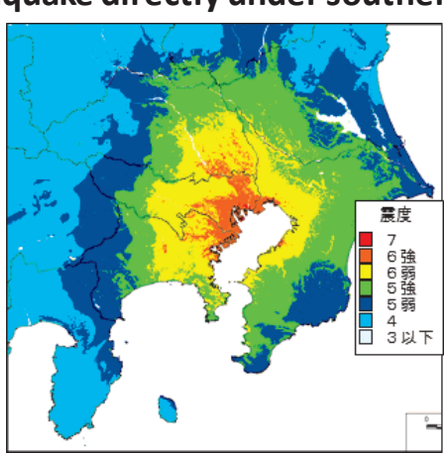
Injured: Approx. 123,000
Economic damage: Approx. JPY 95 trillion

Distribution of structures burned down/destroyed



* Created by the Cabinet Office of Japan from Damage Estimates and Countermeasures for a Tokyo Inland Earthquake (Final Report) (December 2013)

Distribution of seismic intensity of earthquake directly under southern Tokyo



Source: Cabinet Office

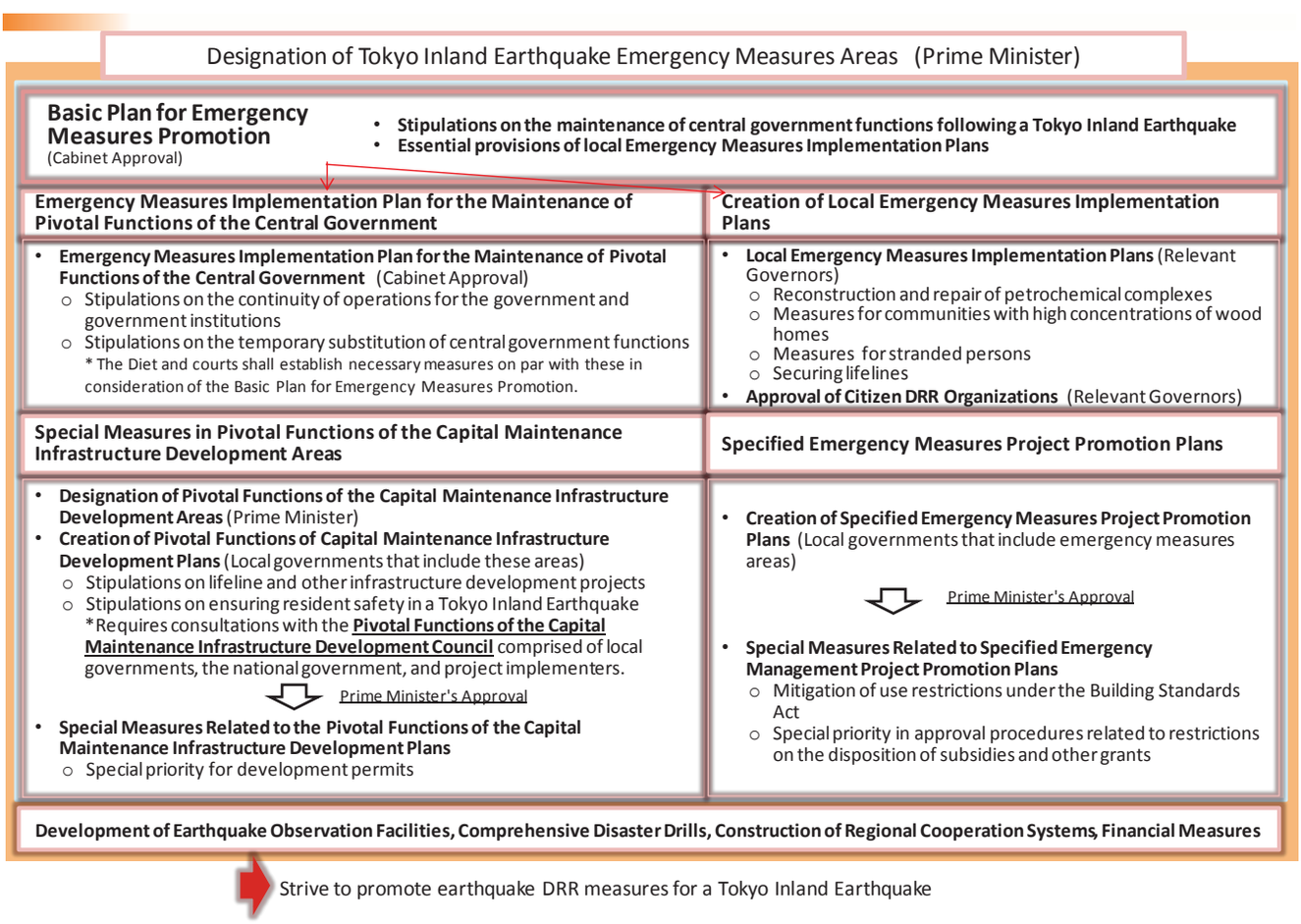
(2) Act on Special Measures against Tokyo Inland Earthquake

The Act on Special Measures against Tokyo Inland Earthquake (Act No. 88, 2013; Fig. II-2-13), a piece of legislation introduced by the Diet in November 2013, was enacted to plan for the maintenance of the pivotal functions of the capital in the event of a Tokyo Inland Earthquake and to protect citizens' lives and property from damage due to such an earthquake.

This law creates a Basic Plan for Emergency Measures Promotion, which stipulates the importance of the Tokyo Inland Earthquake Measures, basic guidelines, and measures that must be taken, and an Emergency Measures Implementation Plan for the Maintenance of Pivotal Functions of the Central Government (Government Business Continuity Plan), which contains stipulations regarding the maintenance of government operations. For local governments, it establishes specific goals that are set at the discretion of the local governments themselves based on actual community conditions, and strives to promote systematic Tokyo Inland Earthquake Measures based on the assumption that Local Emergency Measures Implementation Plans can be created with strategic positioning of various countermeasures.

It also identifies areas that are required to develop plans for maintaining pivotal functions of the capital and to ensure the safety of residents, designating them as Pivotal Functions of the Capital Maintenance Infrastructure Development Areas (as of March 2014, these were Chiyoda-ku, Chuo-ku, Minato-ku, and Shinjuku-ku), and calls for necessary infrastructure developments. Local governments within these designated areas can gain access to special provisions for projects based on this plan by creating and obtaining approval for their Pivotal Functions of Capital Maintenance Infrastructure Development Plans.

Fig. II-2-13 Overview of Act on Special Measures against Tokyo Inland Earthquake



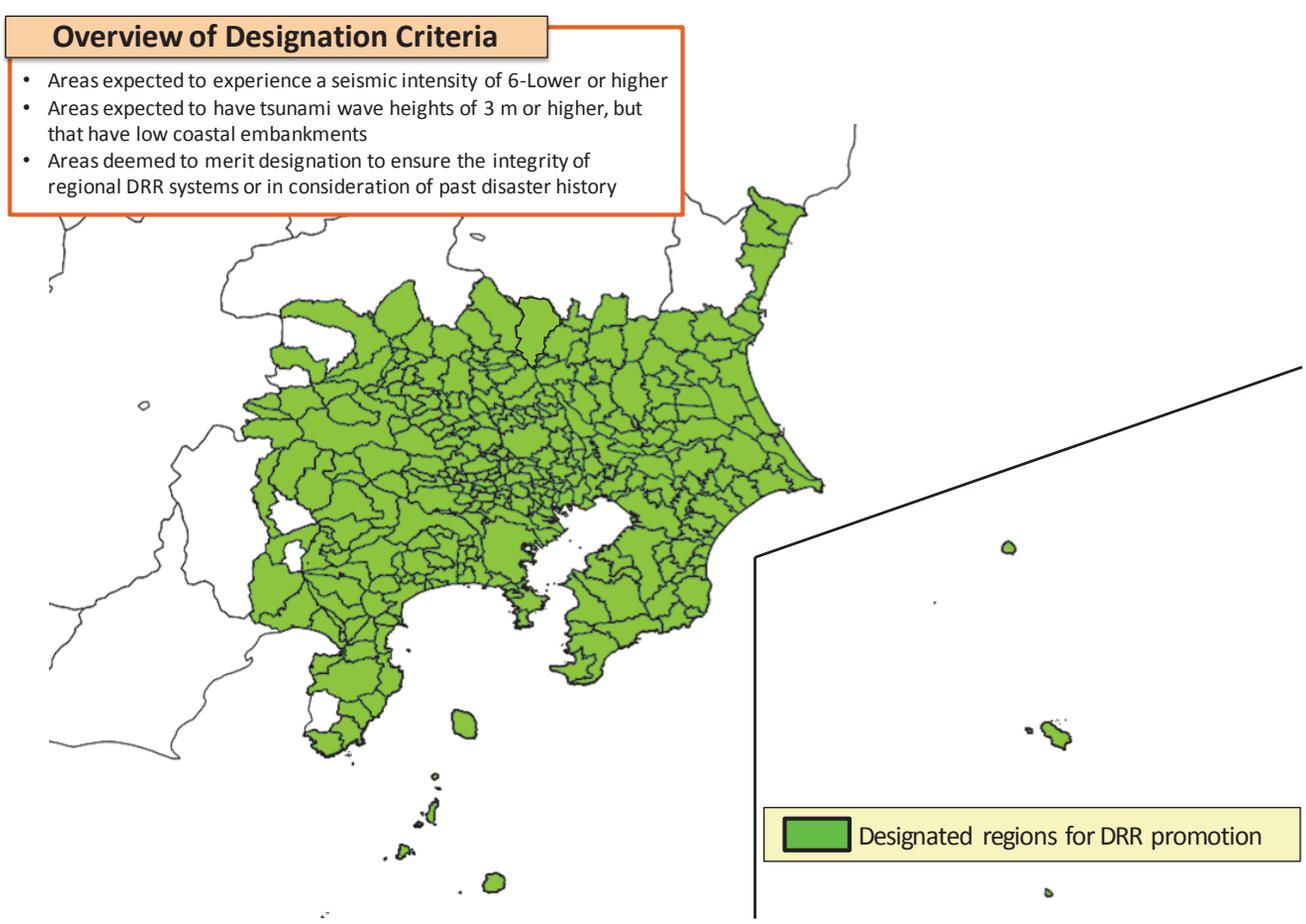
Source: Cabinet Office

(3) Tokyo Inland Earthquake Emergency Management Areas

Areas that need to urgently promote earthquake DRR measures because they are deemed to be at risk of significant damage in the event of a Tokyo Inland Earthquake, based on seismic intensity distribution and tsunami wave height data, have been designated as Tokyo Inland Earthquake Emergency Management Areas pursuant to the Act on Special Measures against Tokyo Inland Earthquake. This designation has been given to one metropolitan area, nine prefectures, and 309 municipalities. Specifically, this designation identifies areas to which one of the following will apply in the event of an M7-class earthquake in the Tokyo Metropolitan Area, Saitama Prefecture, Chiba Prefecture, Kanagawa Prefecture, and some parts of Ibaraki Prefecture, or in the event of an M8-class deep-trench earthquake, like the Taisho Period Kanto Earthquake or the Enpo Boso-Oki Earthquake. Even areas that have not been identified for designation should take adequate DRR measures since they also are expected to sustain significant damage caused by violent shaking and fires (Fig. II-2-14).

- Areas expected to experience a seismic intensity of 6-Lower or higher
- Areas expected to have tsunami wave heights of 3 m or higher, but that have low coastal embankments
- Areas deemed to merit designation to ensure the integrity of regional DRR systems or in consideration of past disaster history

Fig. II-2-14 **Tokyo Inland Earthquake Emergency Measures Areas**



Source: Cabinet Office

(4) Basic Plan for the Promotion of Tokyo Inland Earthquake Emergency Countermeasures

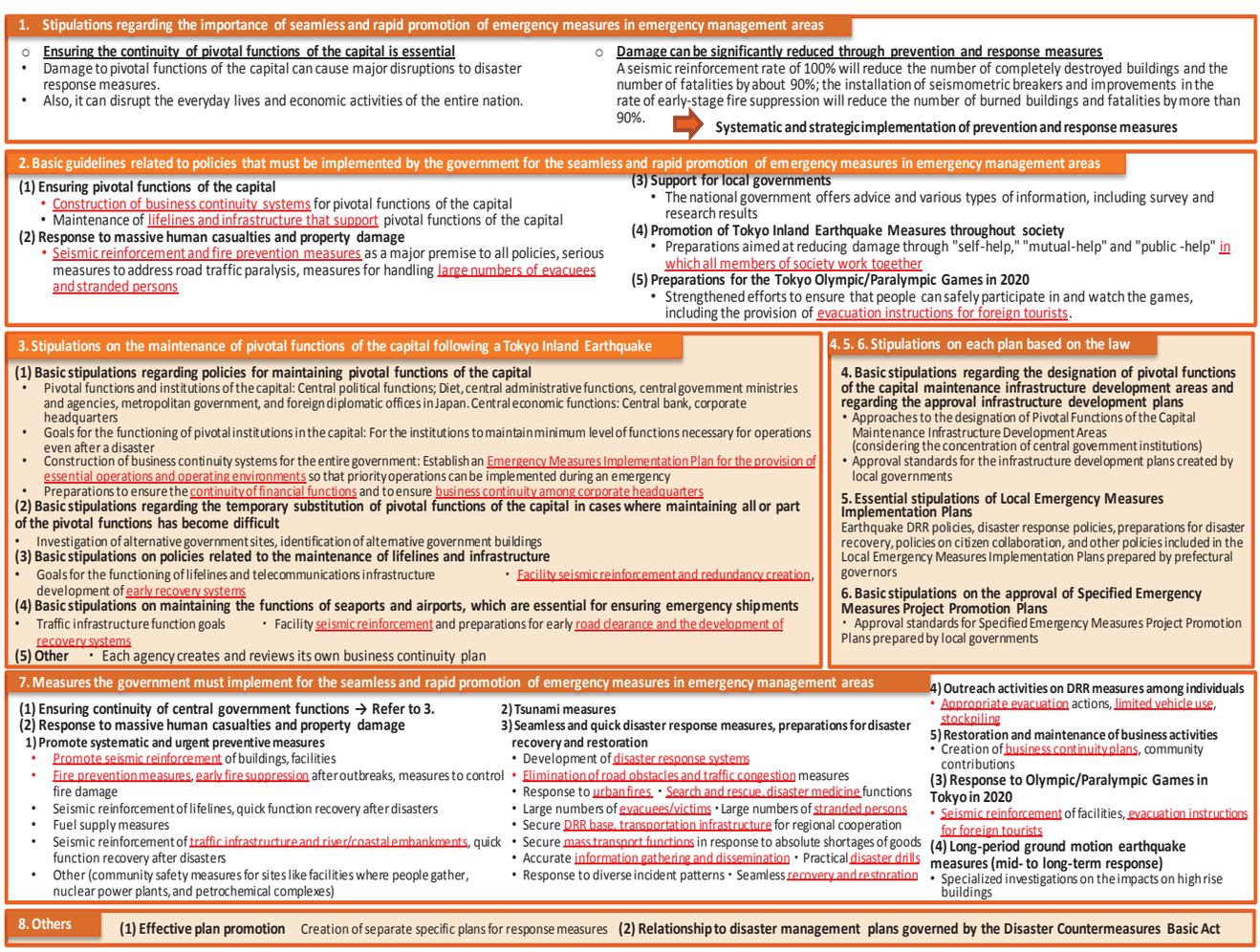
On March 28, 2014, the Cabinet approved the Basic Plan for the Promotion of Tokyo Inland Earthquake Emergency Countermeasures (hereafter, the TIE Basic Plan) pursuant to the Act on Special Measures against Tokyo Inland Earthquake (Fig. II-2-15). A year later, on March 31, 2015, the Cabinet approved revisions to the plan (Fig. II-2-16).

This plan stipulates the necessity of two items to reduce damage caused by a Tokyo Inland Earthquake: (1) the construction of systems for ensuring the continuity of the pivotal functions of the capital, and (2) the formation of "earthquake-resilient communities" by systematically and strategically promoting the development of prevention measures and orderly and rapid response measures. The plan outlines the following basic guidelines regarding the policy measures the government absolutely must implement.

- Creation of business continuity systems for pivotal institutions in the capital and the maintenance of lifelines and infrastructure to sustain the system.
- Seismic reinforcement and fire prevention measures as a major premise to all policies, serious measures to address road traffic paralysis, and measures for assisting large numbers of evacuees and stranded persons.
- Promotion of efforts throughout society based on the concepts of "self-help," "mutual help," and "public help" in which all members of society work together.
- Disaster Preparedness for the period of the Tokyo Olympic and Paralympic Games in 2020.

Since local governments will be creating, based on the standards established in this plan, Emergency Measures Implementation Plan for the Maintenance of Pivotal Functions of the Central Government, Local Emergency Measures Implementation Plans, and Specified Emergency Measures Project Promotion Plans, the Cabinet Office will provide necessary advice and other support to ensure that these plans will be promptly prepared, and will strive to ensure, by conducting the necessary follow-up on these plans, that the national government, public institutions, local governments, businesses, and residents are all working in unison when it comes to promoting Tokyo Inland Earthquake Measures.

Fig. II-2-15 Outline of the Basic Plan for the Promotion of Tokyo Inland Earthquake Emergency Countermeasures



Source: Cabinet Office

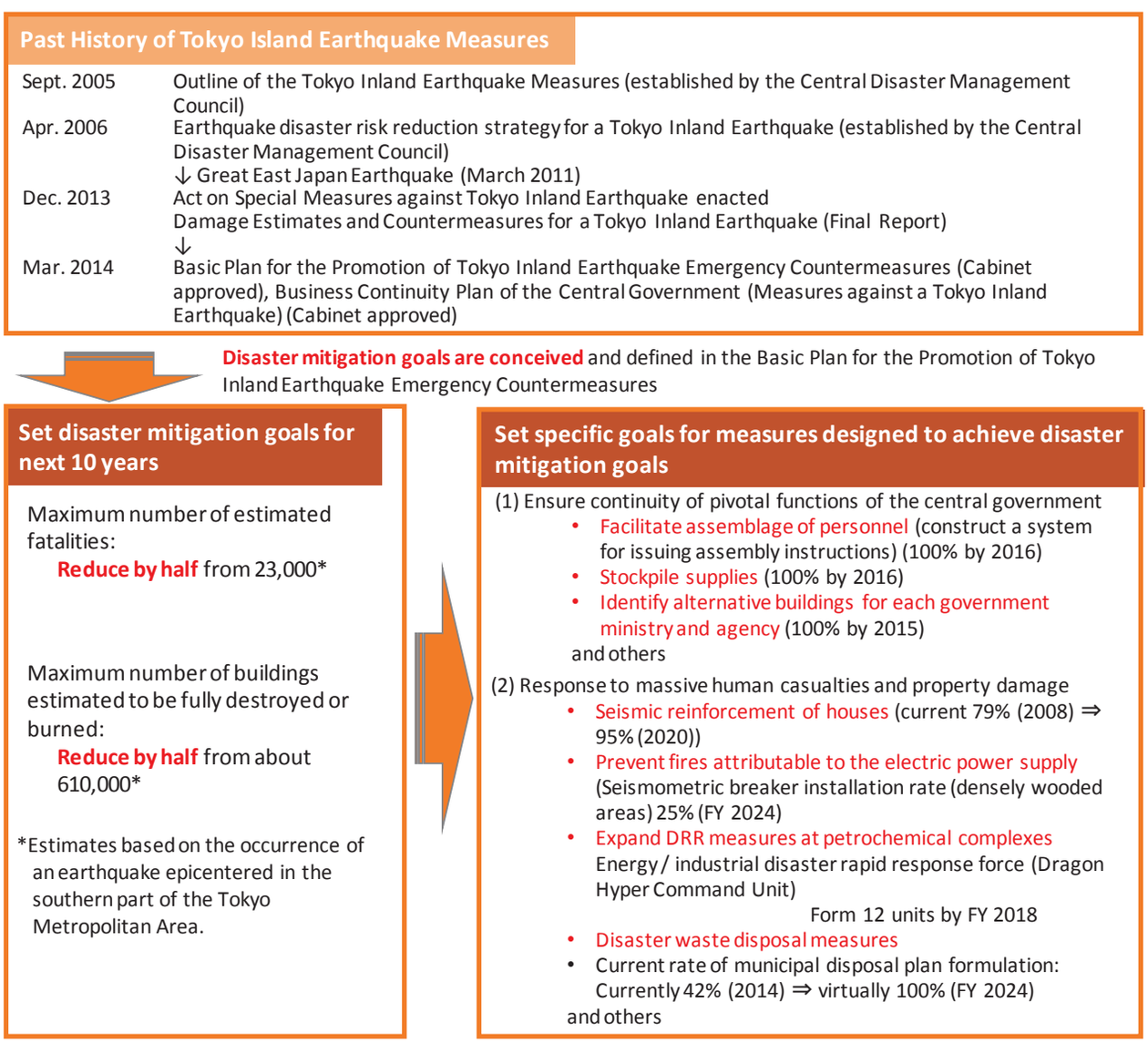
(5) Setting Disaster Reduction Goals

On March 31, 2015, the Cabinet approved revisions to the TIE Basic Plan. In the plan, the government set quantitative disaster mitigation goals with specific deadlines and set specific goals for policies measures intended to achieve these goals.

Specifically, the quantitative disaster reduction goals are to reduce by half, over 10 years starting in FY 2015, the maximum number of estimated fatalities from current level of about 23,000, and to reduce by half the maximum number of buildings estimated to be fully destroyed or burned from the current level of about 610,000 buildings.
In terms of specific goals related to ensuring the continuity of pivotal functions of the central government, the plan establishes the goal of constructing a system for issuing assembly instructions to those essential personnel who need to be assembled among central government ministries and agencies. With regard the stockpiling of materials, the goal has been set to reach 100% by FY 2016.

Since many of the human casualties in an earthquake will be caused by building collapses or fires that start after the quake, specific goals have been set around, and efforts are being made to further promote, the seismic reinforcement of homes, the secure attachment of home furnishings, the elimination of high density urban areas, which are particularly hazardous during an earthquake, and the dissemination of seismometric breakers to prevent fires attributable to the electric power supply. The plan also establishes goals and calls for strengthened efforts related to expanded DRR measures at petrochemical complexes, which can cause exacerbated damage after a disaster occurs, and the acceleration of disaster waste disposal to facilitate seamless reconstruction and restoration.

Fig. II-2-16 Overview of Changes to the Basic Plan for the Promotion of Tokyo Inland Earthquake Emergency Countermeasures



Source: Cabinet Office

Section 2: Volcano Disaster Management

On September 27, 2014, a volcanic eruption at Mt. Ontake, located along the border between Nagano and Gifu Prefectures, occurred while many hikers were near the peak of the mountain. It happened around noon on a day during the fall season of changing colors. The eruption caused large numbers of fatalities and injuries near the edge of the crater due to the ejection of material in conjunction with the eruption.

In response to this eruption, the government established the 2014 Mt. Ontake Eruption Major Disaster Management Headquarters, comprised of representatives from relevant ministries and agencies. It also established the 2014 Mt. Ontake Eruption On-site Major Disaster Management Headquarters in the Nagano Prefectural Office and worked in cooperation with relevant local governments on information gathering and response.

The Major Disaster Management Headquarters established Urgent Measures for the Prevention of Disasters Related to Volcanic Eruptions on October 28 of the same year, and related ministries and agencies including the Cabinet Office, Fire and Disaster Management Agency, and Japan Meteorological Agency, working in collaboration with relevant institutions, promoted emergency measures. These included the performance of emergency surveys on the development of information communication mechanisms and evacuation facilities, the establishment of Volcanic Disaster Management Councils at all continuously monitored volcanoes (47 in Japan), the appropriate provision of information and safety measures for hikers and tourists, and the strengthening of volcano observation systems. Volcanic Disaster Management Councils were established for all 47 volcanoes in March 2015.

In December 2014, the Volcano Disaster Prevention Promotion Working Group was established under the Central Disaster Management Council's Disaster Management Implementation Committee to bridge the lessons learned from the eruption of Mt. Ontake to the further promotion of volcano disaster management measures, and it began conducting additional investigations into longstanding volcano DRR measures. This Working Group met four times. Based on discussions held at relevant investigation committee meetings, such as meetings of the Coordinating Committee for the Prediction of Volcanic Eruptions, and over the course of consultations with experts and relevant government ministries and agencies, the Working Group compiled a Report on Future Volcano DRR Promotion Based on Lessons from the Eruption of Mt. Ontake (March 2015). This report contained proposals regarding structures for promoting volcano DRR measures, volcano monitoring and observation systems, and the communication of volcano DRR information, as well as appropriate methods of evacuating from a volcanic eruption, which incorporated the development of shelters to ensure the safety of hikers, the dissemination of volcano DRR education and volcano-related knowledge, the strengthening of volcano research systems, and the cultivation of volcano experts (Fig. II-2-17).

Based on these proposals, the Cabinet Office passed a bill on May 29, 2015 that partially revised the Act on Special Measures for Active Volcanoes, to include provisions to bolster alert and evacuation systems to be developed by relevant stakeholders in communities with volcanoes. This bill was then submitted to the 189th Diet (Fig. II-2-18).

On May 29, 2015, a volcanic eruption occurred on Kuchinoerabushima Island in Kagoshima Prefecture. The national government supported evacuees in collaboration with the Yakushima City and Kagoshima Prefecture by holding disaster management meetings among related ministries and agencies, dispatching a government investigation team led by Senior Vice-Minister Ryosei Akazawa, and establishing an on-site contact office in Yakushima.

Fig. II-2-17 Summary Report on the Future Volcano DRR Promotion Based on Lessons from the Eruption of Mt. Ontake

Summary Report on the Future Volcano DRR Promotion Based on Lessons from the Eruption of Mt. Ontake

March 26, 2015
Disaster Management Implementation Committee of the Central Disaster Management Council
Volcano Disaster Prevention Promotion WG

Mt. Ontake Eruption (Sep. 27, 2014): 57 fatalities, 6 missing (as of March 2015)
Worst volcano disaster in the postwar period affected many hikers. Revealed weaknesses in volcano monitoring/observation systems, communication of volcano disaster management information, cultivation of experts.

- Living near a volcano requires that people not only enjoy the everyday benefits of their location, but take appropriate action, such as rapid evacuations, when the volcano erupts. Residents must enhance their understanding of volcanic eruptions.
- Because few volcanoes erupt frequently, very few government officials or local residents have experience with volcanic eruptions.
- The types of phenomena that occur in conjunction with an eruption, and the size of eruptions, vary. Promoting volcano DRR thus requires investigations based on detailed surveys and research on individual volcanoes. However, there is a lack of volcano researchers and no progress is being made on research that contributes to volcano DRR.

Coordinating Committee for the Prediction of Volcanic Eruptions (Japan Meteorological Agency)
Investigation Committee on Volcano Observation Systems
Investigation Committee on Volcano Information Dissemination
*Compiled Mar. 26, 2015

Council for Science and Technology Earthquake and Volcano Subcommittee (MEXT)
Issues in Volcano Observation Research based on the Eruption of Mt. Ontake
Compiled Nov. 2014

→ Central Disaster Management Council Volcano Disaster Prevention Promotion WG "Future Countermeasures vis-à-vis Volcano Activities Reflecting upon Eruption of Mt. Ontake" is compiled

1. Framework for Promoting Volcano DRR Measures

1. Formulation of Basic Guidelines on Volcano DRR by the national government
2. Establishment of Volcano Disaster Management Councils and clarification of their position in terms of the creation of evacuation plans.
3. To propose volcano DRR measures and strengthen monitoring and observation systems, as well as survey and research systems, strengthen connections between relevant institutions and develop more integrated volcano DRR promotion systems.
4. Continue to follow-up on efforts proposed by the WG.

→ Establish a Working Group for Promotion of Volcano Disaster Prevention within the Cabinet Office to conduct ongoing investigations.

2. Volcano Monitoring/Observation Systems

(1) Strengthen volcano monitoring/observation systems
1. Promote the mutual cooperation/complementarity between observation facility development institutions and the increased sharing of observation data, strengthen volcano monitoring/observation systems.
2. Add Hakkoda-san, Towada, and Midagahara to the 47 volcanoes subject to regular monitoring to bring the number to 50; quickly construct monitoring and observation systems.

(2) Observation systems to quickly ascertain the signs of steam-blast eruptions.
1. Emergency development of observation facilities near the crater, and the development of technologies for reading signs earlier.
2. Strengthen systems for conducting strategic observations, implement quick local surveys, and coordinate the installation of observation equipment
3. To strengthen networks for collecting information from people who see the mountain every day, develop Volcanic Information Liaison Systems within the Volcanic Disaster Reduction Councils.

3. Dissemination of Volcano DRR Information

(1) Provision of easy-to-understand information
1. Carefully examine criteria for raising and lowering the volcanic warning level and *achieve quick increases through public announcements*
   - If signs do not meet the standard for raising the level, immediately mobilize volcano observation teams to conduct emergency observations and determine as quickly as possible whether the level should be raised
2. When changes are observed, publicly announce activity changes and the implementation of emergency observations (provide occasional briefings)
   - Volcanic Disaster Management Councils should investigate in advance the content that should be included in the occasional briefings, methods of communicating information, and the volcano DRR procedures of relevant local institutions.
3. Change the volcanic warning level 1 keyword from "Normal" to "Be mindful of potentially active volcano activity"
4. Investigate the rapid dissemination of eruption information (volcanic alerts) and modes of communication
5. Bolster websites that provide information to hikers so that volcano visitors can easily confirm the volcano status before visiting; post an easy-to-review list of volcanoes where changes in activity have been reported

(2) Strengthen modes of information dissemination
1. Diversify modes of information dissemination (radio communication networks for DRM administration, sirens, emergency alert email, information dissemination through mountain huts, etc.)
2. Use of emergency alert email, improvements in radio wave communication conditions, easy-to-understand publication of area maps to hikers to bolster information dissemination using mobile devices
3. Disseminate information through tourism facilities to communicate with tourists
   (push-format information sharing with tourism and lodging facilities, station terminals)

4. Appropriate Volcano Evacuation Policies

(1) Approaches to the development of evacuation facilities, such as evacuation trenches and shelters.
Creation of Evacuation Shelter Development Guidelines, outlining perspectives on the effectiveness and installation of shelters and cautionary notes related to their design.

(2) Approaches to evacuation systems for hikers and tourists
1. Needs are being considered by Volcano Disaster Management Councils, introduction of appropriate hiking registration systems (use of IT-based frameworks)
2. Development of information collection and dissemination systems by linking mountain huts and guides, investigation of evacuation and rescue measures, promotion of disaster drills. Investigate support for the provision of communications equipment and helmets to mountain huts.
3. Council participation by tourism organizations comprised of tourism facilities and the creation of evacuation plans by tourism facilities.

(3) Promotion of volcano disaster management drill
Conduct volcano disaster management drills that envision the needs of hikers by developing connections between members of the Volcano Disaster Management Councils.

5. Dissemination of Volcano DRR Education and Volcano Knowledge

(1) School education related to volcano DRR
1. Investigate approaches to DRR education within overall discussions regarding next-term curriculum revisions
2. Bolster support for practical DRR education in schools near volcanoes (e.g., visiting lectures, development of pamphlets)

(2) Outreach to hikers, tourists, and residents
1. Hikers take responsibility for their own safety by collecting information, securing the necessary gear, and registering their hikes
2. Use of visitor centers and geoparks for outreach to tourists, conduct outreach through travel agencies and transportation companies (hold training sessions for travel agency personnel, create pamphlets for tourists)
3. Outreach to local residents and the general public can include the distribution of volcano DRR maps and efforts to raise awareness of volcano DRR through presentation opportunities. Develop voluntary DRR organizations in local communities, cultivate DRR leaders (use of volcano DRR expert systems, lectures by the Volcano and Landslide Forum, organization of study groups)

6. Strengthening Volcano Research Systems and Cultivation of Volcano Researchers

(1) Priority research volcanoes
Add Ontake-san, Meakan-dake, Towada, Zao-zan, Azuma-yama, Nasu-take, Midagahara, Yake-dake, and Kuju-san to the 16 current mountains to bring the number to 25, and conduct priority observations and research at these sites.

(2) Use and cultivate volcano researcher knowledge to promote volcano DRR
1. To strengthen volcano monitoring and evaluation systems, use findings of volcano researchers to conduct clear volcanic activity assessments, conduct technology trainings to increase the volcanic activity assessment skills of Japan Meteorological Agency officials
2. To strengthen volcano DRR measures, promote the active participation of volcano experts in Volcanic Disaster Management Councils through investigation and coordination by the meetings of the Volcano Disaster Prevention Promotion WG, investigate various support measures for Councils, establish venues to enhance close communication and collaboration for volcano experts who participate in the Councils
3. To strengthen volcano research systems, secure and cultivate post-docs through project research, promote the revitalization of the entire field of volcano research, and establish specific venues for the investigation of these topics

Source: Summary Report on the Future Volcano DRR Promotion Based on Lessons from the Eruption of Mt. Ontake

Fig. II-2-18 Bill to Revise the Act on Special Measures for Active Volcanoes

Based on the lessons learned from the eruption of Mt. Ontake and the particular features of volcano DRR measures, necessary measures are being taken to strengthen active volcano disaster management measures through the development of alert and evacuation systems that involve collaboration among all stakeholders in volcano communities.

1. Background

- Since eruptions can happen without any clear warnings, rapid information dissemination and evacuation instructions must be made to residents, hikers and others. (Lesson learned from Mt. Ontake Eruption)
- Volcanic phenomena vary and response measures must be made on the individual characteristics of each volcano (geography and eruption history). Thus, various stakeholders must work together to investigate policies that incorporate expert findings for each volcano.

2. Bill Overview

Formulation of Basic Guidelines on the Promotion of Active Volcano Management by the national government (Article 2)

- **Development of alert and evacuation systems in volcanic eruption hazard areas**

Designation of volcanic eruption hazard areas (Article 3)
Government designates communities that must promote the development of alert and evacuation systems (primarily communities around volcanoes that are subject to regular observation)

Volcanic Disaster Management Councils (Article 4)

...Stakeholders must work together to investigate policies that incorporate expert findings.

- Prefectures and municipalities establish Volcanic Disaster Management Councils (mandatory)

Required Members:
- Prefectures, municipalities
- Local meteorological offices
- Regional dev't bureaus (Sabo offices)
- Volcano experts
- Self-defense forces
- Police
- Fire

Add as needed:
- Tourism organizations, etc.

Others, including environmental offices, forest management offices, transportation and telecommunications companies, etc. Possibly also managers of consumers facilities and mountain huts.

Items for Discussion

- Integrated alert and evacuation systems, including the establishment of volcanic alert levels and the construction of corresponding evacuation systems

Eruption Scenarios
Timelines showing changes in the phenomena and related impacts associated with an eruption

Volcano Hazard Maps
Maps give topographical representation of areas impacted by eruption-related phenomena

Volcanic Alert Level
Mountain access regulations based on degree of volcanic activity, evacuations, etc.

Evacuation Plans
Displays showing evacuation sites, evacuation routes, modes of evacuation

Results of council hearings are reflected in Local Disaster Management Plans (mandatory)

Prefectures (Article 5)
1. Collection and dissemination of information on the occurrence and movement of volcano phenomena, issuance and dissemination of forecasts and warnings (in prefectures)
2. Standards for determining items (2) and (3) at right
3. Regional coordination of evacuation and rescue activities

etc.

Municipalities (Article 6)
1. Collection and dissemination of information on the occurrence and movement of volcano phenomena, issuance and dissemination of forecasts and warnings (in municipalities)
2. Announcements made by municipalities regarding evacuation, such as eviction preparations (volcanic alert level)
3. Evacuation sites, evacuation routes
4. Names and addresses of consumers facilities, facilities used by vulnerable populations
5. Evacuation drills and rescue activities

etc.

Mandatory Info Dissemination to Residents by Municipal Leaders (Article 7)
Disseminate information required to ensure efficient alerts and evacuations, such as evacuation sites, by distributing volcano hazard maps.

A volcano hazard map

Mandatory Creation of Evacuation Plans (Article 8)
Creation of plans and implementation of drills by managers of consumer facilities (e.g., ropeway stations, hotels) and facilities used by vulnerable populations

- **Strengthen interactions between volcano research institutions, cultivate and secure volcano experts (Article 30)**
- **Obligation of local governments and hikers to make efforts (Article 11)**
  - New regulation requiring efforts by local governments to obtain hiker information
  - New regulation requiring efforts by hikers (to collect volcano information, secure means of communication)

Section 3: Sediment Disaster Management

Japan experiences many sediment disasters every year, but in 2014, due to heavy rains that fell in August, a series of sediment disasters caused human causalities in communities all across Japan. On August 20, as many as 74 people were killed in a landslide in Hiroshima city.

In response to this disaster, the government established the August 2014 Storm Major Disaster Management Headquarters, comprised of people from related ministries and agencies. It also established the On-site Major Disaster Management Headquarters in the Hiroshima Prefectural Office and worked in cooperation with relevant local governments on information gathering and response.

On September 5, 2014, the Emergency Management Headquarters formulated its Key Disaster Prevention Policies for Sediment Disasters and Other Massive Disasters in which it presented measures that relevant ministries and agencies must urgently develop in order to prevent the recurrence of a large-scale of disaster of this magnitude. These include the urgent dissemination of information about sediment disaster risk areas to citizens, urgent investigations of the government's systems development, efforts aimed at providing accurate disaster risk information, and the implementation of more practical exercises on how to prepare for a landslide disaster (Fig. II-2-19).

As of November 2014, many communities had neither been designated as sediment disaster hazard zones nor been the target of basic surveys, and residents had not been adequately informed about their local sediment disaster risks. Given this, a revised version of the Act on the Promotion of Sediment Countermeasures for Sediment Disaster Prone Areas (Act No. 57 of 2000; hereafter, the Sediment Disasters Prevention Act) was enacted in the following January. The revised Act requires prefectures to publicly disclose the results of basic surveys and stipulates that information on sediment disaster risks is to be promptly disseminated to citizens. Also, based on the Sediment Disasters Prevention Guidelines related to the revised Sediment Disasters Prevention Act, a goal has been established for all prefectures to complete basic surveys by the end of FY 2019. The revised Act also legally defines sediment disaster alert information, requires prefectures to share this information with municipal leaders and the general public, and ensures that information is provided that will contribute to the issuance of efficient evacuation instructions. The local disaster management plans of municipalities that have been designated as sediment disaster hazard zones will contain stipulations regarding evacuation sites and routes, and regarding efforts to bolster and strengthen evacuation systems (Fig. II-2-20).

In December 2014, the Working Group for Studying Comprehensive Countermeasures for Sediment Disasters was established under the Central Disaster Management Council's Disaster Management Implementation Committee for the purpose of compiling the challenges that were revealed by the series of sediment disasters that included the Hiroshima landslide, and connecting the lessons learned from these disasters to the improved promotion of sediment disaster management policies in the future. As a result of the discussions of this Working Group, a Report on the Promotion of Comprehensive Countermeasures against Sediment Disasters was compiled. This report contains recommendations regarding the assessment and sharing of basic information about sediment disasters and local disaster risks, the communication of disaster risk reduction information to citizens, timely and appropriate evacuation behaviors by citizens, and rapid response activities starting immediately after the disaster occurs. (Fig. II-2-21).
In the future, there are plans for the national government, local governments, and community residents to work together on promoting sediment disasters management measures based on this information.

View of the sediment disaster in Hiroshima

Fig. II-2-19 **Key Disaster Prevention Measures for Sediment Disasters and Other Massive Disasters**

September 5, 2014
Decision by the August 2014 Heavy Rain Emergency Management Headquarters

Key Disaster Prevention Measures for Sediment Disasters and Other Massive Disasters

Although the Sediment Disasters Prevention Act was enacted in 2000 based on lessons learned from a landslide in Hiroshima in 1999, another much larger disaster struck the area once again. The following key efforts are therefore, again, being made by relevant ministries and agencies to prevent the recurrence of similar large-scale disasters in the future.

1. Launch investigations into revising the Sediment Disasters Prevention Act

Investigate the following based on lessons learned from the delayed identification of sediment disaster hazard zones:

- Publish survey results as soon as basic surveys are are completed
- Require prefectures to share information (sediment disaster alert information) with municipalities

2. Urgent dissemination, urgent inspections

(1) Urgently disseminate hazardous area information to the public

To improve public awareness of disaster management issues and relevant hazards, prefectures and municipalities must work together to disseminate information on potential sediment disaster risk areas (about 530,000 sites) and sediment disaster hazard zones (about 350,000 zones). Includes:

- Sediment disaster hazard zones; and
- Potential sediment disaster risk areas that have not been designated as sediment disaster hazard zones, as well as the surrounding areas likely to be impacted

Disseminate information on hazard maps and evacuation sites using websites, newsletters, circulation of drawings, and posting at public facilities to ensure that the public understands the risks they face
(→ Begin sharing information as quickly as possible, aiming to do so within one week of a request of the national government)

(2) Urgently inspect government systems development

For all potential sediment disaster risk areas (about 530,000)

- Circulation of the site's status as a hazardous location
- Standards for the issuance of evacuation advisories/orders
- Information dissemination methods
- Circulation of information on evacuation sites
- Implementation of disaster drills

Prefectures and municipalities will urgently conduct general inspections of the current status of alert and evacuation systems (→ Aim to conduct inspections within one month of a national government request)

3. Provide accurate disaster risk information, even overnight

(1) Thoroughly disseminate and confirm the Guidelines for Producing a Decision and Dissemination Manual for Evacuation Advisories and Orders
→ Disseminate to local governments in early September, conduct confirmation surveys in November

(2) Promote the development of emergency alert emails in municipalities, promote the installation of household receivers for prefectural/municipal disaster management radio communications system
→ The emergency alert email system development rate is 93.2% of all municipalities (as of Aug. 2014; promptly strive for 100%

(3) Introduce and apply the L-Alert (disaster information sharing system) in all prefectures
→ Aim to get all prefectures to decide in FY 2014 to introduce L-Alert, a shared platform for sending out local disaster information all at once via multiple media.

4. Hold practical drills in preparation for a sediment disaster

Focus on the following points when conducting drills to encourage residents to actively evacuate:

- Information sharing and advice from national and prefectural governments aimed an encouraging municipalities to make early decisions
- Appropriate evacuation behavior by residents based on weather and timing (selection of evacuation sites, measures to find safety indoors when it is dangerous to be outdoors)

Source: Cabinet Office

Fig. II-2-20 Revision of the Act on Promotion of Sediment Disaster Countermeasures in Sediment Disaster Prone Areas

Act to Revise the Act on Promotion of Sediment Disaster Countermeasures in Sediment Disaster Prone Areas (Act No. 109 of 2014 enacted Jan. 18, 2015)

Given the sediment disaster that occurred in the northern part of the Hiroshima due to heavy rainfall in August 2014, and the desire to protect the lives and health of citizens from sediment disasters, measures were taken to require prefectures to publicly disclose basic survey results, to require prefectural governors to communicate sediment disaster alert information to municipal leaders and the general public, and to add provisions regarding designations of sediment disaster hazard zones to municipal and community disaster management plans.

Background

- Many communities had neither been designated as sediment disaster hazard zones nor been the target of basic surveys, and local sediment disaster risks were not being adequately communicated to residents.
- Sediment disaster alert information was not being used as criteria for direct evacuation orders.
- Sediment disaster evacuation systems are not adequately developed, as some evacuation sites and routes are located in hazard areas.

Overview of Revisions

Identification of sediment disaster hazard zones

Publication of basic survey results

➢ To raise citizen awareness of sediment disaster risks and promote the designation of sediment disaster hazard zones, prefectures are required to publicize the results of basic surveys.

Require corrective action if basic surveys have not been appropriately performed

➢ The MLIT will require prefectures to take corrective action if basic surveys are not being properly conducted. (National government will ascertain and publicize progress based on reports received from prefectures as specified in the basic guidelines based on the law.)

Provision of information to ensure seamless issuance of evacuation orders

Communication of sediment disaster alert information to municipalities and the general public

➢ To facilitate the issuance of evacuation orders, the revised law does the following:
① Establishes a new legal definition of what constitutes sediment disaster alert information
② Requires prefectural governors to communicate sediment disaster alert information to relevant municipal leaders
③ Requires prefectural governors to communicate sediment disaster alert information to the general public

Seamless cancelation of evacuation orders

➢ The revised law requires the MLIT and prefectural governors to provide necessary advice when municipalities ask for advice on issues like canceling an evacuation order.

Strengthen evacuation systems

Disclosure of evacuation shelters and routes in municipal and community disaster management plans

➢ Bolster evacuation systems by identifying safe evacuation sites and adding stipulations to municipal disaster management plans in sediment disaster hazard zones regarding evacuation sites, evacuation routes, and the implementation of evacuation drills.

➢ Add stipulations to municipal disaster management plans regarding the communication of sediment disaster alert information to welfare facilities, schools, medical facilities, and other facilities within the sediment disaster hazard zone.

Government support

Obligation of the MLIT to strive to provide advice, information, and other forms of support

➢ The MLIT must work to provide advice, information, and other forms of support to help promote the sediment disaster prevention policies of prefectures and municipalities.

Source: Ministry of Land, Infrastructure, Transport and Tourism

Fig. II-2-21 Report on the Promotion of Comprehensive Countermeasures against Sediment Disasters

Report on the Promotion of Comprehensive Countermeasures against Sediment Disasters (Overview)

June 2015 Central Disaster Management Council, Disaster Management Implementation Committee
WG for Studying Comprehensive Countermeasures against Sediment Disaster

A massive sediment disaster struck Hiroshima City on August 20, 2014, killing 74 people

Issues

- Local residents were not adequately aware of the characteristics of sediment disasters, which occur very suddenly and are difficult to predict, or their sediment disaster risks
- Evacuation preparation information and evacuation orders were not issued quickly using weather forecasts and sediment disaster alert information
- Government did not adequately convey to residents that moving to a sturdy nearby building or to a room in one's own home on an upper level or as far away as possible from the mountain can be effective evacuation options if it is not possible to escape due to heavy rain
- Sediment disaster risks were not taken into consideration in community development

Residents and government must work together on comprehensive initiatives to minimize sediment disaster damage

1. Assessment and sharing of sediment disaster characteristics, local disaster risks

○ **Sharing the characteristics of sediment disasters**
- Sediment disasters occur suddenly, are difficult to predict, are difficult to escape from, and are highly destructive, making them **highly likely to cause human casualties**, but it is possible **to ascertain the most hazardous areas through advance surveys**
- It is important for residents to be aware of the importance of **early evacuation**
- To encourage timely, appropriate evacuation behaviors, national, prefectural, and municipal governments must explain the risks and disseminate necessary information during disasters

○ **Ascertain and share sediment disaster risk information in communities**
- Citizens and governments must both ascertain and share information on community sediment disaster risks
- Complete nationwide basic surveys to achieve sediment-related disaster hazard area designations by the end of FY 2019
- Circulate information on potential sediment-related disaster risk areas until basic surveys have been completed
- Disclose and share more detailed information on sediment disaster risks

○ **Use of risk information**
- Develop alert and evacuation systems based on community-specific risk information

2. Communication of DRR information to residents

Revise the Guidelines for Producing a Decision and Dissemination Manual for Evacuation Advisories and Orders with regard to the following stipulations:

○ **Use evacuation preparation information**
- **Promote early evacuation** by explaining the meaning of evacuation preparation information (opening of designated emergency evacuation sites, evacuation orders for vulnerable populations, evacuation preparations for the general public, promotion of early, voluntary evacuation among residents living in sediment-related disaster hazard areas and risk areas, and criteria for allowing voluntary evacuees into designated emergency evacuation sites)
- In more spacious municipalities, recommend the issuance of orders based on old municipal units or topography
- Issue orders at appropriate times to avoid nighttime evacuations

○ **Issue evacuation orders with the appropriate timing and scale**
- Let residents know that evacuation orders/advisories may be issued even before evacuation sites have opened
- In narrower zones, investigate the issuance of evacuation orders **(areas that have exceeded the standards for the issuance of sediment disaster hazard information and that are also sediment-related disaster hazard areas/potential risk areas)**
- Improve sediment disaster hazard information (improve prediction technologies, be more specific about the areas where announcements are made based on how easily local residents can understand the information)

○ **Improve methods of communicating evacuation advisories/orders and other information**
- **Diversify modes of communication** to combine push-type services (radio communications system for DRR administration, emergency alert emails) and pull-type services (web, TV, radio); use L-Alert
- Narrow the communication areas in which push-type services are used
- In addition to evacuation orders, communicate easy-to-understand information that will stimulate a sense of urgency and let people know how to evacuate

○ **Give advice to municipalities**
- It is important for municipalities to actively obtain DRR information and seek advice from national and prefectural governments
- Even without requests from municipalities, national and prefectural governments should provide advice from an expert perspective

3. Timely, appropriate evacuation behaviors by residents

○ **Confirm designated evacuation sites**
- Promote designations by **formulating Guidelines for the Designation of Emergency Evacuation Sites and Evacuation Shelters (tentative)**
- Residents should know the difference between "designated emergency evacuation sites" and "designated evacuation shelters," and **inspect whether their evacuation site would be safe from a sediment disaster**.

○ **Promptly and reliably open designated emergency evacuation sites**
- Strengthen communications between municipal disaster management officials, schools, and neighborhoods to ensure the prompt opening of evacuation facilities

○ **Create structures for promoting timely, appropriate evacuation behaviors**
- Residents should take time under non-emergency conditions to understand (1) the principle of promptly evacuating to a **designated emergency evacuation site** (designated by hazard), but should be aware that they can also, depending on the conditions, (2) go to an **emergency waiting site** (a sturdy building nearby) or (3) **ensure their safety indoors** (by moving to a room in their own home on an upper level or as far away as possible from the mountain)
- Promote voluntary, early evacuation by having residents themselves create Disaster Evacuation Info Cards together with their neighbors, with the advice and support of the government (provide support by **formulating Guidelines for Evacuating (tentative title)**)

○ **Bolster DRR education, cultivate human resources**
- Use pamphlets to educate residents on sediment disasters
- Cultivate municipal officials and national and prefectural experts through DRR education and trainings held in schools and communities

○ **Importance of voluntary DRR organizations**
- Enable residents to help one another in a disaster by strengthening community connections around voluntary DRR organizations

4. Best approaches to community development, promotion of national land conservation measures

○ **Promote DRR community development that accounts for sediment disaster risks**
- In areas that have already been developed, promote the development of warning and evacuation systems, the movement and repair of existing substandard buildings, and the development of sediment disaster prevention facilities; circulate and use subsidies and financial systems for the movement and repair of existing buildings
- In areas yet to be developed, incorporate disaster-resilient community development principles, based on relevant risks, during the planning stages

○ **Conduct everyday land monitoring**
- Accumulate detailed topographical data on a regular basis by ascertaining changes through regular basic surveys and using airborne laser measurements.

○ **Appropriately develop and manage sediment disaster prevention facilities**
- Prioritize locations that are going to be most effective in protecting lives and promote active development based on value priorities

○ **Appropriately develop and preserve forests**
- Promote improvements to the sediment disaster and outflow prevention functions of forests, as well as measures to handle driftwood

5. Rapid response activities immediately after a disaster

○ **Speed up efforts to ensure safety and to verify safety status during rescue activities**
- To verify the safety status of individuals, relevant institutions should work together to obtain and share information on victims and to prevent secondary damage

○ **Implement emergency response and recovery support**
- Promote collaboration with construction companies and strengthen systems like TEC-FORCE to achieve rapid emergency response and recovery

○ **Active communication with volunteers**
- Strengthen information sharing and communication between government and volunteer organizations

○ **Mental health care for victims**
- **Use DPAT**, which was mobilized for the first time in the Hiroshima Landslide and confirmed to be effective

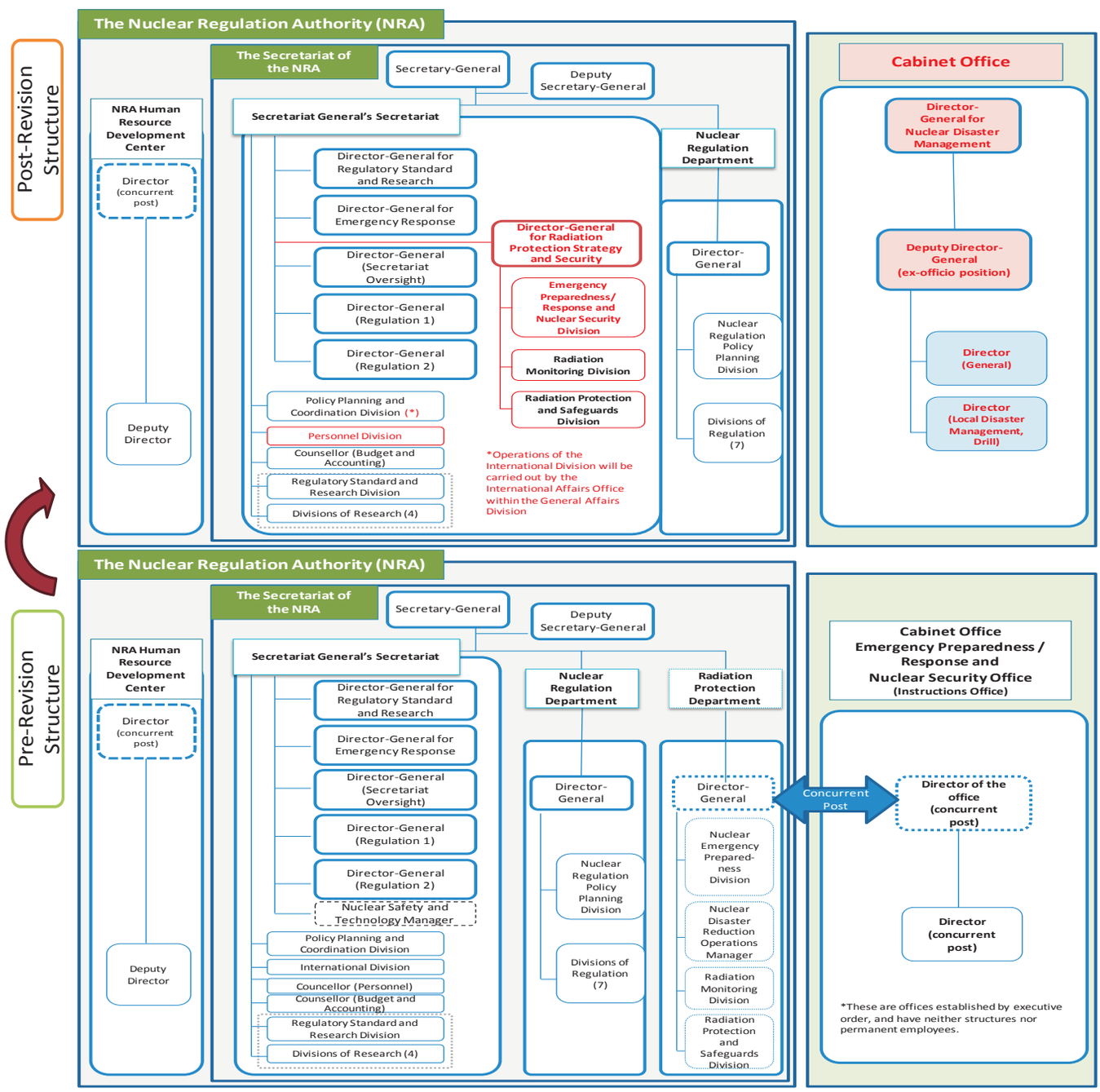
Source: Cabinet Office

Section 1: Review of the Nuclear Regulation Authority and the Cabinet Office Nuclear Disaster Management System

On October 14, 2014, to enhance the government's overall system of nuclear disaster risk reduction (DRR), the existing system of operations related to strengthening local nuclear DRR, which had been implemented by Nuclear Regulation Authority (NRA) officials concurrently serving as members of the Cabinet Office, was reviewed, and a dedicated organization was launched under a Cabinet Office Director-General for Nuclear Disaster Management.

This organization works on reinforcing Japan's off-site emergency response when a nuclear disaster occurs. It provides support for the creation of local disaster management plans and evacuation plans by relevant local governments, offers financial support for DRR measures taken by local governments, and conducts nuclear disaster drills. It establishes Local Nuclear Disaster Management Councils in each community where a nuclear power plant is located, and works on improving and developing more concrete measures for local emergency response, including evacuation plans.

Fig. II-3-1 Revision of the Organizations for Strengthened Nuclear Disaster Risk Reduction System



Source: Nuclear Regulation Authority

With this reorganization, the Radiation Protection Department of the NRA was abolished and a new position of Director -General for Radiation Protection Strategy and Security was established within the Secretary-General's Secretariat to serve as the new Director-General for Nuclear Security, Nuclear Materials Protection, and Radiation Countermeasures, and a Nuclear Security Division was set up under the Director-General for Radiation Protection Strategy and Security (Fig. II-3-1).

On January 15, 2015, five permanent employees were installed to bolster and strengthen emergency monitoring systems in the neighborhoods around all nuclear power plants.

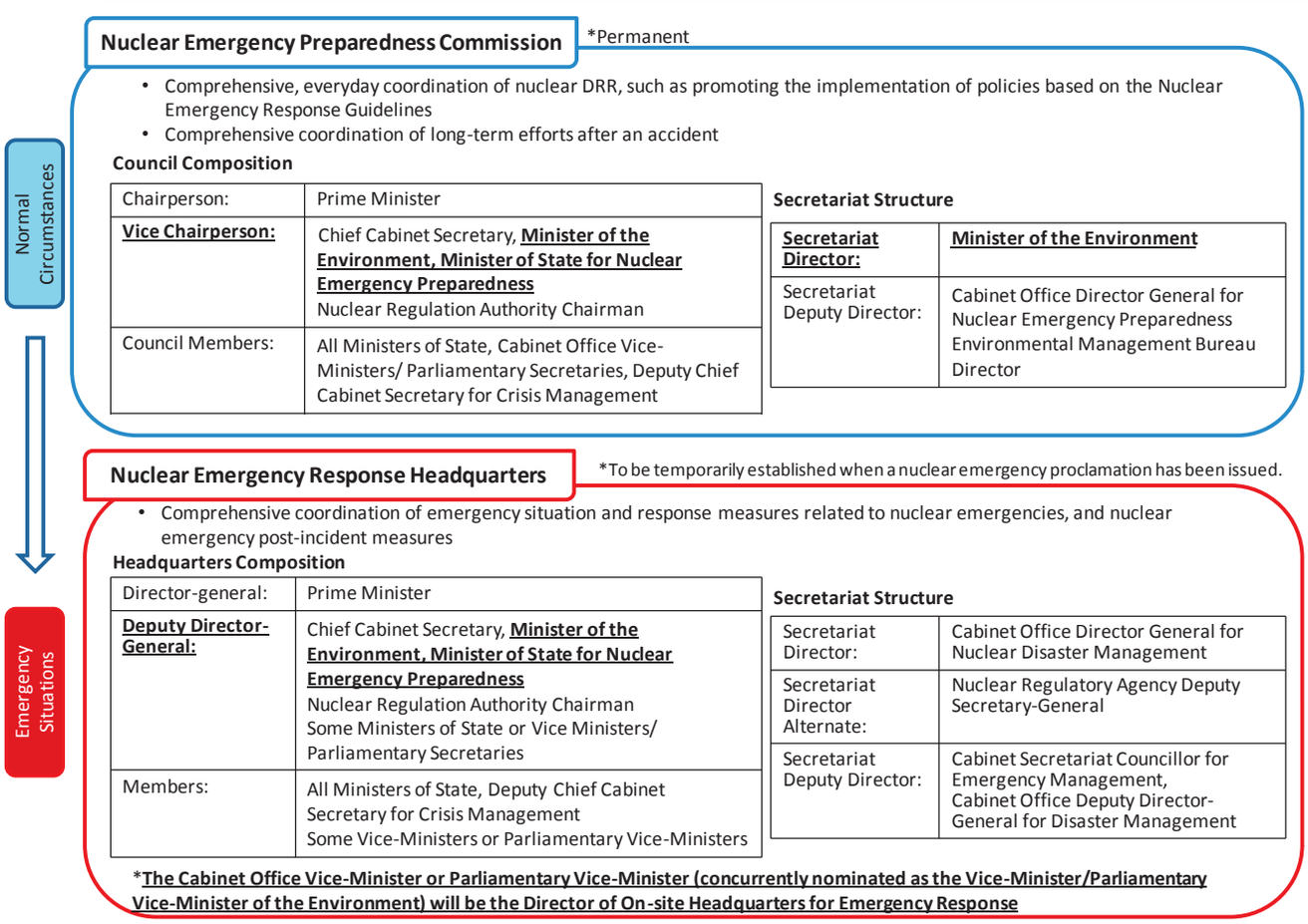
Section 2: Bolstering Nuclear Disaster Management and Radiation Monitoring Under the NRA

The NRA was established based on lessons learned from the Tokyo Electric Power Company (TEPCO) Fukushima Daiichi Nuclear Power Station accident, and has expected to play an extremely important role in continuously working to ensure the reliability of the nuclear regulatory authorities so as to improve public trust. The NRA works on various policy issues to fulfill its organizational mission to engage in fair, neutral, and independent decision-making from scientific and technological perspectives to protect people and the environment through effective regulation of nuclear power use; to demonstrate care in this work so as to prevent the development of arrogance in its own perspective by listening to a variety of opinions; to discard formularity and pursue truly effective regulations through an approach that focuses on on-site conditions; and to ensure transparency by thoroughly disclosing regulatory information, including the decision-making process.

(1) Efforts in Nuclear Disaster Management

On September 19, 2012, in conjunction with the establishment of the NRA, revisions were made to relevant laws like the Atomic Energy Basic Act (Act No. 186, 1955) and the Act on Special Measures Concerning Nuclear Emergency Preparedness (Act No. 156, 2009) that resulted in the construction of a new government framework for nuclear disaster

Fig. II-3-2 Nuclear Disaster Management System



Source: Cabinet Office

management.

On October 14, 2014, the government created a new post of “Cabinet Office Director General” for Nuclear Disaster Management, and placed the secretariat of the Nuclear Emergency Response Headquarters, which had previously been overseen by the Nuclear Regulatory Agency, under its oversight (Fig. II-3-2).

Under the Act on Special Measures Concerning Nuclear Emergency Preparedness, the NRA was tasked with establishing nuclear emergency response guidelines to ensure the seamless implementation of nuclear disaster management measures by businesses, the national government, and local governments. These guidelines were formulated by the NRA in October 2012, and underwent two revisions, in FY 2012 and FY 2013. Since October 2014, an investigation team on nuclear emergency preparedness had been examining nuclear emergency response measures related to the Fukushima Daiichi Nuclear Power Station, which were addressed in these guidelines, as well as the scope and determination standards for protective measure implementation in the event of plume passage outside of the Urgent Protective action planning Zone (UPZ). Proposed revisions based on the results of this investigation were compiled in March 2015 and were opened to public comment.

(2) Emergency Response Efforts

The NRA has been holding meetings since FY 2013 for reporting on and evaluating the nuclear operator disaster drills that have been conducted pursuant to the Act on Special Measures Concerning Nuclear Emergency Preparedness. At the report meeting in FY 2014, discussions were held with nuclear operators on the current status of efforts taken to address common issues identified in the previous year, as well as future concerns. It was also reported that drills had been bolstered since the previous year.

Also, the Secretariat of the NRA participates in nuclear operator drills and pursues best practices in widespread information sharing with the Nuclear Regulatory Agency Emergency Response Center and the Nuclear Facility Emergency Response Center so as to improve emergency response capacity. The crisis management efforts of the NRA have included necessary systems development, such as the reorganization of the Cabinet Office and the NRA on October 14, 2014 and the revision of the NRA's Disaster Management Operations Continuity Plan. With the creation of a day and night duty check list and the implementation of practical trainings, efforts are being made to maintain and improve initial response capabilities based on the NRA Initial Response Manual.

The NRA was also one of the relevant authorities that participated in the comprehensive nuclear disaster drill conducted with the cooperation of the Government of Japan, local governments, and nuclear operators at the Hokuriku Electric Power Company Nuclear Power Station on November 2-3, 2014. This was the first drill to be conducted after the establishment of the Cabinet Office Director General for Nuclear Disaster Management, and helped confirm the linkages between that organization and the NRA.

(3) Bolstering Radiation Monitoring

To perform effective emergency monitoring based on the Nuclear Disaster Management Guidelines, the Nuclear Regulatory Agency developed Guidelines for Creating an Emergency Monitoring Plan on June 12, 2014 and Guidelines for Establishing an Emergency Monitoring Center on October 29, 2014. The NRA bolstered its emergency monitoring systems by formulating a Mobilization Plan for Emergency Monitoring on January 21, 2015. To strengthen emergency monitoring systems in areas around nuclear power stations, local radiation monitoring offices were established in Ibaraki Prefecture, Ehime Prefecture, Saga Prefecture, Kagoshima Prefecture, and in the areas of Ohi and Takahama in Fukui Prefecture.

Pursuant to the Comprehensive Radiation Monitoring Plan established by the government (approved by the Monitoring Coordination Council on August 2, 2011, revised April 1, 2014), the NRA conducts monitoring related to the Fukushima Daiichi Nuclear Power Plant accident. It monitors aerial radiation rates in Fukushima Prefecture and throughout Japan, and publishes its results weekly. In September and November 2014, experts from the Environment Laboratories of the International Atomic Energy Agency (IAEA) visited Japan and jointly collected ocean water samples around the Fukushima Daiichi Nuclear Station with the NRA. After comparing the results of these analyses and evaluating the

capabilities of the analyzing institutions, the IAEA concluded that the Japanese data was highly reliable.
In addition, to study the impact of radiation in the areas around nuclear facilities and environmental radiation levels nationwide, the IAEA provided support for environmental radiation level surveys in all 47 prefectures, ocean water radiation analyses in areas around nuclear power plants (all 16 seas), and radiation surveys conducted by the locations and neighboring prefectures of nuclear facilities (24 prefectures). The NRA also offered training for local government employees responsible for monitoring operations, and conducted radiation surveys at ports that service US nuclear-powered vessels.

(4) Accidents and Problems

The Nuclear Reactor Regulation Act requires nuclear operators to report accidents that occur at nuclear power facilities to the NRA. Of the reports received in FY 2014, six came from nuclear operators and two came from operators dealing with radioisotopes.

Section 3: Implementation of Comprehensive Nuclear Disaster Drills in FY 2014

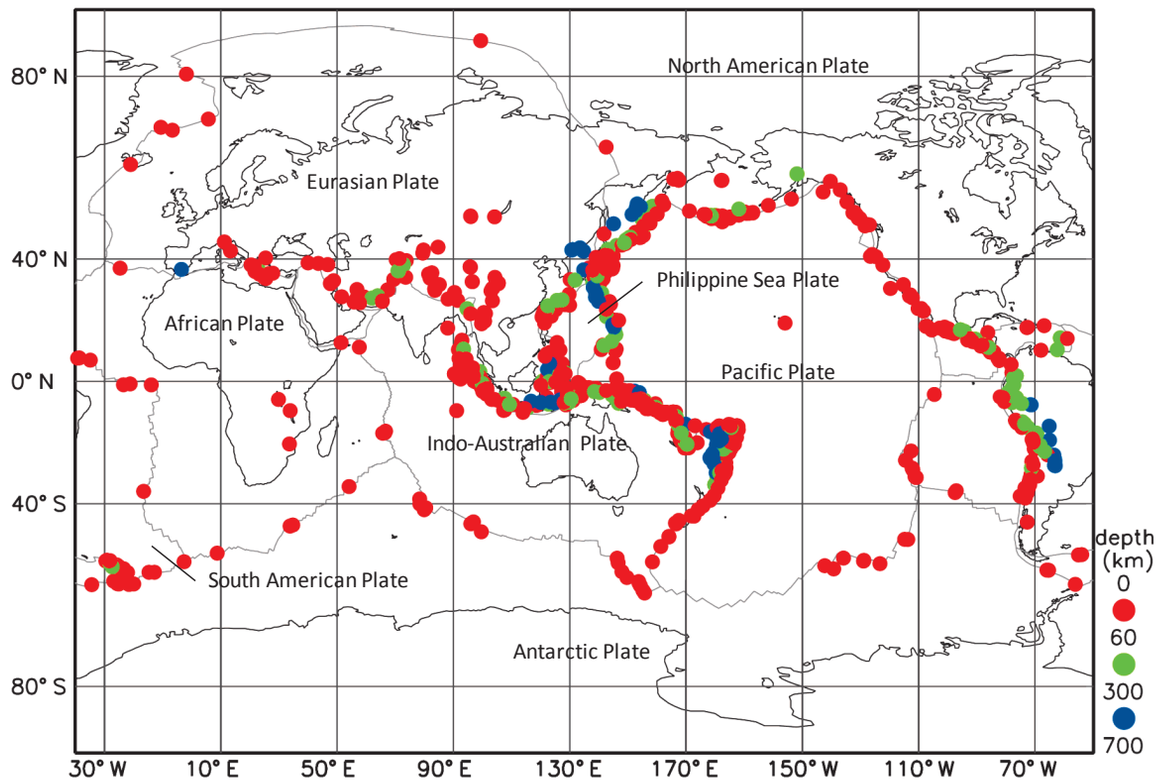
On November 2-3, 2014 a comprehensive nuclear disaster drill was conducted with the cooperation of the Government of Japan, local governments, and nuclear operators at the Hokuriku Electric Power Company Shika Nuclear Power Station pursuant to the Act on Special Measures Concerning Nuclear Emergency Preparedness. The scenario used in this drill was a compound disaster involving both a natural and nuclear disaster, and drills were conducted on internal government communications for handling a compound disaster, such as joint meetings between the Emergency Management Headquarters and the Joint Headquarters for Nuclear Emergency Response.

Appendix

TABLE OF CONTENTS: APPENDIX

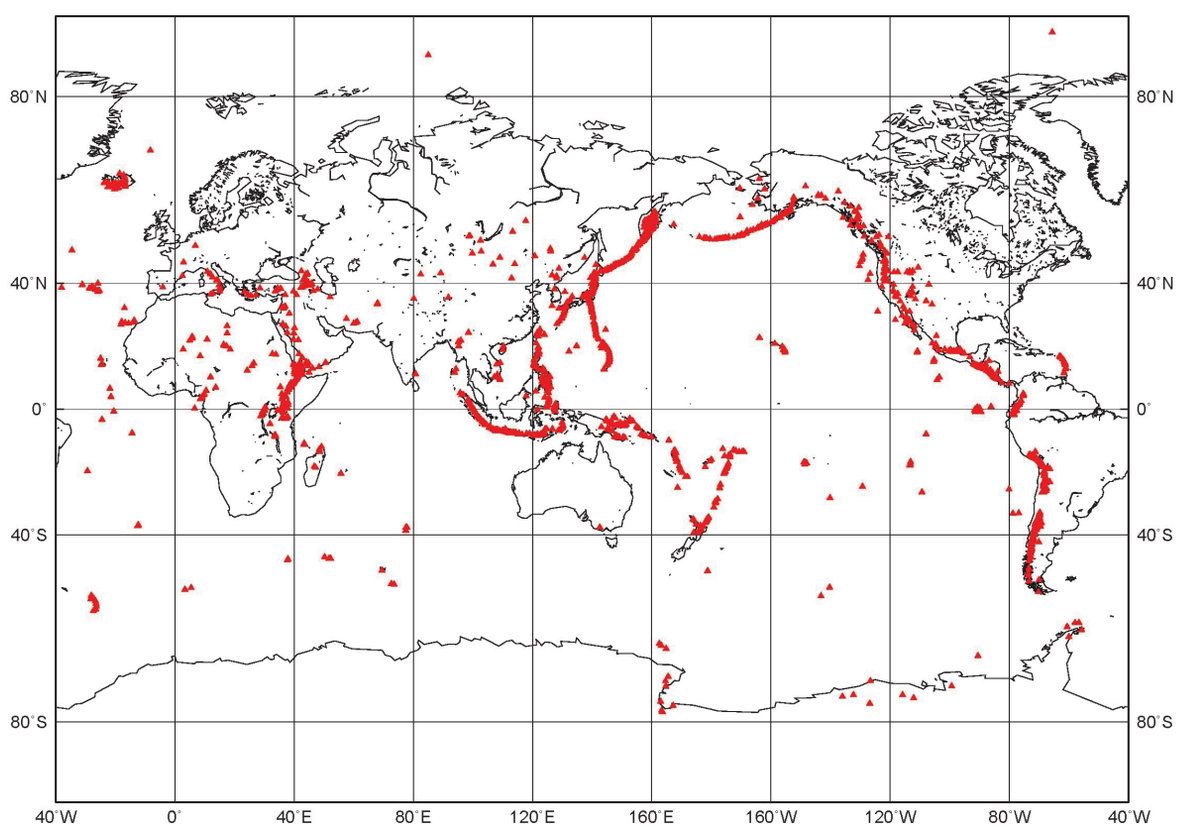
Section 1: Overview of Japan's National Land

Fig. A-1 Worldwide Hypocenter Distribution (for Magnitude 6 and Higher Earthquakes) and Plate Boundaries



Note: 2005–2014
Source: Created by the Japan Meteorological Agency based on earthquake data from the U.S. Geological Survey

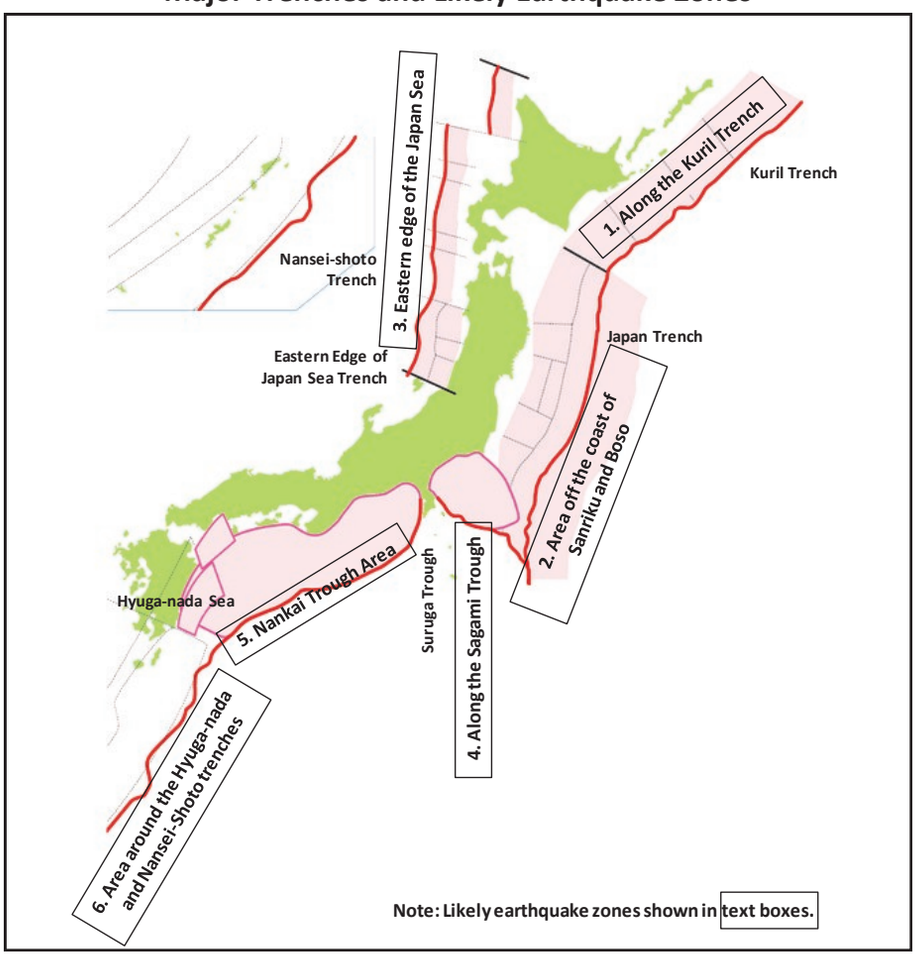
Fig. A-2 Distribution of Volcanoes Worldwide



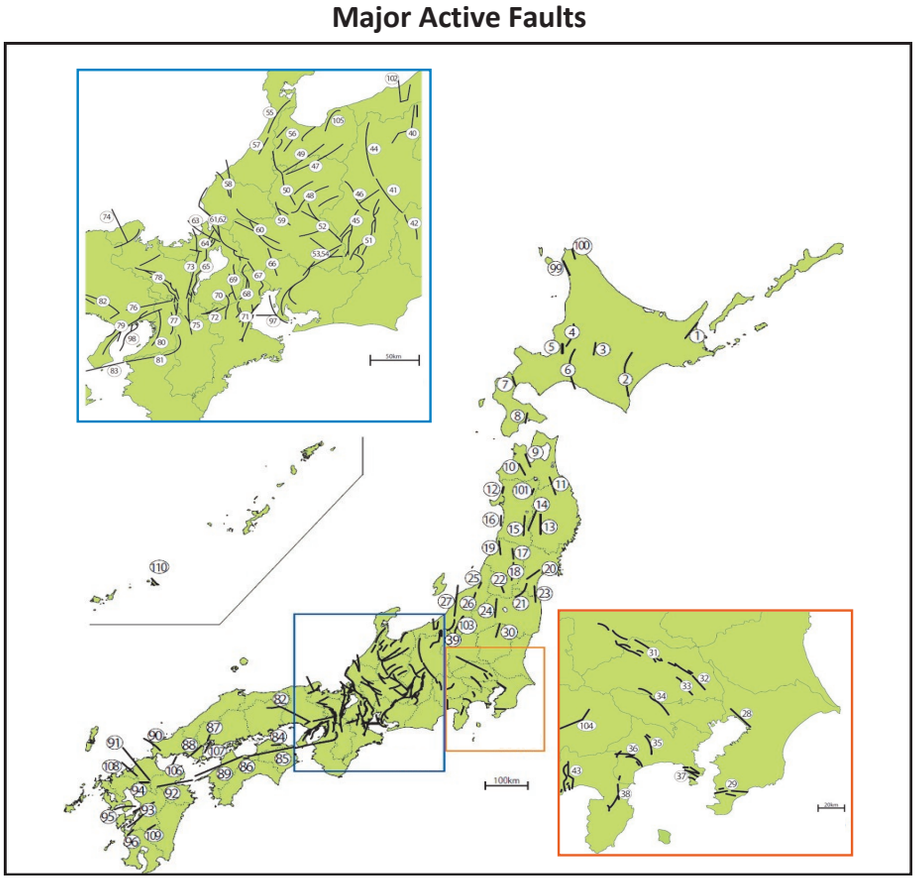
Source: Japan Meteorological Agency

Fig. A-3 Overview of Major Trenches and Major Active Faults

Major Trenches and Likely Earthquake Zones



Major Active Faults

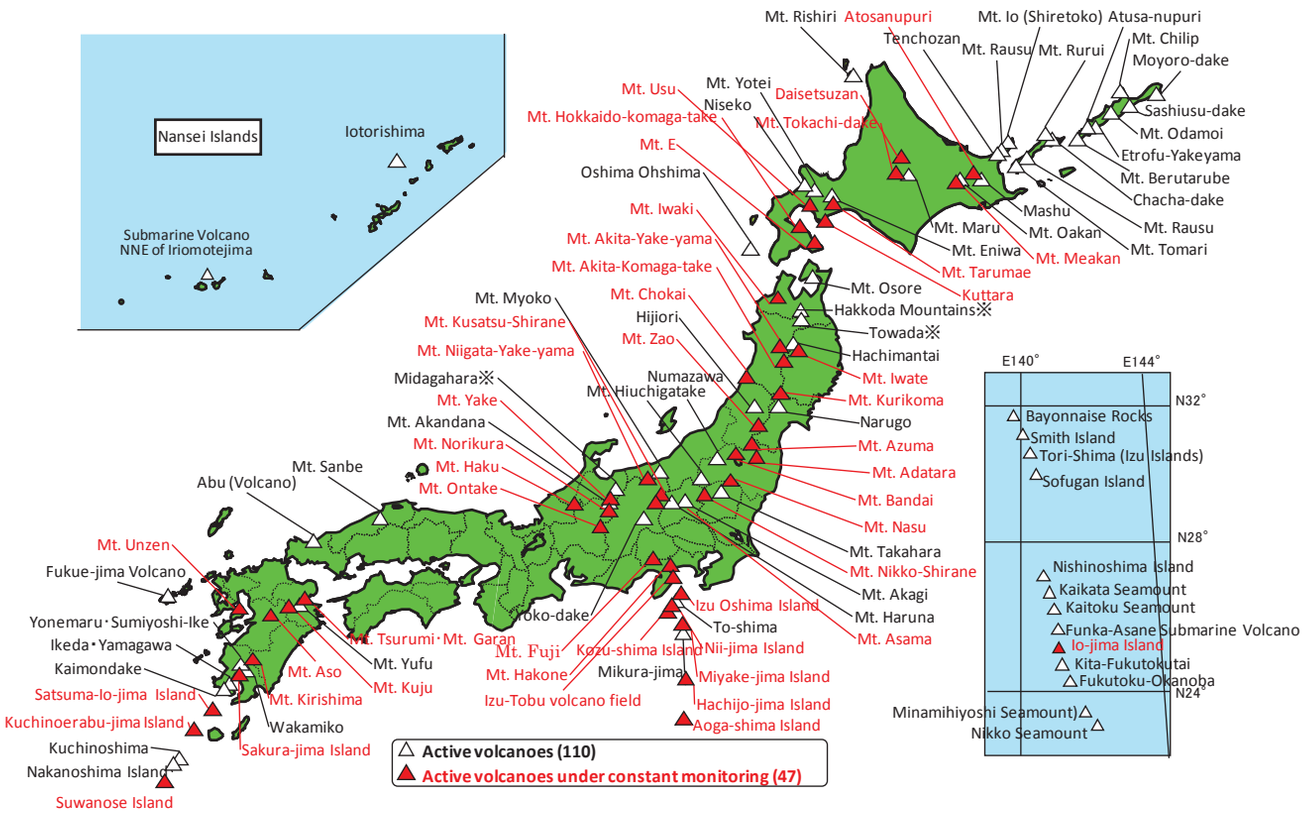


Source: Ministry of Education, Culture, Sports, Science and Technology

No.	Name of Fault	No.	Name of Fault
1	Sarobetsu fault zone	51	Shokawa fault zone
2	Shibetsu fault zone	52	Inadani fault zone
3	Tokachi-heiya fault zone	53	Atera fault zone
4	Furano fault zone	54	Byoubuyama Enasan fault zone & Sanageyama fault zone
5	Mashike-sanchi-toen fault zone · Numata-Sunagawa fault zone	55	Ouchigata fault zone
6	Toubetsu fault	56	Tonami-heiya fault zone · Kurehayama fault zone
7	Ishikari-teichi-toen fault zone	57	Morimoto Togashi fault zone
8	Kuromatsunai-teichi fault zone	58	Fukui-heiya-toen fault zone
9	Hakodate-teiya-seien fault zone	59	Nagaragawa-joryu fault zone
10	Aomori-wan-seigan fault zone	60	Noubi fault zone
11	Tsugaru-sanchi-seien fault zone	61	Yanagase Sekigahara fault zone
12	Oritsume fault	62	Nosaka Shufukuji fault zone
13	Hanawa-higashi fault zone	63	Kohoku-sanchi fault zone
14	Noshiro fault zone	64	Biwako-seigan fault zone
15	Kitakami-teichi-seien fault zone	65	Yoro-Kuwana-Yokkaichi
16	Shizukuishi-bonchi-seien - Mahiru-sanchi-toen fault zone	66	Suzuka-toen fault zone
17	Yokote-bonchi-toen fault zone	67	Suzuka-seien fault zone
18	Kitayuri fault	68	Tongu fault
19	Shinjo-bonchi fault zone	69	Isewan fault zone
20	Yamagata-bonchi fault zone	70	Nunobiki-sanchi-toen fault zone
21	Shonai-heiya-toen fault zone	71	Kizugawa fault zone
22	Nagamchi-Rifu Line fault zone	72	Mikata Hanaore fault zone
23	Fukushima-bonchi-seien fault zone	73	Yamada fault zone
24	Nagai-bonchi-seien fault zone	74	Sourthern fault zone of Kyoto-bonchi-Nara-bonchi (Nara-bonchi-toen fault zone)
25	Futaba fault	75	Arima-Takatsuki fault zone
26	Aizu-bonchi-seien-toen fault zone	76	Ikoma fault zone
27	Kushigata-sanmyaku fault zone	77	Mitoke Kyoto Nishiyama fault zone
28	Tsukioka fault zone	78	Rokko Awajishima fault zone
29	Nagaoka-heiya-seien fault zone	79	Osaka-wan fault zone
30	Kamogawa-teichi fault zone	80	Uemachi fault zone
31	Sekiya fault	81	Chuo-kozosen fault zone (Kongo-sanchi-toen - Iyo-nada)
32	Fukaya fault zone · Ayasegawa fault (Kanto-heiya hokuseiendan fault zone·Motoarakawa fault zone)	82	Yamasaki fault zone
33	Tachikawa fault zone	83	Nagao fault zone
34	Isehara fault	84	Itsukaichi fault zone
35	Shiozawa fault zone · Hirayama-Matsuda-kita fault zone · Kouzu-Matsuda fault zone (Kannawa Kouzu-Matsuda fault zone)	85	Iwakuni fault zone
36	Miura-hanto fault group	86	Akinada fault group
37	Kitaizu fault zone	87	Ube-oki fault group (Suounada fault group)
38	Muikamachi fault zone	88	Kikugawa fault zone
39	Takada-heiya fault zone	89	Nishiyama fault zone
40	Tokamachi fault zone	90	Kego fault zone
41	Nagano-bonchi-seien fault zone (Shinanogawa fault zone)	91	Beppu-Haneyama fault zone
42	Itoigawa-Shizuoka-kozosen fault zone	92	Futagawa-Hinagu fault zone
43	Sone-kyuryo fault zone	93	Mizunawa fault zone
44	Fujikawa-kako fault zone	94	Unzen fault group
45	Kiso-sanmyaku-seien fault zone	95	Izumi fault zone
46	Sakaitoge Kamiya fault zone	96	Hitoyoshi-bonchi-nanen fault
47	Uozu fault zone	97	Miyakojima fault zone
48	Atotsugawa fault zone		
49	Takayama Oppara fault zone		
50	Ushikubi fault zone		

Source: Ministry of Education, Culture, Sports, Science and Technology

Fig. A-4 Distribution of Active Volcanoes in Japan



Source: Created by the Cabinet Office from the Japan Meteorological Agency website

Fig. A-5 **Major Destructive Earthquakes in Japan (Since the Meiji Period)**

Disaster		Date	Number of Fatalities and Missing Persons
Nobi Earthquake	(M8.0)	October 28, 1891	7,273
Meiji Sanriku Earthquake and Tsunami	(M8.25)	June 15, 1896	Approx. 22,000
Great Kanto Earthquake	(M7.9)	September 1, 1923	Approx. 105,000
1927 Kita Tango Earthquake	(M7.3)	March 7, 1927	2,925
Showa Sanriku Earthquake Tsunami	(M8.1)	March 3, 1933	3,064
1943 Tottori Earthquake	(M7.2)	September 10, 1943	1,083
Tonankai Earthquake	(M7.9)	December 7, 1944	1,251
Mikawa Earthquake	(M6.8)	January 13, 1945	2,306
Nankai Earthquake	(M8.0)	December 21, 1946	1,443
Fukui Earthquake	(M7.1)	June 28, 1948	3,769
Tokachi-oki Earthquake	(M8.2)	March 4, 1952	33
1960 Chile Earthquake and Tsunami	(Mw9.5)	May 23, 1960	142
1964 Niigata Earthquake	(M7.5)	June 16, 1964	26
1968 Tokachi-oki Earthquake	(M7.9)	May 16, 1968	52
1974 Izu-hanto-oki Earthquake	(M6.9)	May 9, 1974	30
1978 Izu-Oshima-kinkai Earthquake	(M7.0)	January 14, 1978	25
1978 Miyagi-ken-oki Earthquake	(M7.4)	June 12, 1978	28
Nihon-kai-chubu Earthquake	(M7.7)	May 26, 1983	104
Nagano-ken-seibu Earthquake	(M6.8)	September 14, 1984	29
Hokkaido-nansei-oki Earthquake	(M7.8)	July 12, 1993	230
Great Hanshin-Awaji Earthquake	(M7.3)	January 17, 1995	6,437
Niigata-ken-Chuetsu Earthquake	(M6.8)	October 23, 2004	68
Iwate–Miyagi Inland Earthquake	(M7.2)	June 14, 2008	Approx. 23
Great East Japan Earthquake	(Mw9.0)	March 11, 2011	Approx. 21,839

*Mw: Moment magnitude

Notes:

1. The earthquakes listed before World War II are those with more than 1,000 fatalities and missing persons, while the earthquakes listed after World War II are those with more than 20 fatalities and missing persons.
2. The number of fatalities and missing persons from the Great Kanto Earthquake are based on the revised Chronological Scientific Table (2006), which changed the number from approximately 142,000 to approximately 105,000.
3. The number of fatalities and missing persons from the Great Hanshin-Awaji Earthquake is the current figure as of December 22, 2005. The number of fatalities directly caused by structures collapsing, fire, and other factors caused by seismic shaking on the day of the earthquake, excluding so-called “related deaths,” is 5,521.
4. The number of fatalities (including earthquake-related fatalities) and missing persons from the Great East Japan Earthquake is the current figure as of March 1, 2015.

Source: Chronological Scientific Tables, Fire and Disaster Management Agency materials, National Police Agency materials, Comprehensive List of Destructive Earthquakes in Japan, Extreme Disaster Management Headquarters materials

Fig. A-6 Major Natural Disaster in Japan Since 1945

Date	Disaster	Main Disaster Areas	Number of Dead and Missing
January 13, 1945	Mikawa Earthquake (M6.8)	Southern Aichi	2,306
September 17-18, 1945	Typhoon Makurazaki	Western Japan (Especially in Hiroshima)	3,756
December 21, 1946	Nankai Earthquake (M8.0)	Various Places in West of Chubu	1,443
August 14, 1947	Mt. Asama Eruption	Around Mt. Asama	11
September 14-15, 1947	Typhoon Catherine	North of Tohoku	1,930
June 28, 1948	Fukui Earthquake (M7.1)	Around the Fukui Plains	3,769
September 15-17, 1948	Typhoon Ion	From Shikoku into Tohoku (Especially in Iwate)	838
September 2-4, 1950	Typhoon Jane	North of Shikoku (Especially in Osaka)	539
October 13-15, 1951	Typhoon Ruth	Nationwide (Especially in Yamaguchi)	943
March 4, 1952	Tokachi-oki Earthquake (M8.2)	Southern Hokkaido, Northern Tohoku	33
June 25-29, 1953	Torrential Rains	Kyushu, Shikoku, Chugoku (Especially Kitakyushu)	1,013
July 16-24, 1953	Torrential Rains	West of Tohoku (Especially in Wakayama)	1,124
May 8-12, 1954	Storm Disaster	Northern Japan, Kinki	670
September 25-27, 1954	Typhoon Toyamaru	Nationwide (Especially in Hokkaido and Shikoku)	1,761
July 25-28, 1957	Torrential Rains	Kyushu (Especially around Isahaya)	722
June 24, 1958	Mt. Aso Eruption	Around Mt. Aso	12
September 26-28, 1958	Typhoon Kanogawa	East of Kinki (Especially in Shizuoka)	1,269
September 26-27, 1959	Typhoon Ise-wan	Nationwide (Except for Kyushu, especially in Aichi)	5,098
May 23, 1960	Chile Earthquake Tsunami	Southern Coast of Hokkaido, Sanriku Coast, Shima Coast	142
January 1963	Snow Disasters	Hokuriku, Sanin, Yamagata, Shiga, Gifu	231
June 16, 1964	Niigata Earthquake (M7.5)	Niigata, Akita, Yamagata	26
September 10-18, 1965	Typhoons 23, 24, 25	Nationwide (Especially in Tokushima, Hyogo, Fukui)	181
September 23-25, 1966	Typhoons 24, 26	Chubu, Kanto, Tohoku (Especially in Shizuoka, Yamanashi)	317
July to August 1967	Torrential Rains	West of Chubu, Northern Tohoku	256
May 16, 1968	Tokachi-oki Earthquake (M7.9)	Southern Hokkaido and Tohoku Area centering around Aomori	52
July 3-15, 1972	Typhoons 6, 7, 9 and Torrential Rains	Nationwide (Especially in Kitakyushu, Shimane, Hiroshima)	447
May 9, 1974	Izu-hanto-oki Earthquake (M6.9)	Southern Tip of Izu-hanto	30
September 8-14, 1976	Typhoon 17 and Torrential Rains	Nationwide (Especially in Kagawa, Okayama)	171
January 1977	Snow Disaster	Tohoku, Northern Kinki, Hokuriku	101
August 7, 1977- October 1978	Mt. Usu Eruption	Hokkaido	3
January 14, 1978	Izu-Oshima-kinkai Earthquake (M7.0)	Izu-hanto	25
June 12, 1978	Miyagi-ken-oki Earthquake (M7.4)	Miyagi	28
October 17-20, 1979	Typhoon 20	Nationwide (Especially Tokai, Kanto, Tohoku)	115
December 1980 - March 1981	Snow Disasters	Tohoku, Hokuriku	152
July to August 1982	Torrential Rains and Typhoon 10	Nationwide (Especially in Nagasaki, Kumamoto, Mie)	439
May 26, 1983	Nihon-kai-chubu Earthquake (M7.7)	Akita, Aomori	104
July 20-29, 1983	Torrential Rains	East of Sanin (Especially in Shimane)	117
October 3, 1983	Miyake Is. Eruption	Around Miyake-jima Island	—
December 1983 - March 1984	Snow Disasters	Tohoku, Hokuriku (Especially in Niigata, Toyama)	131
September 14, 1984	Nagano-ken-seibu Earthquake (M6.8)	Western Nagano	29
November 15 - December 18, 1986	Izu-Oshima Eruption	Izu Oshima Island	—
November 17, 1990	Mr. Unzen Eruption	Nagasaki	44
July 12, 1993	Hokkaido-nansei-oki Earthquake (M7.8)	Hokkaido	230
July 31 - August7, 1993	Torrential Rains	Nationwide	79
January 17, 1995	Great Hanshin-Awaji Earthquake (M7.3)	Hyogo	6,437
March 31, 2000 - June 28, 2001	Mt. Usu Eruption	Hokkaido	—
June 25, 2001 - March 31, 2005	Miyake Is. Eruption and Niijima and Kozushima Is. Earthquake	Tokyo	1
October 20-21, 2004	Typhoon 23	Nationwide	98
October 23, 2004	Niigata-ken-Chuetsu Earthquake (M6.8)	Niigata	68
December 2005 - March 2006	Heavy Snowfalls	Japan Sea Coast centering around Hokuriku Area	152
July 16, 2007	Niigata Earthquake (M6.8)	Niigata	15
June 14, 2008	Iwate-Miyagi Inland Earthquake (M7.2)	Tohoku (Especially in Miyagi, Iwate)	23
December 2010 - March 2011	Snow Disasters	From Northern Japan through into Kanto-Koshinetsu Area (Especially in Yamanashi)	131
March 11, 2011	Great East Japan Earthquake (Mw9.0)	Eastern Japan (Especially in Miyagi, Iwate, Fukushima)	21,839
August 29 - September 7, 2011	Typhoon 12	Kinki, Shikoku	94
November 2011 - March 2012	Deep Snowfall from November 2011 onwards	From Northern Japan through into West Japan on the Japan Sea Coast	132
December 2012 - March 2013	Deep Snowfall from December 2012 onwards	From Northern Japan through into West Japan on the Japan Sea Coast	101
November 2013 - May 2014	Deep Snowfall from November 2013 onwards	From Northern Japan through into Kanto-Koshinetsu Area (Especially in Yamanashi)	93
August 20, 2014	Torrential Rains of August 2014	Hiroshima	74
September 27, 2014	2014 Eruption of Mt. Ontake	Nagano, Gifu	63

*Mw: Moment magnitude

Notes:

1. The disasters listed resulted in fatalities and missing persons as follows: 500 or more for storm and flood disasters, 100 or more for snow disasters, and 10 or more for earthquakes, tsunamis, and volcanic eruptions. It also includes disasters for which governmental Major Disaster Management Headquarters were established based on the Disaster Countermeasures Basic Act.
2. The number of fatalities and missing persons for the Great Hanshin-Awaji Earthquake is the current figure as of December 22, 2005. The number of deaths directly caused by structural collapse, fire, and other factors caused by seismic shaking on the day of the earthquake, excluding so-called “related deaths,” is 5,521.
3. The numbers of fatalities from the Miyake Is. Eruption and Niijima and Kozushima Is. Earthquake are from the earthquake of July 1, 2000.
4. The numbers of fatalities and missing persons since 2014 are from flash bulletins based on Cabinet Office summaries.
5. The number of fatalities (including earthquake-related fatalities) and missing persons resulting from the Great East Japan Earthquake is the current figure as of March 1, 2015.

Source: Created by the Cabinet Office based on the meteorological almanac of Japan, Chronological Scientific Tables, National Police Agency materials, Fire and Disaster Management Agency materials, Extreme Disaster Management Headquarters materials, and Hyogo Prefecture materials

Fig. A-7 Major Natural Disasters in Japan in Recent Years

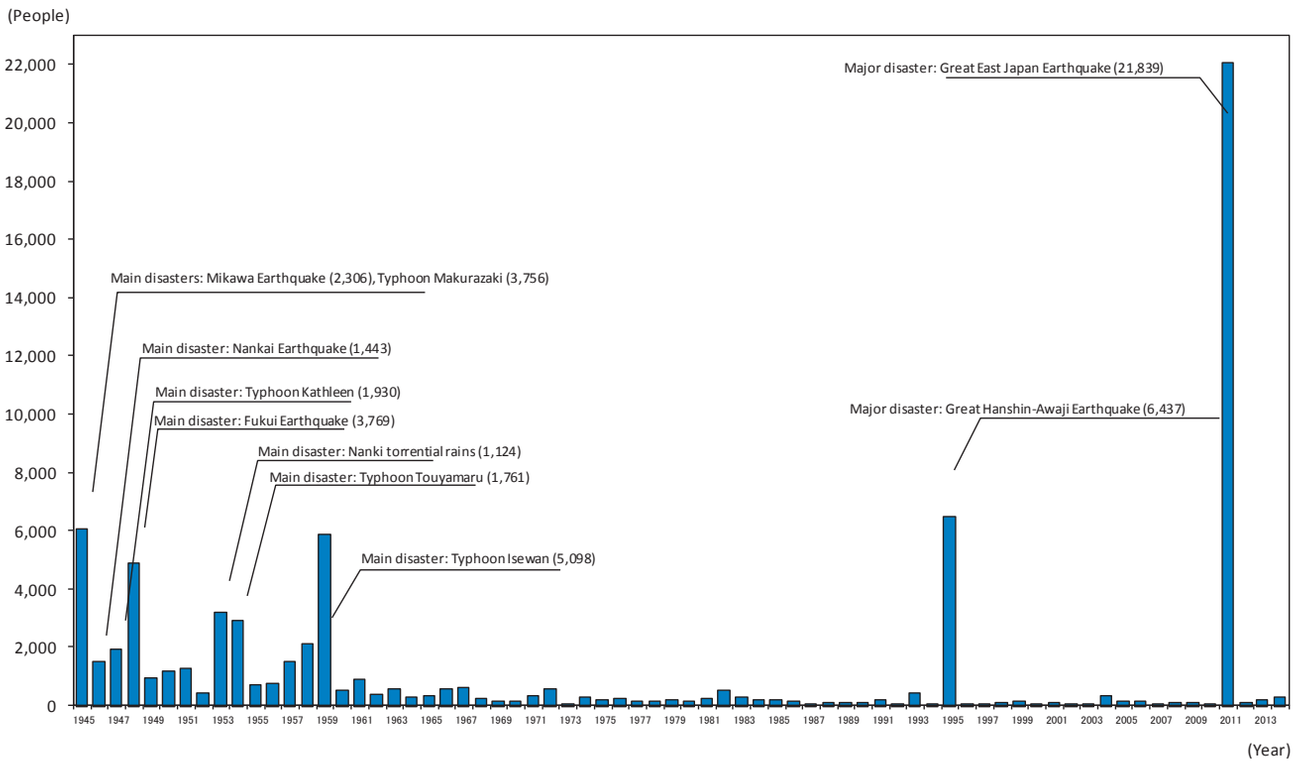
Date	Disaster	Main Disaster-affected Areas	Number of Dead and Missing
March 24, 2001	Geiyo Earthquake (M6.7)	Hiroshima, Ehime, Yamaguchi	2
April 3, 2001	Earthquake (M5.3) epicentered in central Shizuoka Prefecture	Shizuoka	0
July 11-13, 2001	Heavy rains in northern Kyushu Region	Fukuoka, Saga, Kumamoto, Nagasaki, Yamaguchi	0
August 20-13, 2001	Typhoon 11	Nationwide centering around Western Japan	6
September 6-13, 2001	Typhoon 16	Okinawa, Western Japan	0
September 8-12, 2001	Typhoon 15	Nationwide centering around Eastern Japan	8
July 9-11, 2002	Typhoon 6	Nationwide centering around Tohoku	7
July 13-16, 2002	Typhoon 7	Nationwide centering around Kagoshima	0
October 1-2, 2002	Typhoon 21	Hokkaido, Tohoku, Kanto, Chubu	4
May 26, 2003	Earthquake (M7.1) epicentered off coast of Miyagi Prefecture	Tohoku	0
July 18-21, 2003	Torrential rains from seasonal rain front	Kyushu	23
July 26, 2003	Earthquake (M6.4) epicentered in northern Miyagi Prefecture	Miyagi	0
August 7-10, 2003	Typhoon 10	Nationwide centering around Hokkaido	19
September 11-14, 2003	Typhoon 14	Nationwide centering around Okinawa	3
September 26, 2003	Tokachi-oki Earthquake (M8.0)	Hokkaido	2
July 12-13, 2004	Torrential rains in Niigata and Fukushima in July 2004	Niigata, Fukushima	16
July 17-18, 2004	Torrential rains in Fukui in July 2004	Fukui	5
July 29 - August 6, 2004	Heavy rains from and related to Typhoons 10 and 11	Chugoku, Shikoku	3
August 17-20, 2004	Heavy rains from and related to Typhoon 15	Tohoku, Shikoku	10
August 27-31, 2004	Typhoon 16	Nationwide centering around Western Japan	17
September 5, 2004	Earthquakes (M7.1, M7.4) epicentered off coast of Kii Peninsula/off the coast of Tokaido	Aichi, Mie, Wakayama	0
September 4-8, 2004	Typhoon 18	Nationwide centering around Chugoku	45
September 26-30, 2004	Typhoon 21	Nationwide centering around Western Japan	27
October 8-10 , 2004	Typhoon 22	East Japan on the Pacific Ocean side	9
October 18-21 , 2004	Typhoon 23	Nationwide centering around Kinki and Shikoku	98
October 23, 2004	2004 Niigata-ken Chuetsu Earthquake (M6.8)	Niigata	68
December 2004- March 2005	Snow disasters	Hokkaido, Tohoku, and Hokuriku Regions	88
March 20, 2005	Fukuoka-ken-Seihou-oki Earthquake (M7.0)	Fukuoka	1
June 27 - July 25, 2005	Heavy rains due to the seasonal rain front	From the southern Tohoku Region to the Kyushu Region	12
July 23, 2005	Earthquake (M6.0) epicentered in northwestern Chiba Prefecture	Tokyo, Saitama, Kanagawa and Chiba	0
August 16, 2005	Earthquake (M7.2) epicentered off coast of Miyagi Prefecture	Tohoku Region	0
August 25-26, 2005	Typhoon 11	Kanto and Tokai Regions	0
September 4-8, 2005	Typhoon 14	Nationwide centering around Chugoku, Shikoku, and Kyushu Regions	29
December 2005- March 2006	Torrential rains in 2006	Japan Sea side centering around Hokuriku Region	152
June 10 - July 29, 2006	Torrential rains due to seasonal rain front	Kanto, Chubu, Kinki, Chugoku, Kyushu Regions	33
September 15-20, 2006	Typhoon 13	Chugoku and Kyushu Regions	10
November 7, 2006	Tornado in town of Saroma	Hokkaido (Saroma-cho)	9
March 25 2007	Noto Hanto Earthquake (M6.9) of 2007	Ishikawa	1
April 15, 2007	Earthquake (M5.4) epicentered in central Mie Prefecture	Mie	0
July 5-17 2007	Heavy rains from Typhoon 4 and seasonal rain front	Chubu, Shikoku and Kyushu Regions	7
July 16, 2007	2007 Niigata Earthquake (M6.8)	Niigata	15
August 2-4, 2007	Typhoon 5	Kyushu Region	0
September 6-8, 2007	Typhoon 9	Tohoku, Kanto and Chubu Regions	3
September 13-18, 2007	Heavy rains from Typhoon 11 and rain front	Tohoku Region	4
October 1, 2007	Earthquake (M4.9) epicentered is western Kanagawa Prefecture	Kanagawa	0
February 23-24, 2008	Damage from low-pressure system	Hokkaido, Tohoku and Chubu Regions	4
June 14, 2008	Iwate-Miyagi Inland Earthquake (M7.2) of 2008	Tohoku Region (Especially Miyagi and Iwate)	23
July 24, 2008	Earthquake (M6.8) epicentered on northern coast of Iwate Prefecture	Hokkaido and Tohoku Regions	1
July 28-29, 2008	Damage from heavy rains	Hokuriku and Kinki Regions (Especially Hyogo)	6
August 26-31, 2008	Torrential rains at the end of August 2008	Tohoku, Kanto, Tokai and Chugoku Regions (Especially Aichi)	2
July 21-26, 2009	Torrential rains in northern Chugoku and Kyushu Regions in July 2009	Chugoku and Kyushu Regions (Especially Yamaguchi and Fukuoka)	35
August 10-11, 2009	2009 Typhoon 9	Kinki and Shikoku Regions (Especially Hyogo)	27
August 11, 2009	Earthquake (M6.5) epicentered in Suruga Bay	Tokai Region	1
October 7-8, 2009	2009 Typhoon 18	Tohoku, Kanto, Chubu and Kinki Regions	5
February 28, 2010	Tsunami from an earthquake epicentered on central Chilean coast	Tohoku, Kanto, Tokai, Kinki and Shikoku Regions	0
June 11 - July 19, 2010	Heavy rains due to 2010 seasonal rain front	Nationwide centering around Chugoku and Kyushu Regions	21
October 18-30, 2010	Heavy rains in Amami region of Kagoshima Prefecture	Kagoshima (Amami)	3
November 2010- March 2011	Heavy snows from November 2010	Hokkaido, Tohoku and Hokuriku Regions	131
January 26 - 2011	Mt. Kirishima (Shinmoedake) Eruption	Miyazaki and Kagoshima	0
March 11, 2011	Tohoku Region Pacific Coast Earthquake (Mw9.0) of 2011	Nationwide centering around Tohoku Region	21,839
July 19-24, 2011	2011 Typhoon 6	Kanto, Tokai, Kinki and Shikoku Regions	3
July 28-30, 2011	Torrential rains in Niigata and Fukushima in July 2011	Tohoku and Hokuriku Regions (Especially Niigata and Fukushima)	6
August 30 - 5 September 2011	2011 Typhoon 12	Kanto, Tokai, Kinki, Chugoku and Shikoku Regions	98
September 15-22, 2011	2011 Typhoon 15	Nationwide	19

Date	Disaster	Main Disaster-affected Areas	Number of Death and Missing
November 2011- March 2012	Heavy snows in 2012	Hokkaido, Tohoku and Hokuriku Regions	132
May 6, 2012	Wind gusts occurring in May 2012	Kanto Region (Especially Ibaraki and Tochigi)	3
June 18-20, 2012	2012 Typhoon 4	Nationwide	1
July 2-9, 2012	Heavy rains from July 3, 2012	Nationwide centering around Kyushu and Okinawa Regions	2
July 11-14, 2012	Heavy rains from July 11, 2012	Nationwide centering around northern Kyushu Region	32
August 13-15, 2012	Heavy rains from August 13, 2012	Kinki and Chubu Regions	3
September 15-19, 2012	2012 Typhoon 16	Nationwide	0
September 28 - October 1, 2012	2012 Typhoon 17	Chubu, Kinki, Kyushu and Okinawa Regions	1
December 2012- March 2013	Heavy snows in 2013	Hokkaido, Tohoku and Hokuriku Regions	101
April 6-9, 2013	Low-pressure system from April 6, 2013	Nationwide	1
June 8 - August 9, 2013	Heavy rains in the 2013 rainy season	Tohoku and Chugoku Region	17
August 23-28, 2013	Heavy rains from August 23, 2013	Nationwide centering around Chugoku Region	2
September 2 & 4, 2013	Tornados on September 2 and 4, 2013	Kanto region	0
September 15-16, 2013	2013 Typhoon 18	From Northern Japan to Western Japan on the Japan Sea side (especially Kinki)	7
October 15-16, 2013 October 24-26, 2013	2013 Typhoon 26 & 27	From Eastern Japan to Western Japan on the Pacific Ocean side (especially Kanto)	43
November 2013- March 2014	Heavy snows from the end of November 2013	Tohoku and Kanto-Koshinetsu Regions	93
July 6-11, 2014	2014 Typhoon 8	Nationwide	3
July 30 - August 11, 2014	2014 Typhoon 12 & 11	Nationwide	6
August 15-26, 2014	Torrential rains of August 2014 (Except Hiroshima Landslide)	Kinki, Hokuriku and Tokai Regions	8
August 20, 2014	Torrential rains of August 2014 (Hiroshima Landslide Disaster)	Hiroshima	74
September 27, 2014	2014 Eruption of Mt. Ontake	Nagano and Gifu	63
November 22, 2014	Earthquake epicentered in northern Nagano Prefecture	Nagano	0

*Mw: Moment magnitude
Notes:
1. Natural disasters for which an Information Office was set up in the Cabinet Office and which resulted in fatalities/missing persons.
2. Data for the Niigata-ken Chuetsu Earthquake (the Mid Niigata Prefecture Earthquake) includes so-called "related deaths."
3. The Great East Japan Earthquake (2011) includes damage from earthquakes deemed aftershocks.* The number of fatalities (including earthquake -related fatalities) and missing persons is the current figure as of March 1, 2015.
(*April 7 earthquake hypocentered off the coast of Miyagi Prefecture, April 11 earthquake hypocentered in the Hamadori region of Fukushima Prefecture, April 12 earthquake hypocentered in the Hamadori region of Fukushima Prefecture, May 22 earthquake hypocentered in northeastern Chiba Prefecture, July 25 earthquake hypocentered off the coast of Fukushima Prefecture, July 31 earthquake hypocentered off the coast of Fukushima Prefecture, August 12 earthquake hypocentered off the coast of Fukushima Prefecture, August 19 earthquake hypocentered off the coast of Fukushima Prefecture, September 10 earthquake hypocentered in northern Ibaraki Prefecture, October 10 earthquake hypocentered off the coast of Fukushima Prefecture, November 20 earthquake hypocentered in northern Ibaraki Prefecture, February 19, 2012, earthquake hypocentered in northern Ibaraki Prefecture, March 1 earthquake hypocentered off the coast of Ibaraki Prefecture, March 14 earthquake hypocentered off the eastern coast of Chiba Prefecture, June 18 earthquake hypocentered off the coast of Miyagi Prefecture, August 30 earthquake hypocentered off the coast of Miyagi Prefecture, December 7 earthquake hypocentered off the coast of Sanriku, and January 31, 2013, earthquake hypocentered in northern Ibaraki Prefecture)
4. The numbers of fatalities and missing persons since 2013 are from flash bulletins based on Cabinet Office summaries.

Source: Meteorological Almanac of Japan, Chronological Scientific Tables, National Police Agency materials, Fire and Disaster Management Agency materials

Fig. A-8 Number of Fatalities and Missing Persons Resulting from Natural Disasters



Note: Of the fatalities in 1995, the deaths from the Great Hanshin-Awaji Earthquake include 919 so-called "related deaths" (Hyogo Prefecture). The fatalities and missing persons in 2011 are based on flash bulletins from the Cabinet Office. The fatalities and missing persons resulting from the 2011 Great East Japan Earthquake include earthquake-related fatalities based on the Fire and Disaster Management Agency document, "Damage Conditions of the Tohoku Region Pacific Coast Earthquake (Great East Japan Earthquake)" (as of March 1, 2015).
Source: Fatalities and missing persons for the year 1945 came only from major disasters (source: Chronological Scientific Table). Years 1946–1952 use the Japanese Meteorological Disasters Annual Report; years 1953–1962 use National Police Agency documents; years 1963 and after created by the Cabinet Office based on Fire and Disaster Management Agency materials.

Fig. A-9 Breakdown of Fatalities and Missing Persons Caused by Natural Disasters

Year	Storm/Flood	Earthquake/ Tsunami	Volcano	Snow	Other	Total
1993	183	233	1	9	11	437
1994	8	3	0	21	7	39
1995	19	6,437	4	14	8	6,482
1996	21	0	0	28	35	84
1997	51	0	0	16	4	71
1998	80	0	0	28	1	109
1999	109	0	0	29	3	141
2000	19	1	0	52	6	78
2001	27	2	0	59	2	90
2002	20	0	0	26	2	48
2003	48	2	0	12	0	62
2004	240	68	0	16	3	327
2005	48	1	0	98	6	153
2006	87	0	0	88	2	177
2007	14	16	0	5	4	39
2008	21	24	0	48	7	100
2009	76	1	0	35	3	115
2010	31	0	0	57	1	89
2011	136	21,843	0	125	2	22,106
2012	52	2	0	138	0	192
2013	75	0	0	92	6	173
2014	101	0	63	121	0	285

Notes: This table shows the number of deaths and missing persons between Jan. 1 and Dec. 31. Fatalities and missing persons in 2014 are based on flash bulletins from the Cabinet Office. (The earthquake/tsunami disaster figures for 2011 include earthquake-related fatalities from the Great East Japan Earthquake based on the Fire and Disaster Management Agency document, “Damage Conditions of the 2011 Tohoku Region Pacific Coast Earthquake (Great East Japan Earthquake)” (March 1, 2015).)
Source: Created by the Cabinet Office based on the Fire and Disaster Management Agency report "Status of Regional Disaster Management Administration"

Fig. A-10 Recent Major Natural Disasters (Since the Great Hanshin-Awaji Earthquake)

(Total: As of April 14, 2015)

Name of Disaster	Major Events	Human Casualties (persons)		Houses Damaged (houses)			Remarks
		Fatalities/ Missing Persons	Injured	Completely Destroyed	Half Destroyed	Above-floor Flooding	
The Great Hanshin-Awaji Earthquake (January 17, 2005)	• Maximum seismic intensity of 7. • Unprecedented major disaster in Western Japan. Became a turning point in DRR measures for national and local governments, with various DRR measures developed and strengthened.	6,437	43,792	104,906	144,274	-	• Establishment of Disaster Management Headquarters[*1] • Establishment of Major Disaster Management Headquarters • Inspection by Prime Minister • Deployment of government survey team • Invocation of Disaster Relief Act • Designation as an extremely severe disaster
The Great East Japan Earthquake (March 11, 2011)	• Maximum seismic intensity of 7. • Tsunami caused extreme damage mainly along the coast of Eastern Japan, including Iwate, Miyagi, and Fukushima Prefectures.	21,839	6,219	127,830	275,807	-	• Establishment of Emergency Disaster Management Headquarters • Establishment of On-site Disaster Management Headquarters • Inspection by Prime Minister • Deployment of government survey team • Inspection by Minister of State for Disaster Management • Invocation of Disaster Relief Act • Invocation of Act Concerning Support for the Reconstruction of Livelihoods of Disaster Victims • Designation as extremely severe disaster
2000 Eruption of Mt. Usu (March 31, 2000 - June 28, 2001)	The Japan Meteorological Agency announced emergency volcano information and residents evacuated before the eruption began, resulting in no human casualties.	-	-	119	355	-	• Establishment of Major Disaster Management Headquarters • Establishment of On-site Disaster Management Headquarters • Inspection by Prime Minister • Deployment of government survey team • Invocation of Disaster Relief Act • Invocation of Act Concerning Support for the Reconstruction of Livelihoods of Disaster Victims • Designation as extremely severe disaster
2000 Miyake Is. Eruption and Niijima and Kozushima Is. Earthquake (June 25, 2000 - March 31, 2005)	A caldera was formed along with the summit eruption. Large amounts of volcanic gases were emitted over an extended period, and evacuation instructions were issued to all residents of the town of Miyake, which forced all residents to evacuate and live off the island.	1	15	15	20	-	• Establishment of Major Disaster Management Headquarters • Inspection by Prime Minister • Invocation of Disaster Relief Act • Invocation of Act Concerning Support for the Reconstruction of Livelihoods of Disaster Victims • Designation as extremely severe disaster
2004 Typhoon 23 (October 18-21, 2004)	Very large number of human casualties due to rising river levels, sediment disasters, and high waves nationally, but concentrated in the Kinki and Shikoku regions. The Maruyama River, Izushigawa River, and other Maruyama River system rivers overflowed their banks and flooded.	98	555	909	7,776	14,323	• Establishment of Major Disaster Management Headquarters • Deployment of government survey team • Invocation of Disaster Relief Act • Invocation of Act Concerning Support for the Reconstruction of Livelihoods of Disaster Victims • Designation as extremely severe disaster
2004 Niigata-ken-Chuetsu Earthquake (October 23, 2004)	• Maximum seismic intensity of 7. • Homes were destroyed, landslides and other disasters caused many human casualties, communities were isolated, people were forced to evacuate, and there was massive damage to homes, lifelines, transportation, and agricultural land.	68	4,805	3,175	13,810	-	• Establishment of Major Disaster Management Headquarters • Inspection by Prime Minister • Deployment of government survey team • Invocation of Disaster Relief Act • Invocation of Act Concerning Support for the Reconstruction of Livelihoods of Disaster Victims • Designation as extremely severe disaster
Fukuoka-ken-Seihou-oki Earthquake (March 20, 2005)	• Maximum seismic intensity of Lower 6. • Homes were destroyed on Genkai Island and elsewhere, and window glass fell from buildings in Fukuoka City.	1	1,204	144	353	-	• Inspection by Prime Minister • Deployment of government survey team • Invocation of Disaster Relief Act • Invocation of Act Concerning Support for the Reconstruction of Livelihoods of Disaster Victims • Invocation of Remote Islands Development Act
2005 Typhoon 14 (September 4-8, 2005)	Record-breaking rains fell, mainly in the Kyushu region, and sediment disasters caused many human casualties.	29	179	1,178	3,692	7,159	• Deployment of government survey team • Invocation of Disaster Relief Act • Invocation of Act Concerning Support for the Reconstruction of Livelihoods of Disaster Victims • Designation as extremely severe disaster
2006 Heavy Snowfalls (December 2005 - March 2006)	Following 1963, the second-largest number of fatalities and missing persons since WW II (on par with 1981.)	152	2,145	18	28	12	• Invocation of Disaster Relief Act
2006 Torrential Rains Due to Seasonal Rain Front (June 10–July 29, 2006)	Many fatalities due to sediment disasters in Nagano and Kagoshima Prefectures.	32	81	300	1,258	2,212	• Deployment of government survey team • Invocation of Disaster Relief Act • Invocation of Act Concerning Support for the Reconstruction of Livelihoods of Disaster Victims • Designation as extremely severe disaster
2006 Typhoon 13 (September 15–20, 2006)	Damage due to strong winds from the Okinawa region to the Kyushu region, and a tornado in Nobeoka City, Miyazaki Prefecture.	10	448	159	514	189	• Deployment of government survey team • Invocation of Disaster Relief Act • Invocation of Act Concerning Support for the Reconstruction of Livelihoods of Disaster Victims • Designation as extremely severe disaster
Tornado in Saroma, Hokkaido Prefecture (November 7, 2006)	Highest number of fatalities on record attributed to a tornado.	9	31	7	7	-	• Deployment of government survey team • Invocation of Disaster Relief Act • Invocation of Act Concerning Support for the Reconstruction of Livelihoods of Disaster Victims

Name of Disaster	Major Events	Human Casualties (persons)		Houses Damaged (houses)			Remarks
		Fatalities/ Missing Persons	Injured	Completely Destroyed	Half Destroyed	Above-floor Flooding	
2007 Noto Hanto Earthquake (March 25, 2007)	• Maximum seismic intensity of Upper 6. • Disaster in mountainous regions with a high percentage of aging population and advancing depopulation.	1	356	686	1,740	-	• Inspection by Prime Minister • Deployment of government survey team • Invocation of Disaster Relief Act • Invocation of Act Concerning Support for the Reconstruction of Livelihoods of Disaster Victims • Designation as extremely severe disaster
2007 Heavy Rains from Typhoon 4 and Seasonal Rain Front (July 5-31, 2007)	The typhoon that made landfall in July was very powerful. Record rainfalls in various regions.	7	79	26	26	420	• Deployment of government survey team • Invocation of Disaster Relief Act • Designation as extremely severe disaster
2007 Niigata Earthquake (July 16, 2007)	• Maximum seismic intensity of Upper 6. • Many human causalities due to homes collapsing. Damage to homes, lifelines, transportation, and nuclear power plants.	15	2,346	1,331	5,709	-	• Inspection by Prime Minister • Deployment of government survey team • Invocation of Disaster Relief Act • Invocation of Act Concerning Support for the Reconstruction of Livelihoods of Disaster Victims • Designation as extremely severe disaster
2008 Iwate-Miyagi Inland Earthquake (June 14, 2008)	• Maximum seismic intensity of Upper 6. • Many human causalities due to landslides and other sediment disasters. Many river channels became blocked (natural dams) in rivers in mountainous areas.	23	426	30	146	-	• Inspection by Prime Minister • Deployment of government survey team • Invocation of Disaster Relief Act • Invocation of Act Concerning Support for the Reconstruction of Livelihoods of Disaster Victims • Designation as extremely severe disaster
Earthquake epicentered on Northern Coast of Iwate Prefecture (July 24, 2008)	• Maximum seismic intensity of Lower 6. • Earthquake with a deep hypocenter occurring inside a plate. Seismic intensity of Lower 5 and higher recorded in disaster-affected regions of inland Iwate and Miyagi Prefectures.	1	211	1	0	-	• Deployment of government survey team
Heavy Rains from July 28 (July 28-29, 2008)	• Localized heavy rains in the Hokuriku and Kinki regions. • Human casualties along the Togagawa River in Kobe City.	6	13	6	16	536	• Invocation of Disaster Relief Act • Invocation of Act Concerning Support for the Reconstruction of Livelihoods of Disaster Victims • Designation as extremely severe disaster
Torrential Rains at the End of August 2008 (August 26-31, 2008)	Record heavy rains in various regions, especially extensive flood damage in Aichi Prefecture.	2	7	6	7	3,106	• Deployment of government survey team • Invocation of Disaster Relief Act • Invocation of Act Concerning Support for the Reconstruction of Livelihoods of Disaster Victims
July 2009 Torrential Rains in Chugoku and Northern Kyushu (July 19-26, 2009)	• Record heavy rains in Yamaguchi and Fukuoka Prefectures due to seasonal rain front. • Numerous fatalities from sediment disasters in Yamaguchi Prefecture and other prefectures.	35	59	52	99	2,137	• Inspection by Prime Minister • Deployment of government survey team • Invocation of Disaster Relief Act • Invocation of Act Concerning Support for the Reconstruction of Livelihoods of Disaster Victims • Designation as extremely severe disaster
2009 Typhoon 9 (August 8-11, 2009)	• Heavy rains from the Chugoku and Shikoku regions to the Tohoku region due to the effects of the typhoon. • Human casualties and homes damaged due to flooding in Hyogo Prefecture.	27	23	183	1,130	973	• Inspection by Prime Minister • Deployment of government survey team • Invocation of Disaster Relief Act • Invocation of Act Concerning Support for the Reconstruction of Livelihoods of Disaster Victims • Designation as extremely severe disaster
Earthquake epicentered in Suruga Bay (August 11, 2009)	• Maximum seismic intensity of Lower 6. • Tomei Expressway closed due to slope collapse.	1	319	0	6	-	-
2009 Typhoon 18 (October 6-8, 2009)	• Destructive storm and heavy rains over a wide area from the Okinawa region to Hokkaido Prefecture due to the effects of the typhoon. • Winds and rains in Aichi Prefecture caused partial damage and flood damage to many homes.	5	137	9	89	572	• Designation as extremely severe disaster
Tsunami from Earthquake epicentered in Central Chilean Coast (February 27-28, 2010)	An earthquake struck the central coast of Chile just after noon on Feb. 27. A tsunami was approaching Japan the next day on the 28th, and a major tsunami warning and tsunami warning were issued at 9:33 a.m. on the 28th. Extensive fishery damage to aquaculture facilities.	0	0	0	0	6	• Designation as extremely severe disaster
2010 Heavy Rains Due to Seasonal Rain Front (June 11 - July 19, 2010)	The seasonal rain front stalled over the region from Kyushu to Honshu from mid-June, with intermittent bursts of activity. Southern Kyushu received more than twice its average annual rainfall. There were large-scale landslides in Kagoshima Prefecture, and fatalities and missing persons mainly in Hiroshima and Gifu Prefectures.	21	21	42	74	1,786	• Inspection by Prime Minister • Inspection by Minister of State for Disaster Management • Invocation of Disaster Relief Act • Invocation of Act Concerning Support for the Reconstruction of Livelihoods of Disaster Victims • Designation as extremely severe disaster
Heavy Rains in Amami Region of Kagoshima Prefecture (October 18-25, 2010)	The rain front stalled over the Amami region, with moist air flowing in from the south toward this rain front, creating unstable atmospheric conditions. The Amami region received intense rainfall of more than 120 mm per hour, with more than 800 mm of rainfall since the rains began.	3	2	10	479	119	• Inspection by Minister of State for Disaster Management • Invocation of Disaster Relief Act • Invocation of Act Concerning Support for the Reconstruction of Livelihoods of Disaster Victims • Designation as extremely severe disaster

Name of Disaster	Major Events	Human Casualties (persons)		Houses Damaged (houses)			Remarks
		Fatalities/ Missing Persons	Injured	Completely Destroyed	Half Destroyed	Above-floor Flooding	
Heavy Snows from November 2010 (November 1, 2010 - March 2011)	Record snows fell from the end of the year to the beginning of the following year in some areas of the Japan Sea side of Western Japan. Fishing boats overturned and sank along with other damage in Tottori and Shimane Prefectures.	128	1,491	9	12	6	• Cabinet meeting held • Inspection by Minister of State for Disaster Management • Invocation of Disaster Relief Act
Mt. Kirishima Eruption (Shinmoedake) (January 26, 2011-)	Shinmoedake continued to be highly active from January 26, erupting a total of 13 times until March 4 at 6:00 p.m. Falling ash from the eruptions was recorded over a wide area mainly to the southeast of the mountain, including Kirishima City, Kagoshima Prefecture, and Miyakonojo City, Miyazaki Prefecture.	0	42	0	0	0	• Deployment of government survey team (twice) • Inspection by Minister of State for Disaster Management • Designation as an area requiring the emergency development of evacuation facilities and an ash prevention area • Invocation of Disaster Relief Act
2011 Typhoon 6 (July 12-24, 2011)	The typhoon made landfall in southern Tokushima Prefecture around 12:30 a.m. on July 20. At the time of landfall, maximum peak winds of 40m/s were recorded, and the large typhoon maintained its powerful force. Record heavy rains were recorded in Western Japan, with rainfall of more than 1,000 mm recorded in some pars of the Shikoku region since the rains began.	3	54	0	1	28	• Designation as extremely severe disaster
July 2011 Niigata and Fukushima Torrential Rains (July 27-30, 2011)	Rain began falling in Niigata Prefecture and Aizu, Fukushima Prefecture, from around noon on the 27th. Intermittent intense rains of more than 80 mm per hour fell starting on the 28th. In Niigata and Fukushima Prefectures, record heavy rains exceeding the July 2004 Niigata and Fukushima Torrential Rains were recorded.	6	13	73	998	1,221	• Deployment of government survey team (twice) • Local survey by Minister of State for Disaster Management • Invocation of Disaster Relief Act • Invocation of Act Concerning Support for the Reconstruction of Livelihoods of Disaster Victims • Designation as extremely severe disaster
2011 Typhoon 12 (August 30 - 6 September 2011)	Record rains were recorded across a wide area from Western Japan to Northern Japan. Especially on the Kii Peninsula, the highest amount of rainfall since the rains began at 5:00 p.m. on August 30 exceeded 1,800 mm, and many river channels became blocked.	98	112	379	3,159	5,500	• Establishment of Major Disaster Management Headquarters • Site inspection by Prime Minister Noda • Deployment of government survey team (twice) • Local survey by Minister of State for Disaster Management • Invocation of Disaster Relief Act • Invocation of Act Concerning Support for the Reconstruction of Livelihoods of Disaster Victims • Designation as extremely severe disaster (national)
2011 Typhoon 15 (September 15-22, 2011)	Strong winds and record rains were recorded across a wide area from Western Japan to Northern Japan. Total rainfall from 12:00 a.m., September 15 to 9:00 a.m., September 22 exceeded 1,000 mm in some parts of Kyushu and Shikoku, with many points recording rainfall of more than double the average rainfall for September.	19	337	33	1,577	2,145	• Invocation of Disaster Relief Act • Invocation of Act Concerning Support for the Reconstruction of Livelihoods of Disaster Victims • Designation as extremely severe disaster
Heavy Snows from November 2012 (November 2011 - March 2012)	Record snows fell mainly on the Japan Sea side, with cumulative snowfall of more than 28% higher than the average for the past 5 years. In addition, in some regions the depth of the snowfall was more than double the average for the past 30 years.	133	1,990	13	12	3	• Cabinet meeting held (twice) • Local survey by Minister of State for Disaster Management (twice) • Invocation of Disaster Relief Act
Wind Gusts in May 2012 (May 6, 2012)	Lightning strikes, wind gusts, and hail were recorded from the Tokai region to the Tohoku region. From Joso City to Tsukuba City, Ibaraki Prefecture, a tornado formed that was estimated to be one of the strongest (F3) recorded in Japan. Multiple tornadoes were recorded in the region from Mooka City, Tochigi Prefecture, to Hitachi-Omiya City, Ibaraki Prefecture, including a destructive tornado of approx. 32 km, the second longest recorded since statistics have been kept.	3	59	89	197	-	• Deployment of government survey team • Local survey by Minister of State for Disaster Management • Invocation of Disaster Relief Act • Invocation of Act Concerning Support for the Reconstruction of Livelihoods of Disaster Victims
2012 Typhoon 4 (June 18-20, 2012)	Heavy rains fell across a wide area from the Okinawa region to the Tohoku region due to the typhoon and seasonal rain front. Following the path of the typhoon, strong winds, high waves, and a storm surge were recorded across a wide area from the Okinawa region to the Tohoku region.	1	79	1	1	54	• Designation as extremely severe disaster
Heavy Rains from June 21 to July 7, 2012 (June 21 - July 7, 2012)	Due to the effects of the seasonal rain front and a low-pressure system in the Yellow Sea forming above the seasonal rain front, from June 21 to July 7, rains were recorded from Western to Eastern Japan, and Northern Japan, with heavy rains in parts of Kyushu and other locations.	2	7	36 (*2)	180 (*2)	1,131 (*2)	• Deployment of government survey team • Invocation of Disaster Relief Act • Invocation of Act Concerning Support for the Reconstruction of Livelihoods of Disaster Victims • Designation as extremely severe disaster

Name of Disaster	Major Events	Human Casualties (persons)		Houses Damaged (houses)			Remarks
		Fatalities/ Missing Persons	Injured	Completely Destroyed	Half Destroyed	Above-floor Flooding	
July 2012 Northern Kyushu July Torrential Rains (July 11-14, 2012)	From July 11 to 14, moist air from the south flowed in toward the seasonal rain front that was stalled near Honshu, and heavy rains were recorded across a wide area from Western to Eastern Japan. Extremely heavy rains fell intermittently with thunder especially in the northern region of Kyushu.	32	27	363 (*3)	1,500 (*3)	3,298 (*3)	• Site inspection by Prime Minister Noda • Deployment of government survey team (twice) • Invocation of Disaster Relief Act • Invocation of Act Concerning Support for the Reconstruction of Livelihoods of Disaster Victims • Designation as extremely severe disaster
Heavy Snows from November 2012 (November 2012-)	Due to the cold, there was a long stretch of low-temperature days in Northern Japan, with a large amount of snow falling mainly on the Japan Sea side. This resulted in record snowfall recorded mainly on the Japan Sea side of Northern Japan, including snowfall with a depth of 566 cm recorded at Sukayu, Aomori Prefecture.	103	1,517	5	7	2	• Cabinet meeting held • Deployment of government survey team • Invocation of Disaster Relief Act
Earthquake epicentered Near Awaji Island (April 13, 2013)	Maximum seismic intensity of Lower 6.	0	34	6	66	-	—
Heavy Rains in 2013 Seasonal Rain Front (Disaster due to torrential rains and destructive storms between June 8 and August 9, 2013)	From June 8 to August 9, the seasonal rain front stalled from Kyushu to the vicinity of Honshu with intermittent bursts of activity. In addition, warm and very moist air surrounding a high-pressure ridge flowed in even after the rainy season ended. During this time, Typhoons 4 and 7 approached Japan, causing heavy rains in various regions.	17	50	73	222	1,845	• Local survey by Prime Minister Abe • Deployment of government survey team (seven times) • Invocation of Disaster Relief Act • Invocation of Act Concerning Support for the Reconstruction of Livelihoods of Disaster Victims • Designation as extremely severe disaster
Heavy Rains from August 23, 2013 (August 23-28, 2013)	Warm, moist air flowed in toward the rain front, creating extremely unstable atmospheric conditions and heavy rains mainly on the Japan Sea side of Eastern Japan, and Western Japan. On August 24, record heavy rains on par with the torrential rains of July 28 were recorded, especially in Shimane Prefecture. Some areas of Hokkaido Prefecture also received heavy rains.	2	4	8	14	288	• Invocation of Disaster Relief Act • Invocation of Act Concerning Support for the Reconstruction of Livelihoods of Disaster Victims • Designation as extremely severe disaster
Tornadoes on September 2 and 4, 2013 (September 2, 4, & 7, 2013)	• On September 2, F2 tornadoes were recorded in Saitama City, Koshigaya City, and Matsubushi Town, Saitama Prefecture, Noda City, Chiba Prefecture, and Bando City, Ibaraki Prefecture. • On September 4, an F0 tornado was recorded in Sukumo City, Kochi Prefecture, an F0 tornado in Aki City, Kochi Prefecture, F1 tornadoes respectively from Kanuma City to Utsunomiya City, Tochigi Prefecture, and from Shioya Town, Shioya District to Yaita City, and F0 tornadoes from Ise City to Obata Town, Mie Prefecture. • On September 7, F0 wind gusts were recorded in Komaki City, Hokkaido Prefecture.	0	67	13	38	0	• Deployment of government survey team (twice) • Invocation of Disaster Relief Act • Invocation of Act Concerning Support for the Reconstruction of Livelihoods of Disaster Victims
Heavy Rains from 2013 Typhoon 18 (September 15-16, 2013)	On September 15, localized intense rains fell in Eastern Japan and Northern Japan. On the 16th, heavy rains fell across a wide area from Shikoku to Hokkaido. Record heavy rains fell especially in Fukui, Shiga, and Kyoto Prefectures. A total of ten F0–F1 tornadoes also occurred.	7	143	48	208	3,011	• Deployment of government survey team (five times) • Invocation of Disaster Relief Act • Invocation of Act Concerning Support for the Reconstruction of Livelihoods of Disaster Victims • Designation as extremely severe disaster
2013 Typhoon 26 & 27 (October 14-16, 2013) (October 24-26, 2013)	Heavy rains fell mainly on the Pacific Ocean side of Eastern Japan and Northern Japan. Driving rains of more than 100 mm per hour fell especially in Oshima-machi, Tokyo Prefecture, with record rainfall of 824 mm recorded in 24 hours.	43	107	86	65	1,524	• Local survey by Prime Minister Abe • Deployment of government survey team (once) • Invocation of Disaster Relief Act • Invocation of Act Concerning Support for the Reconstruction of Livelihoods of Disaster Victims • Designation as extremely severe disaster
Heavy Snows from November 2013 (November 2013 - 26 March 2014)	• Record heavy snowfall was recorded across a wide area from Northern Japan to Kanto-Koshinetsu. • Especially from February 14 to 16, record heavy snows fell, substantially surpassing past snowfall depths mainly in the Kanto-Koshinetsu region, including Kofu (Yamanashi Prefecture) with 114 cm, Chichibu (Saitama Prefecture) with 98 cm, and Maebashi (Gunma Prefecture) with 73 cm of snowfall.	95	1,770	28	40	3	• Establishment of Major Disaster Management Headquarters • Establishment of On-site Disaster Management Headquarters • Site inspection by Prime Minister Abe • Deployment of government survey team (five times) • Invocation of Disaster Relief Act

Name of Disaster	Major Events	Human Casualties (persons)		Houses Damaged (houses)			Remarks
		Fatalities/ Missing Persons	Injured	Completely Destroyed	Half Destroyed	Above-floor Flooding	
2014 Typhoon 8 (July 6-11, 2014)	• Record heavy rains were recorded on Okinawa Island. • Due to the effects of the moist southerly wind surrounding the typhoon and the seasonal rain front, some regions even far from the typhoon received localized driving rains.	3	67	14	3	331	• Deployment of government survey team (three times) • Invocation of Disaster Relief Act • Invocation of Act Concerning Support for the Reconstruction of Livelihoods of Disaster Victims
Torrential Rains of August 2014							
2014 Typhoon 12 & 11 (July 30 - August 11, 2014)	**Typhoon 12** From the night of the 5th, heavy rains were recorded in the Chugoku and Tohoku regions. Especially in Yamaguchi Prefecture, localized driving rains of more than 100 mm per hour were recorded in some places. **Typhoon 11** Heavy rains fell across a wide area from Western Japan to Northern Japan. Especially in Kochi Prefecture, total rainfall from the 7th to the 11th, when the heaviest rains fell, was more than 1,000 mm. Total rainfall from the Shikoku region to the Tokai region was more than 600 mm. Atmospheric conditions were extremely unstable, with extremely strong winds including tornadoes in Tochigi Prefecture and other areas.	6	80	7	7	929	• Deployment of government survey team (twice) • Invocation of Disaster Relief Act • Invocation of Act Concerning Support for the Reconstruction of Livelihoods of Disaster Victims • Designation as extremely severe disaster
Heavy Rains from August 15, 2014 (August 15-26, 2014) *Excludes Hiroshima Landslide on August 20	Extremely intense localized rains with thunder. The amount of rainfall that fell during the 2 days of the 16th and 17th set new records in places such as Fukuchiyama City, Kyoto Prefecture, and Takayama City, Gifu Prefecture, with heavy rains mainly in the Kinki, Hokuriku, and Tokai regions.	8	7	35	129	2,117	• Deployment of government survey team (twice) • Invocation of Disaster Relief Act • Invocation of Act Concerning Support for the Reconstruction of Livelihoods of Disaster Victims • Designation as extremely severe disaster
Hiroshima Landslide Disaster on August 20, 2014 (Disaster in Hiroshima Prefecture due to heavy rains from August 19, 2014)	• Warm, moist air flowed in toward the rain front, and extremely unstable atmospheric conditions were recorded mainly in the Chugoku region and northern Kyushu region. • At 3:30 a.m. on the 20th, driving rains of approx. 120 mm per hour were recorded in Hiroshima Prefecture, and heavy rains, including a new record set for the highest recorded rainfall in a 24-hour period, were recorded.	74	44	133	122	1,301	• Establishment of Major Disaster Management Headquarters • Establishment of On-site Disaster Management Headquarters • Site inspection by Prime Minister Abe • Deployment of government survey team (three times) • Invocation of Disaster Relief Act • Invocation of Act Concerning Support for the Reconstruction of Livelihoods of Disaster Victims • Designation as extremely severe disaster
2014 Eruption of Mt. Ontake (September 27, 2014)	• Volcanic tremors started at 11:41 a.m. on September 27, with an eruption on the same day around 11:52 a.m. • Volcanic smoke descended the southern slope and was recorded for more than 3 km. Therefore, a level 3 volcano warning (mountain access restricted) was issued, with entry within 4 km of the crater restricted. • Many mountain climbers suffered casualties due to this eruption.	63	69	0	0	0	• Establishment of Major Disaster Management Headquarters • Establishment of On-site Disaster Management Headquarters • Deployment of government survey team (twice) • Invocation of Disaster Relief Act
Earthquake with a Seismic Source in Northern Nagano Prefecture (November 22, 2014)	Maximum seismic intensity of Lower 6.	0	46	50	92	0	• Site inspection by Prime Minister Abe • Deployment of government survey team (twice) • Invocation of Disaster Relief Act • Invocation of Act Concerning Support for the Reconstruction of Livelihoods of Disaster Victims • Designation as extremely severe disaster
Heavy Snows from December 2014 (December 2014 - March 2015)	Due to the effects of a strong winter air -pressure pattern as well as a low-pressure system and cold air, heavy snows fell on the mountainous areas of the Japan Sea side from Northern Japan to Eastern Japan.	83	1,029	9	12	5	• Deployment of government survey team (once) • Invocation of Disaster Relief Act
Kuchinoerabu-jima Eruption in 2015 (May 29, 2015)*5	• An explosive eruption occurred at Shingaku at 9:59 am on May 29. • At 10:07 am, the JMA raised the eruption warning level from 3 (entry restricted) to 5 (evacuate). • As a result of this eruption, the lava flow reached as far as the coast, ash shot up to more than 9,000 meters above the crater, and ejecta was scattered all around the mouth of the crater.	0	1	-	-	-	• Installation of government on-site communications office • Deployment of government survey team (once) • Invocation of Disaster Relief Act

*1 Established by a Cabinet meeting decision, and therefore not based on the Disaster Countermeasures Basic Act.
*2 The number of damaged houses in the July 2012 Northern Kyushu Torrential Rains contains some duplications.
*3 The number of damaged houses due to heavy rains from June 21 to July 7, 2012 contains some duplications.
*4 Fatalities from the Great Hanshin-Awaji Earthquake and the Great East Japan Earthquake include earthquake-related fatalities.
*5 Status of the Kuchinoerabu-jima Eruption is as of June 3, 2015.
Source: Cabinet Office

Fig. A-11 Establishment of Extreme Disaster Management Headquarters and Major Disaster Management Headquarters

	Name of Headquarters	Period of Establishment	Manager of Headquarters
1	Heavy Snowfall Major Disaster Management Headquarters	Jan. 29 - May 31, 1963	Minister of State
2	Niigata Earthquake Major Disaster Management Headquarters	Jun. 16 - Oct. 31, 1964	Minister of State
3	1965 Typhoon 23, 24, and 25 Major Disaster Management Headquarters	Sep. 17 - Dec. 17, 1965	Minister of State
4	1966 Typhoon 24 and 26 Major Disaster Management Headquarters	Sep. 26 - Dec. 27, 1966	Minister of State
5	1967 July and August Torrential Rains Major Disaster Management Headquarters	Jul. 9 - Dec. 26, 1967	Minister of State
6	1968 Tokachi-oki Earthquake Major Disaster Management Headquarters	May 16, 1968 - May 2, 1969	Minister of State
7	July 1972 Torrential Rains Major Disaster Management Headquarters	Jul. 8 - Dec. 19, 1972	Minister of State
8	1976 Typhoon 17 Major Disaster Management Headquarters	Sep. 13 - Dec. 10, 1976	Director General of National Land Agency (NLA)
9	1977 Mt. Usu Eruption Major Disaster Management Headquarters	Aug. 11, 1977 - Dec. 4, 1979	Director General of NLA
10	1978 Izu-Oshima-kinkai Earthquake Major Disaster Management Headquarters	Jan. 15 - Aug. 4, 1978	Director General of NLA
11	1978 Miyagi-ken-oki Earthquake Major Disaster Management Headquarters	Jun. 13 - Nov. 28, 1978	Director General of NLA
12	1979 Typhoon 20 Major Disaster Management Headquarters	Oct. 20 - Dec. 4, 1979	Director General of NLA
13	July and August 1982 Torrential Rains Major Disaster Management Headquarters	Jul. 24 - Dec. 24, 1982	Director General of NLA
14	1983 Nihon-kai-chubu Earthquake Major Disaster Management Headquarters	May 26 - Dec. 23, 1983	Director General of NLA
15	July 1983 Torrential Rains Major Disaster Management Headquarters	Jul. 23 - Dec. 23, 1983	Director General of NLA
16	1983 Miyake Island Eruption Major Disaster Management Headquarters	Oct. 4, 1983 - Jun. 5, 1984	Director General of NLA
17	1984 Nagano-ken-seibu Earthquake Major Disaster Management Headquarters	Sep. 16, 1984 - Feb. 19, 1985	Director General of NLA
18	1991 Mt. Unzen Eruption Major Disaster Management Headquarters	Jun. 4, 1991 - Jun. 4, 1996	Director General of NLA
19	1993 Hokkaido-nansei-oki Earthquake Major Disaster Management Headquarters	Jul. 13, 1993 - Mar. 31, 1996	Director General of NLA
20	August 1993 Torrential Rains Major Disaster Management Headquarters	Aug. 9, 1993 - Mar. 15, 1994	Director General of NLA
21	1995 Great Hanshin-Awaji Earthquake Major Disaster Management Headquarters	Jan. 17, 1995 - Apr. 21, 2002	Director General of NLA ↓ Minister of Great Hanshin-Awaji Earthquake Measures ↓ Director General of NLA ↓ Minister of State for Disaster Management
	Great Hanshin-Awaji Earthquake Extreme Disaster Management Headquarters*1	Jan. 17 - Apr. 28, 1995	Prime Minister
22	1997 Diamond Grace Oil Spill Major Disaster Management Headquarters	Jul. 2-11, 1997	Minister of Transport
23	2000 Mt. Usu Eruption Major Disaster Management Headquarters	Mar. 31, 2000 - Jun. 28, 2001*2	Director General of NLA ↓ Minister of State for Disaster Management
24	2000 Miyake Island Eruption and Niijima and Kozushima Island Earthquake Emergency Management Headquarters	Aug. 29, 2000 - May 15, 2002	Director General of NLA ↓ Minister of State for Disaster Management
	2000 Miyake Island Eruption Major Disaster Management Headquarters*3	May 16, 2002 - Mar. 31, 2005	
25	2004 Typhoon 23 Major Disaster Management Headquarters	Oct. 21, 2004 - Mar. 31, 2007	Minister of State for Disaster Management
26	2004 Mid Niigata Prefecture Earthquake Major Disaster Management Headquarters	Oct. 24, 2004 - Mar. 31, 2008	Minister of State for Disaster Management
27	2011 Great East Japan Earthquake Extreme Disaster Management Headquarters	Mar. 11, 2011 -	Prime Minister
28	2011 Typhoon 12 Major Disaster Management Headquarters	Sep. 4, 2011 - Dec. 26, 2014	Minister of State for Disaster Management
29	2014 Torrential Rains Major Disaster Management Headquarters	Feb. 18 - May 30, 2014	Minister of State for Disaster Management
30	August 2014 Torrential Rains Major Disaster Management Headquarters	Aug. 22, 2014 - Jan. 9, 2015	Minister of State for Disaster Management
31	2014 Mt. Ontake Eruption Major Disaster Management Headquarters	Sep. 28, 2014 -	Minister of State for Disaster Management

Notes: The above are Extreme Disaster Management Headquarters and Major Disaster Management Headquarters based on the Disaster Countermeasures Basic Act (Act No. 223 of 1961).
*1 Established within the Cabinet Office based on a Cabinet meeting resolution, not based on the Disaster Countermeasures Basic Act.
*2 Based on reports that the eruption had subsided. Upon dissolution of the Headquarters, the Mt. Usu Eruption Disaster Restoration and Recovery Measures Council was established.
*3 The names of Niijima Island and Kozushima Island were changed with the conclusion of response measures.
Source: Cabinet Office

Fig. A-12 Deployment of Government Survey Teams (Since the Great Hanshin-Awaji Earthquake)

Year	Name of Disaster	Deployment Dates	Prefecture Surveyed	Team Leader
1995	1995 Hyogo-ken-Nanbu Earthquake (Great Hanshin-Awaji Earthquake)	Jan. 17-18	Hyogo	Director General of National Land Agency (NLA)
1997	July 1997 Torrential Rains from Seasonal Rain Front	Jul. 11-12	Kagoshima, Kumamoto	Director General of NLA
1998	End of August 1998 Torrential Rains	Aug. 28	Tochigi, Fukushima	Parliamentary Vice-Minister of National Land
1999	Heavy Rains Starting June 23, 1999	Jun. 30 - Jul. 1	Hiroshima	Director General of NLA
	Heavy Rains from 1999 Typhoon 18 and Rain Front	Sep. 25	Kumamoto	Director General of NLA
2000	2000 Eruption of Mt. Usu	Mar. 31 - Apr. 1	Hokkaido	Director General of NLA
	2000 Tottori-seibu Earthquake	Oct. 7	Tottori	Director General of NLA
2001	2001 Geiyo Earthquake	Mar. 29	Hiroshima, Ehime	Parliamentary Vice-Minister of Cabinet Office
2003	July Seasonal Rain Front Torrential Rains	Jul. 22	Kumamoto, Kagoshima	Minister of State for Disaster Management
	Northern Miyagi Earthquake	Jul. 27	Miyagi	Minister of State for Disaster Management
	2003 Tokachi-oki Earthquake	Sep. 26-27	Hokkaido	State-Minister of the Cabinet Office
2004	July 2004 Niigata and Fukushima Torrential Rains	Jul. 14	Niigata	Minister of State for Disaster Management
		Jul. 15	Fukushima	State-Minister of the Cabinet Office
	July 2004 Fukui Torrential Rains	Jul. 20	Fukui	State-Minister of the Cabinet Office
	2004 Typhoon 21	Oct. 1	Mie	Minister of State for Disaster Management
	2004 Typhoon 22	Oct. 14	Shizuoka	State Minister of the Cabinet Office
	2004 Typhoon 23	Oct. 22	Hyogo, Kyoto	Minister of State for Disaster Management
		Oct. 22	Kagawa, Okayama	State-Minister of the Cabinet Office
	2004 Mid Niigata Prefecture Earthquake	Oct. 24	Niigata	Minister of State for Disaster Management
2005	Fukuoka-ken-Seihou-oki Earthquake	Mar. 20-21	Fukuoka	State-Minister of the Cabinet Office
	Miyagi-ken-oki Earthquake	Aug. 16-17	Miyagi	Parliamentary Vice-Minister of Cabinet Office
	2005 Typhoon 14	Sep. 9	Miyazaki	Minister of State for Disaster Management
2006	Heavy Rains from Seasonal Rain Front Starting July 4	Jul. 21	Nagano	Minister of State for Disaster Management
		Jul. 25	Kagoshima	State-Minister of the Cabinet Office
	2006 Typhoon 13	Sep. 19	Miyazaki	Minister of State for Disaster Management
	Tornado in Saroma, Hokkaido	Nov. 7-8	Hokkaido	Minister of State for Disaster Management
2007	2007 Noto-hanto Earthquake	Mar. 25-26	Ishikawa	Minister of State for Disaster Management
	Heavy Rains from Typhoon 4 and Seasonal Rain Front	Jul. 13	Kumamoto	State-Minister of the Cabinet Office
	2007 Niigata Earthquake	Jul. 16	Niigata	Minister of State for Disaster Management
2008	2008 Iwate-Miyagi Inland Earthquake	Jun. 14-15	Iwate, Miyagi	Minister of State for Disaster Management
	Earthquake Epicentered Along Northern Coast of Iwate Prefecture	Jul. 24	Iwate, Aomori	Minister of State for Disaster Management
	End of August 2008 Torrential Rains	Aug. 29	Aichi	Minister of State for Disaster Management
2009	July 2009 Torrential Rains in Chubu and Northern Kyushu	Jul. 22	Yamaguchi	Minister of State for Disaster Management
		Jul. 27	Fukuoka	Minister of State for Disaster Management
	2009 Typhoon 9	Aug. 11	Hyogo, Okayama	Minister of State for Disaster Management
2011	2011 Tohoku Earthquake and Tsunami (Great East Japan Earthquake)	Mar. 11	Miyagi	State-Minister of the Cabinet Office
		Mar. 12	Iwate	State-Minister of the Cabinet Office
		Mar. 12	Fukushima	Parliamentary Vice-Minister of Finance
	July 2011 Niigata and Fukushima Torrential Rains	Jul. 31	Niigata, Fukushima	Minister of State for Disaster Management
		Aug. 2	Fukushima	State-Minister of the Cabinet Office
	2011 Typhoon 12	Sep. 4-9	Wakayama, Nara, Mie	Parliamentary Vice-Minister of Cabinet Office
		Sep. 6	Nara	Minister of Land, Infrastructure, Transport and Tourism
2012	May 2012 Gust	May 7	Ibaraki, Tochigi	State-Minister of the Cabinet Office
	July 2012 Torrential Rains in Northern Kyushu	Jul. 13-14	Kumamoto, Oita	Minister of State for Disaster Management
		Jul. 21-22	Fukuoka, Oita, Kagoshima	Minister of State for Disaster Management

Year	Name of Disaster	Deployment Dates	Prefecture Surveyed	Team Leader
2013	Heavy Snowfall Starting End of November 2013	Mar. 4-5	Hokkaido	Parliamentary Vice-Minister of Cabinet Office, Special Advisor to the Prime Minister
	Heavy Rains with Seasonal Rain Front	Jul. 29-30	Shimane, Yamaguchi	State-Minister of the Cabinet Office
		Aug. 3	Yamagata, Fukushima	Parliamentary Vice-Minister of Cabinet Office
		Aug. 3	Niigata	Parliamentary Vice-Minister of Agriculture, Forestry and Fisheries
		Aug. 3	Iwate, Miyagi	Parliamentary Vice-Minister of Land, Infrastructure, Transport and Tourism
		Aug. 9	Shimane, Yamaguchi	Minister of State for Disaster Management
		Aug. 13	Akita	State-Minister of the Cabinet Office
		Aug. 13	Iwate, Akita	Parliamentary Vice-Minister of Cabinet Office
	Tornadoes on September 2 and 4	Sep. 3	Saitama	Parliamentary Vice-Minister of Cabinet Office
		Sep. 4	Chiba	Parliamentary Vice-Minister of Cabinet Office
	Heavy Rains from Typhoon 18	Sep. 17	Saitama	Parliamentary Vice-Minister of Cabinet Office
		Sep. 18	Kyoto	Acting Minister of State for Disaster Management
		Sep. 18	Shiga, Fukui	State-Minister of the Cabinet Office
		Sep. 19	Mie	Parliamentary Vice-Minister of Cabinet Office
		Sep. 19-20	Aomori, Iwate, Akita	Special Advisor to the Prime Minister
	Typhoon 26	Oct. 19	Oshimacho (Tokyo)	Minister of State for Disaster Management
2014	Heavy Winter Snowfall	Feb. 6	Akita	State-Minister of the Cabinet Office
		Feb. 17	Yamanashi	Parliamentary Vice-Minister of Cabinet Office
		Mar. 7	Tokyo, Yamanashi	State-Minister of the Cabinet Office, State-Minister of the Environment
		Mar. 1	Saitama	State-Minister of the Cabinet Office
		Mar. 15	Nagano, Gunma	State-Minister of the Cabinet Office
	Typhoon 8 and Seasonal Rain Front	Jul. 11	Nagano	Parliamentary Vice-Minister of Cabinet Office
		Jul. 12	Yamagata	Parliamentary Vice-Minister of Cabinet Office
		Jul. 14-15	Okinawa	Parliamentary Vice-Minister of Cabinet Office
	Typhoon 12 & 11	Aug. 11-13	Tokushima, Kouchi	State-Minister of the Cabinet Office
		Aug. 11	Tochigi	Parliamentary Vice-Minister of Cabinet Office
	Heavy Rains Starting August 15	Aug. 18-19	Hyogo, Kyoto	State-Minister of the Cabinet Office
		Aug. 19	Gifu	Parliamentary Vice-Minister of Cabinet Office
	Heavy Rains in Hiroshima Prefecture Starting August 19	Aug. 20-21	Hiroshima	Minister of State for Disaster Management
		Sep. 6	Hiroshima	Minister of State for Disaster Management
		Sep. 17	Hiroshima	Parliamentary Vice-Minister of Cabinet Office
	Mt. Ontake Eruption	Sep. 28	Nagano	State-Minister of the Cabinet Office
		Oct. 11	Nagano	Minister of State for Disaster Management
	Earthquake Epicentered in Northern Nagano Prefecture	Nov. 23	Nagano	Parliamentary Vice-Minister of Cabinet Office
		Dec. 2	Nagano	Minister of State for Disaster Management
	Heavy Winter Snowfall	Dec. 9	Tokushima	Minister of State for Disaster Management
2015	Eruption of Kuchinoerabu-jima	May 29-30	Kagoshima	State-Minister of the Cabinet Office

Source: Cabinet Office

Fig. A-13 Invocation History of the Disaster Relief Act (Since the Great Hanshin-Awaji Earthqauke)

As of March 31, 2015

Year	Name of Disaster	Date of Invocation	Prefecture	No. of Municipalities Invoking the Act
1995	1995 Hyogo-ken-Nanbu Earthquake (Great Hanshin-Awaji Earthquake)	Jan. 17	Hyogo	20
			Osaka	5
	Niigata-ken-Hokubu Earthquake	Apr.1	Niigata	1
	July 1995 Seasonal Rain Front Torrential Rains	Jul.11	Niigata	2
		Jul. 11/12	Nagano	2
1997	July 1997 Seasonal Rain Front Torrential Rains	Jul. 1	Kagoshima	1
	1997 Typhoon 19	Sep.16	Oita	1
			Miyazaki	4
			Kagoshima	1
1998	Early August 1998 Torrential Rains	Aug. 4	Niigata	3
	End of August 1998 Torrential Rains	Aug. 27	Fukushima	3
		Aug. 28	Ibaraki	1
		Aug. 27/30	Tochigi	4
		Aug. 28	Saitama	1
		Aug. 3	Shizuoka	1
	1998 Typhoon 5	Sep. 16	Saitama	1
	1998 Typhoon 7	Sep. 22	Fukui	1
			Hyogo	1
			Nara	1
	Heavy Rains of September 23–25, 1998	Sep. 25	Kochi	6
	1998 Typhoon 10	Oct. 17	Okayama	4
1999	Heavy Rains Starting June 23, 1999	Jun. 29	Hiroshima	2
			Fukuoka	1
	Torrential Rains in Tsushima Region on August 27–28, 1999	Aug. 27	Nagasaki	1
	Heavy Rains from 1999 Typhoon 18 and Rain Front	Sep. 24	Yamaguchi	9
			Fukuoka	1
			Kumamoto	9
	Tokaimura Criticality Accident	Sep. 3	Ibaraki	2
	Heavy Rains Starting October 27, 1999	Oct. 28	Aomori	1
			Iwate	1
2000	2000 Eruption of Mt. Usu	Mar. 29	Hokkaido	3
	2000 Miyake Is. Eruption and Niijima and Kozushima Is. Earthquake	Jun. 26	Tokyo	1
	2000 Niijima and Kozushima Is. Earthquake	Jul. 1,15	Tokyo	2
	2000 Typhoon 3	Jul. 8	Saitama	1
	Heavy Rains from 2000 Autumn Rain Front and Typhoon 14	Sep. 11	Aichi	21
			Gifu	1
	2000 Tottori-ken-Seibu Earthquake	Oct. 6	Tottori	6
			Shimane	2
2001	2001 Geiyo Earthquake	Mar. 24	Hiroshima	13
			Ehime	1
	Heavy Rains of September 6, 2001	Sep. 6	Kochi	2
	2001 Typhoon 16	Sep. 8/11	Okinawa	2
2002	2002 Typhoon 6	Jul. 1	Iwate	1
		Jul. 11	Gifu	1
2003	July Seasonal Rain Front Torrential Rains	Jul. 19	Fukuoka	5
		Jul. 2	Kumamoto	1
	Northern Miyagi Earthquake	Jul. 26	Miyagi	5
	2003 Typhoon 10	Aug. 9	Hokkaido	3
2004	July 2004 Niigata and Fukushima Torrential Rains	Jul. 13	Niigata	7
	July 2004 Fukui Torrential Rains	Jul. 18	Fukui	5
	2004 Typhoon 10, Typhoon 11, and Related Heavy Rains	Jul. 31	Tokushima	2
	2004 Typhoon 15 and Heavy Rains from Rain Front	Aug. 17	Ehime	1
			Kochi	1

Year	Name of Disaster	Date of Invocation	Prefecture	No. of Municipalities Invoking the Act
2004	2004 Typhoon 16	Aug. 3	Okayama	9
			Kagawa	13
			Ehime	1
			Miyazaki	2
	2004 Typhoon 18	Sep. 7	Hiroshima	2
	2004 Typhoon 21	Sep. 29	Mie	5
			Ehime	4
			Hyogo	2
	2004 Typhoon 22	Oct. 9	Shizuoka	1
	2004 Typhoon 23	Oct. 2	Miyazaki	1
			Tokushima	4
			Kagawa	9
			Hyogo	18
			Gifu	1
			Kyoto	7
	2004 Mid Niigata Prefecture Earthquake	Oct. 23	Niigata	54
2005	Fukuoka-ken-Seihou-oki Earthquake	Mar. 2	Fukuoka	1
	2005 Typhoon 14	Sep. 4	Tokyo	2
		Sep. 6	Yamaguchi	2
			Kochi	1
			Miyazaki	13
		Sep. 4	Kagoshima	1
	2006 Heavy Rains	Jan. 6, Jan. 8, Jan. 11, Jan. 13	Niigata	11
		Jan. 7, Jan. 12	Nagano	8
2006	June 2006 Extended Rain Landslide Disaster	Jun. 15	Okinawa	2
	Heavy Rains from Seasonal Rain Front Starting July 4	Jul. 19	Nagano	3
		Jul. 22	Kagoshima	6
			Miyazaki	1
	2006 Typhoon 13	Sep. 17	Miyazaki	1
	Tornado in Saroma, Hokkaido	Nov. 7	Hokkaido	1
2007	2007 Noto-hanto Earthquake	Mar. 25	Ishikawa	7
	Heavy Rains from Typhoon 4 and Seasonal Rain Front	Jul. 6	Kumamoto	1
	2007 Niigata Earthquake	Jul. 16	Niigata	10
	2007 Typhoon 5	Aug. 2	Miyazaki	1
	2007 Heavy Rains from Typhoon 11 and Rain Front	Sep. 17	Akita	2
2008	Low-Pressure System from February 23 to 24	Feb. 24	Toyama	1
	2008 Iwate-Miyagi Inland Earthquake	Jun. 14	Iwate	5
			Miyagi	2
	Heavy Rains Starting July 28	Jul. 28	Toyama	1
			Ishikawa	1
	End of August 2008 Torrential Rains	Aug. 28	Aichi	2
2009	July 2009 Torrential Rains in Chubu and Northern Kyushu	Jul. 21	Yamaguchi	2
		Jul. 24	Fukuoka	1
	2009 Typhoon 9	Aug. 9	Hyogo	3
			Okayama	1
2010	2010 Heavy Rains from Seasonal Rain Front	Jul. 14	Hiroshima	2
		Jul. 15	Yamaguchi	1
		Jul. 16	Hiroshima	1
	Heavy Rains in Amami Region, Kagoshima Prefecture	Oct. 20	Kagoshima	3
2011	Heavy Snowfall Starting November 2010	Jan. 27	Niigata	4
		Jan. 30	Niigata	2
		Jan. 31	Niigata	3
	Mt. Kirishima (Shinmoedake) Eruption	Jan. 30	Miyazaki	1
		Feb. 10	Miyazaki	1

Year	Name of Disaster	Date of Invocation	Prefecture	No. of Municipalities Invoking the Act
2011	2011 Tohoku Earthquake and Tsunami (Great East Japan Earthquake)	Mar. 11	Aomori	2
			Iwate	34
			Miyagi	35
			Fukushima	59
			Ibaraki	37
			Tochigi	15
			Chiba	8
			Tokyo	47
	July 2011 Niigata and Fukushima Torrential Rains	Jul. 29	Niigata	15
			Fukushima	9
	2011 Typhoon 12	Sep. 2	Mie	3
			Nara	10
			Wakayama	5
			Okayama	1
		Sep. 3	Tottori	2
	2011 Typhoon 15	Sep. 21	Aomori	1
			Fukushima	1
2012	Heavy Winter Snowfall	Jan. 14	Niigata	2
		Jan. 28	Niigata	4
		Jan.31	Niigata	1
		Feb. 1	Aomori	2
			Nagano	5
		Feb. 3	Niigata	4
		Feb. 4	Niigata	1
	May 2012 Gust	May 6	Ibaraki	4
			Tochigi	3
	Heavy Rains Starting July 3	Jul. 3	Fukuoka	1
			Oita	2
	Heavy Rains from Seasonal Rain Front Starting July 11	Jul. 12	Kumamoto	5
			Oita	1
		Jul. 13	Fukuoka	7
	Heavy Rains Starting August 13	Aug. 14	Kyoto	1
	2012 Typhoon 16	Sep. 15	Kagoshima	1
	November 27 Destructive Snow Storm	Nov. 27	Hokkaido	7
2013	Heavy Winter Snowfall	Feb. 22	Niigata	8
		Feb. 25	Niigata	1
			Yamagata	1
		Feb. 28	Yamagata	1
	Snow Melt Landslide	May 1	Yamagata	1
	Heavy Rains Starting July 22	Jul. 22	Yamagata	4
	Heavy Rains Starting July 28	Jul. 28	Yamaguchi	3
			Shimane	1
	Heavy Rains Starting August 9	Aug. 9	Akita	3
			Iwate	1
	Heavy Rains Starting August 23	Aug. 23	Shimane	1
	September 2 Gust	Sep. 2	Saitama	2
	2013 Typhoon 18	Sep. 16	Saitama	1
			Kyoto	2
	2013 Typhoon 26	Oct. 16	Tokyo	1
			Chiba	1

Year	Name of Disaster	Date of Invocation	Prefecture	No. of Municipalities Invoking the Act
2014	Heavy Winter Snowfall	Feb. 15	Nagano	4
		Feb. 15	Gunma	1
		Feb. 15	Yamanashi	16
		Feb. 17	Gunma	7
		Feb. 17	Saitama	7
		Feb. 18	Gunma	1
		Feb. 18	Yamanashi	3
		Feb. 21	Yamanashi	2
	Heavy Rains from 2014 Typhoon 8	Jul. 9	Nagano	1
			Yamagata	1
	2014 Typhoon 12	Aug. 3	Kochi	1
	2014 Typhoon 11	Aug. 9	Kochi	3
			Tokushima	1
	Heavy Rains Starting August 15, 2014	Aug. 17	Kyoto	1
			Hyogo	1
	Heavy Rains Starting August 19, 2014	Aug. 20	Hiroshima	1
	Damage Related to Mt. Ontake Eruption	Sep. 27	Nagano	2
	Nagano Prefecture Kamishiro Fault Earthquake	Nov. 22	Nagano	3
	Heavy Snowfall Starting December 5	Dec. 8	Tokushima	3
2015	Eruption of Kuchinoerabu-jima	May 29	Kagoshima	1

Source: Cabinet Office

Fig. A-14 Actual Designations of Extremely Severe Disasters in the Past Five Years

Title of Legislation	Disaster Name	Main Disaster-Affected Regions	Main Applicable Measures										Other Applicable Measures
			Art. 3, 4	Art. 5	Art. 6	Art. 7	Art. 11.2	Art. 12, 13	Art. 16	Art. 17	Art. 19	Art. 24	
Ordinance on the Extremely Severe Disaster Designation and Identification of Essential Response Measures for the Tsunami of February 28, 2010	Tsunami of Feb. 28, 2010	Iwate, Miyagi Pref.				○ *2							
Ordinance on the Extremely Severe Disaster Designation and Identification of Essential Response Measures for Torrential Rains from June 11 to July 19, 2010	Seasonal Rain Front	Gifu, Hiroshima and Saga Pref.		○	○							○	
Ordinance on the Extremely Severe Disaster Designation and Identification of Essential Response Measures for the Districts of Yamakita-machi, Ashigara Kami-gun, Kanagawa Prefecture, and Oyama-cho, Sunto-gun, Shizuoka Prefecture Due to Rainstorms and Torrential Rains from September 4 to 9, 2010	Typhoon 9	Kanagawa and Shizuoka Pref.		●								●	
Ordinance on the Extremely Severe Disaster Designation and Identification of Essential Response Measures for Amami City, Kagoshima Prefecture Due to Torrential Rains from October 18 to 25, 2010	Torrential Rains	Kagoshima Pre.	●	●								●	
Ordinance on the Extremely Severe Disaster Designation and Identification of Essential Response Measures for the Great East Japan Earthquake	Great East Japan Earthquake	Aomori, Iwate, Miyagi, Fukushima, Ibaraki, Tochigi, Chiba, Niigata and Nagano Pref.	○	○	○	○ *2	○	○	○	○	○	○	○
Ordinance on the Extremely Severe Disaster Designation and Identification of Essential Response Measures for Specified Regions in 2010	2010 Regional Disasters	—	●	●								●	
Ordinance on the Extremely Severe Disaster Designation and Identification of Essential Response Measures for Aki City, Kochi Prefecture Due to Rainstorms from July 17 to 20, 2011	Typhoon 6	Mie, Wakayama and Kochi Pref.	●	●								●	
Ordinance on the Extremely Severe Disaster Designation and Identification of Essential Response Measures for Torrential Rains from July 24 to August 1, 2011	July 2011 Niigata/ Fukushima Torrential Rains	Niigata and Fukushima Pref.	○	○				●	○		○	○	
Ordinance on the Extremely Severe Disaster Designation and Identification of Essential Response Measures for Rainstorms and Torrential Rains from August 29 to September 7, 2011	Typhoon 12	Mie, Nara and Wakayama Pref.	○	○	○			●	○	○	○	○	
Ordinance on the Extremely Severe Disaster Designation and Identification of Essential Response Measures for Rainstorms and Torrential Rains from September 15 to 23, 2011	Typhoon 15	Fukushima, Gifu and Hyogo Pref.		○	○							○	
Ordinance on the Extremely Severe Disaster Designation and Identification of Essential Response Measures for Specified Regions in 2011	2011 Regional Disasters	—	●	●								●	
Ordinance on the Extremely Severe Disaster Designation and Identification of Essential Response Measures for Torrential Rains and Rainstorms from June 8 to July 23, 2011	Seasonal Rain Front/Typhoon 4	Fukuoka, Kumamoto and Oita Pref.	○	○	○			●	○	○	○	○	
Ordinance on the Extremely Severe Disaster Designation and Identification of Essential Response Measures for Specified Regions in 2012	2012 Regional Disasters	—	●	●								●	
Ordinance on the Extremely Severe Disaster Designation and Identification of Essential Response Measures for Torrential Rains and Rainstorms from June 8 to August 9, 2013	Seasonal Rain Front / Typhoon 4 / Typhoon 7	Iwate, Yamagata, Shimane and Yamaguchi Pref.	●	○	○							○ *1	
Ordinance on the Extremely Severe Disaster Designation and Identification of Essential Response Measures for the Districts of Gotsu City and Onan-cho, Ochi-gun, Shimane Prefecture Due to Heavy Rains from August 23 to 25, 2013	Torrential Rains	Shimane Pref.	●	●								●	

Title of Legislation	Disaster Name	Main Disaster-Affected Regions	Main Applicable Measures										Other Applicable Measures
			Art. 3, 4	Art. 5	Art. 6	Art. 7	Art. 11.2	Art. 12, 13	Art. 16	Art. 17	Art. 19	Art. 24	
Ordinance on the Extremely Severe Disaster Designation and Identification of Essential Response Measures for Rainstorms and Torrential Rains from September 15 to 17, 2013	Typhoon 18	Fukui, Shiga and Kyoto Pref.	●	○	○							○	
Ordinance on the Extremely Severe Disaster Designation and Identification of Essential Response Measures for the District of Oshima-machi, Tokyo Prefecture Due to Rainstorms on October 15 and 16, 2013	Typhoon 26	Tokyo	●	●				●				●	
Ordinance on the Extremely Severe Disaster Designation and Identification of Essential Response Measures for Specified Regions in 2013	2013 Regional Disasters	—	●	●	●			●				●	
Ordinance on the Extremely Severe Disaster Designation and Identification of Essential Response Measures for the Districts of Nagiso-machi, Kiso-gun, Nagano Prefecture, and Shiiba-son, Higashi Usuki-gun, Miyazaki Prefecture Due to Rainstorms and Torrential Rains on July 9 and 10, 2014	Seasonal Rain Front/Typhoon 8	Nagano and Miyazaki Pref.		●								●	
Ordinance on the Extremely Severe Disaster Designation and Identification of Essential Response Measures for Rainstorms and Heavy Rains from July 30 to August 25, 2014	Torrential Rains Caused by Typhoon 11/ Typhoon 12/ Seasonal Rain Front	Hokkaido, Kyoto, Hyogo, Osaka, Nara, Hiroshima, Tokushima, Ehime, and Kochi Pref.	○	○	○				○	○	○	○	
Ordinance on the Extremely Severe Disaster Designation and Identification of Essential Response Measures for the Districts of Sumoto City and Awaji City, Hyogo Prefecture Due to Rainstorms on October 13 and 14, 2014	Typhoon 19	Hyogo Pref.		●								●	
Ordinance on the Extremely Severe Disaster Designation and Identification of Essential Response Measures for the Districts of Ikeda-cho and Otari-mura, Kitaazumi-gun, Nagano Prefecture Due to the Earthquake of November 22, 2014	Earthquake of Nov. 22, 2014	Nagano Pref.	●	●								●	
Ordinance on the Extremely Severe Disaster Designation and Identification of Essential Response Measures for Specified Regions in 2014	2014 Regional Disasters	—	●	●								●	
Ordinance on the Extremely Severe Disaster Designation and Identification of Essential Response Measures for the District of Miyake-mura, Tokyo Prefecture Due to Volcanic Phenomena from 2000 to 2014*3	Miyake Island Volcanic Phenomena	Miyakemura, Tokyo	●	●			●					●	

○: Indicates a national disaster. ●: Indicates a regional disaster.
National Disasters: Region is not specified, the disaster itself is specified
Regional Disasters: Disaster is specified at the municipal level
*1 Public works facilities were considered as regional disaster
*2 Limited to portions concerning Item No. 3
*3 The eruption started in 2000 and was designated an Extreme Regional Disaster in March 2003, but as the disaster continued, the disaster period was extended each year

The main applicable measures are the measures listed below prescribed in the Act on Special Financial Support to Deal with Extremely Severe Disasters:
Art. 3, 4: Special financial support for disaster recovery projects for public works facilities
Art. 5: Special measures on subsidies for disaster recovery projects for agricultural land
Art. 6: Special cases of subsidies for disaster recovery projects for agricultural, forestry, and fisheries shared-used facilities
Art. 7.3: Special financial support for disaster recovery projects for plant and animal aquaculture facilities
Art. 11.2: Subsidies for disaster recovery projects for forests
Art. 12, 13: Special subsidies for small and medium-sized enterprises
Art 16.: Subsidies for disaster recovery projects for public social and educational facilities
Art. 17: Subsidies for disaster recovery projects for private school facilities
Art. 19: Special cases of cost coverage for projects implemented by municipalities to prevent infectious diseases
Art. 24: Inclusion of funds for the redemption of principal and interest related to small disaster bonds in the standard budget request

"Other applicable measures" refers to the following measures prescribed in the Act on Special Financial Support to Deal with Extremely Severe Disasters:
Art. 8: Application of interim measures related to financing for agricultural, forestry, and fishery operators who are victims of natural disasters
Art. 9: Subsidies for projects to remove deposited earth and sand conducted by forestry associations
Art. 10: Subsidies for projects to remove floodwater conducted by land improvement districts
Art. 11: Subsidies for construction expenses for shared-use small fishing boats
Art. 14: Subsidies for disaster reconstruction projects for facilities including business cooperatives
Art. 20: Special cases of government loans based on the Act for the Welfare of Fatherless Families and Widows
Art. 22: Special cases of subsidies for public housing construction projects for victims
Art. 25: Special cases of paying job seeker benefits based on the Employment Insurance Act

15-1: February 2014 Heavy Snowfall

(1) Damage

In February 2014, low-pressure systems moved across Japan's southern coast and dropped heavy snow across a wide area along the Pacific Coast on two occasions, in early February and then again in mid-February. From February 14 to 16 in particular, the Kanto-Koshin region received record snowfall that substantially surpassed the previous record for greatest snow depth.

This disaster caused snow-removal operation accidents, largely related to the clearing of snow from roofs, which resulted in 26 fatalities and 701 casualties. Damage to houses included 16 houses completely destroyed, 46 houses half destroyed, and 585 houses partially damaged. The heavy snow that began to fall on February 14 also cut off more than 6,000 households in some regions of Yamanashi and Nagano prefectures and elsewhere, and caused many vehicles to become stuck in the snow.

(2) Response from Government Ministries and Agencies

On February 6, the government sent a survey team headed by a State-Minister of Cabinet Office to Akita Prefecture to survey the damage and local issues caused by the heavy snow.

In the heavy snow that started falling February 14, the government held an Inter-Agency Disaster Alert Meeting before the snow falls. The Minister of State for Disaster Management called on the public to refrain from nonessential travel and to return home earlier than usual, and confirmed with the relevant ministries and agencies that the snow-removal operational structure was in place and that all possible preparations were being taken to manage traffic hazards as well as other matters. Based on this, the relevant ministries and agencies conducted activities including snow removal, rescue operations, and the transport of goods. In addition, an Inter-Agency Disaster Management Meeting was held on the 16th to confirm the status of the response. On the 17th, a government survey team headed by the Parliamentary Vice-Minister of Cabinet Office was deployed to Yamanashi Prefecture, and disaster management meetings attended by the relevant ministries and agencies were held twice to coordinate government support.

Then on the 18th, in light of the situation in local areas including villages that had been cut off for more than three days, the Prime Minister ordered the establishment of the 2014 Heavy Snowfall Major Disaster Management Headquarters, headed by the Minister of State for Disaster Management, based on the Disaster Countermeasures Basic Act. In addition, the On-site Major Disaster Management Headquarters, headed by the Parliamentary Vice-Minister of Cabinet Office, was established in Yamanashi Prefecture.

In conjunction with this, National On-site Disaster Management Offices were set up in Gunma Prefecture and Saitama Prefecture to coordinate emergency response countermeasures.

Based on requests for disaster deployment from the prefectures of Miyagi, Fukushima, Gunma, Saitama, Tokyo, Yamanashi, Nagano, and Shizuoka, a total of some 5,060 Self-Defense Forces personnel (number of people actually mobilized on the ground) conducted rescue operations and transported supplies. A total of some 420 TEC-FORCE members and some 230 snowplows from the Ministry of Land, Infrastructure, Transport and Tourism were also dispatched each day to conduct support activities including snow-removal operations.

The Disaster Relief Act was invoked for Annaka City; Fujioka City; Ueno Town, Tano District; Kanna Town, Tano District; Shimonita Town, Kanra District; Nanmoku Town, Kanra District; Takayama Village, Agatsuma District; Higashiagatsuma Town, Agatsuma District; and Numata City in Gunma Prefecture; China City; Karuizawa Town, Kitasaku District; Fujimi Town, Suwa District; and Miyota Town, Kitasaku District in Nagano Prefecture; Kofu City; Fujiyoshida City; Tsuru City; Otsuki City; Nirasaki City; Fuefuki City; Uenohara City; Ichikawamisato Town, Nishiyatsushiro District; Hayakawa Town, Minamikoma District; Minobu Town, Minamikoma District; Oshino Village, Minamitsuru District; Yamanakako Village, Minamitsuru District; Narusawa Village, Minamitsuru District; Fujikawaguchiko Town, Minamitsuru District; Kosuge Village, Kitatsuru District; Tabayama Village, Kitatsuru District; Hokuto City; Koshu City; Nishikatsura Town, Minamitsuru District; Minami-Alps City; and Doshi Village, Minamitsuru District in Yamanashi Prefecture; and Chichibu City; Hanno City; Yokoze Town, Chichibu District; Minano Town, Chichibu District; Nagatoro Town, Chichibu District; Ogano Town, Chichibu District; and Kamikawa Town, Kodama District in Saitama Prefecture.

15-2: 2014 Typhoon No. 8

(1) Damage

Typhoon 8, which formed at 3:00 a.m. on July 4, 2014 in the vicinity of the Mariana Islands, headed north between Okinawa Island and Miyako Island on the 8th while maintaining its large size and very strong strength. It subsequently switched to a more easterly course over the sea west of Kyushu, making landfall before 7:00 a.m. on July 10 near Akune City, Kagoshima Prefecture. Typhoon 8 followed the southern coast of Honshu toward the east and was downgraded to an extratropical cyclone in the sea off of Fukushima Prefecture at 9:00 a.m. on July 11. In addition, the seasonal rain front gradually moved northward from Western Japan to Northern Japan from the 6th to the 11th.

During this time, record heavy rains were observed in the Okinawa Island region, and even regions far away from the typhoon experienced intense localized rainfall due to the effects of the humid, southerly winds around the typhoon and the seasonal rain front. As the typhoon approached land, high winds were recorded mainly in Okinawa, Amami, and southern Kyushu, with violent winds recorded in some areas of the Okinawa region.

With the approach of Typhoon 8, the Japan Meteorological Agency issued an emergency warning and its highest-level warning for high winds, high waves, high tides, and heavy rains for the Miyako Island and Okinawa Island regions. Evacuation orders were also issued for a combined 1,300 households, comprised of more than 4,100 persons, in Yamagata, Niigata, and Gifu prefectures.

Typhoon 8 and the seasonal rain front caused damage including sediment disasters, flood damage, and river flooding. A total of three fatalities were reported in Ehime, Nagano, and Fukushima prefectures, including one death from a sediment disaster in Nagano Prefecture. Above-floor and below-floor level flooding of houses was reported in various regions, with a combined total of more than 1,000 houses suffering flood damage in Okinawa, Niigata, and Yamagata prefectures. Other damage to houses included damage from sediment disasters. Power outages, disrupted telephone service, damage to water service, and transportation blockages, including suspended train service and canceled flights and ferry service, were also reported, with damage in Okinawa Prefecture including seawall damage and destruction.

(2) Response from Government Ministries and Agencies

On July 7, the Prime Minister instructed the relevant ministries and agencies to (1) provide citizens with accurate and timely information on heavy rains, windstorms, and high waves, (2) take all possible prior countermeasures including support for evacuating residents through close cooperation among the relevant ministries and agencies, and (3) use the full power of the government to take disaster response measures when damaged was sustained.

On the same day, an Inter-Agency Disaster Alert Meeting attended by the Chief Cabinet Secretary was held to discuss the weather forecast and the status of the response by various ministries and agencies. Based on instructions from the Prime Minister, it was confirmed that extreme vigilance should be exercised in monitoring the situation. Directly after the meeting, the Minister of State for Disaster Management called on citizens to prepare for heavy rains and high winds accompanying the approach of Typhoon 8 and the effects of the seasonal rain front.

On July 10, the relevant ministries and agencies held an Inter-Agency Disaster Management Meeting to discuss the response to the heavy rains from Typhoon 8, where they confirmed that all possible preparations for prior countermeasures would be made, including support for evacuating residents based on instructions from the Prime Minister. It was also confirmed that (1) based on the intent of the revised Disaster Countermeasures Basic Act, the national government would cooperate closely with local governments and give appropriate advice regarding evacuations, (2) damage status data and other information would be shared among the relevant ministries and agencies, (3) efforts would be made to prevent the damage from being exacerbated in the disaster-affected regions and appropriate measures, such as emergency restoration measures, would be taken as necessary, and (4) based on the forecast of heavy rains due to Typhoon 8 and the seasonal rain front, the government would continue to exercise extreme vigilance in monitoring the situation.

On July 11, a government survey team headed by the Parliamentary Vice-Minister of Cabinet Office for Disaster Management was deployed to Nagano Prefecture. It was also deployed to Yamagata Prefecture the next day (July 12). The team exchanged opinions with leaders of local governments in the disaster-affected areas and others, and surveyed the disaster-affected areas. From July 14 to 15, a government survey team headed by the Parliamentary Vice-Minister of Cabinet Office for Disaster Management was deployed to Okinawa Prefecture.

In addition, a total of some 180 TEC-FORCE members from the Ministry of Land, Infrastructure, Transport and Tourism, as well as a total of some 330 vehicles/day of machinery and other vehicles used for disaster management, were deployed to survey the damage conditions and conduct emergency response and restoration operations.

Due to the effects of Typhoon 8 and the seasonal rain front, the Disaster Relief Act and the Act on Support for Reconstructing Livelihoods of Disaster Victims were invoked in Nagiso Town, Nagano Prefecture, and Nanyo City, Yamagata Prefecture (July 9).

15-3: August 2014 Torrential Rains (Hiroshima Sediment Disaster)

(1) Damage

There was a series of storm and flood disasters in the summer of 2014 caused by typhoons and heavy rains. From July 31 to August 11, Typhoon 12 and Typhoon 11 approached the Japanese Islands one after another, and from August 5 to 26, the rain front stalled near Japan. From July 30 to August 26, warm and very humid air continuously flowed into the region around Japan. Consecutive days of heavy rains were experienced in various regions nationwide due to the effects of these typhoons and the rain front, and windstorms were recorded mainly in Okinawa, Amami, and Western Japan where Typhoons 12 and 11 approached and/or made landfall.

Typhoon 12 and Typhoon 11 caused human casualties that included six fatalities in the prefectures of Tokushima, Yamaguchi, Shimane, Wakayama, and Aichi, and caused structural damage to more than 7,000 houses in regions nationwide, concentrated in the Shikoku region.

The heavy rains from the rain front that started around August 15 resulted in combined human casualties of eight fatalities in the prefectures of Fukuoka, Hyogo, Kyoto, Ishikawa, and Hokkaido. They also caused damage to more than 8,000 houses in regions nationwide, concentrated in Kyoto and Hyogo prefectures.

From August 19 to 20, warm, humid air flowed in toward the rain front, creating unstable atmospheric conditions in the Chugoku and northern Kyushu regions. In Hiroshima Prefecture, in particular, intense rains of approximately 120 mm per hour were recorded from before dawn to daybreak on August 20. In addition, heavy rains set a new record for the greatest amount of rainfall in 24 hours. The region suffered extreme damage due to the effects of these heavy rains, including sediment disasters in more than 166 locations within Hiroshima City. This event caused 74 fatalities, and some 2,300 people were forced to evacuate.

(2) Response from Government Ministries and Agencies

The following describes the response of ministries, agencies, and other government bodies to the Hiroshima sediment disasters (Hiroshima City, Hiroshima Prefecture) that occurred on August 20.

At 6:30 a.m. on August 20, the Prime Minister instructed the relevant ministries and agencies to (1) immediately ascertain the damage and take emergency disaster response measures through concerted, all-out government efforts to save lives and provide relief to disaster victims, (2) closely cooperate with relevant ministries and agencies to take all possible measures to support the evacuation of residents, and (3) continue to provide accurate information regarding the heavy rains to citizens, and to take comprehensive steps to prevent the disaster from escalating.

At 10:00 a.m. on the same day, the relevant ministries and agencies held an Inter-Agency Disaster Management Meeting attended by the Minister of State for Disaster Management to share the forecast of future weather conditions, damage updates, and the status of the response by ministries and agencies. In addition, it was confirmed that ministries and agencies were taking all possible response measures based on instructions from the Prime Minister.

At 11:13 a.m. on the same day, the Prime Minister instructed the relevant ministries and agencies to (1) take integrated government emergency response measures including comprehensive rescue and relief operations for victims, (2) reinforce the Self-Defense Forces' personnel engaged in rescue and relief activities to a scale of several hundred, and (3) immediately deploy a government survey team led by the Minister of State for Disaster Management once conditions had been readied. Based on the Prime Minister's instructions, a government survey team led by the Minister of State for Disaster Management was immediately deployed to Hiroshima Prefecture, where it met with leaders of local governments in the disaster-affected areas, and surveyed the disaster-affected areas.

At 1:40 p.m. on the same day in Hiroshima Prefecture, which suffered extensive damage due to sediment disasters

caused by the heavy rains, a National On-site Disaster Management Office (headed by the Deputy Director General for Disaster Management) was set up at the Hiroshima Prefectural Office to promptly and precisely carry out emergency countermeasures in concert with local authorities and the relevant ministries and agencies in the disaster-affected areas.

On August 21, the directors general of the relevant ministries and agencies held an Inter-Agency Disaster Management Meeting, attended by the Prime Minister and the Chief Cabinet Secretary, and shared information on the future weather forecast, damage conditions, and the status of the response.

At 9:00 a.m. on August 22, given the high number of missing persons and the ongoing rescue activities after more than two days since the sediment disasters in Hiroshima Prefecture, the August 2014 Torrential Rain Major Disaster Management Headquarters (headed by the Minister of State for Disaster Management) was established pursuant to the provisions of Article 24.1 of the Disaster Countermeasures Basic Act (Act No. 223 of 1961), and the decision was made to establish an On-site Major Disaster Management Headquarters in Hiroshima Prefecture, to be headed by the State-Minister of Cabinet Office for Disaster Management.

On the morning of the same day, the first Meeting of the Major Disaster Management Headquarters was held, attended by the head of the Major Disaster Management Headquarters. There it was decided that authorities would (1) continue making every effort to rescue any missing persons as quickly as possible, (2) prepare for future rainfall and strive to prevent the disaster from escalating, (3) work to quickly restore electricity, gas, water, and other utilities, making every effort to quickly improve the lives of people living in the disaster-affected regions, and (4) take all possible measures to ensure the health, including mental health, of people requiring prolonged evacuation, and strive to secure good living environments for evacuees, including supplies of food and daily necessities (Major Disaster Management Headquarters meetings were held a total of 16 times).

In addition, a ministerial meeting on the August 2014 Torrential Rains, attended by the Prime Minister, was held in the afternoon of the same day. Participants discussed damage conditions, the status of the response by ministries and agencies, and other matters.

On August 25, the Prime Minister conducted a local inspection, received reports on the damage conditions from the Governor of Hiroshima Prefecture and the Mayor of Hiroshima City, and discussed the situation with them.

On the same day, the Disaster Victim Support Team was established at the On-Site Major Disaster Management Headquarters to more quickly and precisely secure housing for disaster victims and provide support for disaster victims' living situations, including the improvement of living conditions at evacuation centers in coordination with Hiroshima Prefecture and Hiroshima City. On the following day (August 26), the 8.20 Sediment Disaster Emergency Restoration Liaison Meeting was established by the On-Site Major Disaster Management Headquarters, Hiroshima Prefecture, and Hiroshima City to quickly and comprehensively make progress on resolving local issues, including the disposal of sediment and debris accumulated on roads, and the implementation of emergency restoration work on sediment control and forest conservation facilities, rivers, and roads.

To prevent this type of large-scale disaster from happening again, on September 5 the Major Disaster Management Headquarters established Key Disaster Prevention Measures for Sediment Disasters and Other Massive Disasters, which focused on launching examinations to amend the Sediment Disasters Prevention Act, urgently informing citizens about known hazardous areas, performing an emergency inspection of the state of development of administrative systems, accurately communicating disaster risk information, even late at night, and conducting more practical drills to prepare for sediment disasters.

In addition, in response to a request for disaster deployment from the governor of Hiroshima Prefecture, a total of some 14,970 Self-Defense Forces personnel (the number of people actually mobilized on the ground) conducted rescue operations and provided support for bathing facilities as well as other activities. Based on a request for aid from the Hiroshima Prefecture Public Safety Commission, a total of approximately 9,200 members of the Police Disaster Response Units and others searched for missing persons, rescued persons using hoists and police helicopters, and collected information. A total of approximately 16,000 firefighting personnel (from local fire stations and fire brigades, as well as auxiliary fire headquarters and fire brigades) within Hiroshima Prefecture also conducted rescue operations and other activities. In addition, following a request from the governor of Hiroshima, a total of approximately 2,600 Emergency Fire Rescue Team personnel from seven prefectures (Osaka, Tottori, Shimane, Okayama, Yamaguchi, Ehime,

and Kochi) were deployed at the request of the Commissioner of the Fire and Disaster Management Agency to conduct search and rescue operations, debris removal, and other activities. A total of 2,431 TEC-FORCE members from the Ministry of Land, Infrastructure, Transport and Tourism were deployed on the ground as well as a total of some 630 vehicles/day including machines used in disaster management. These provided support for the evaluation of sediment disaster risk areas and search activities, support for rapid restoration work, and support to prevent secondary disasters.

The Disaster Relief Act and the Act on Support for Reconstructing Livelihoods of Disaster Victims were invoked for Hiroshima City in Hiroshima Prefecture due to the heavy rains that started on August 19 (invoked August 20).

The Disaster in Hiroshima Prefecture Due to Rainstorms and Torrential Rains between July 30 and August 25, 2014 was designated an extremely severe disaster nationwide, and measures to be implemented for this disaster were identified (special measures on subsidies for disaster recovery projects for agricultural land, special cases of subsidies for disaster recovery projects for agricultural, forestry, and fisheries shared-used facilities, and the inclusion of funds for the redemption of principal and interest related to small disaster bonds in the standard budget request; announced and enacted on September 10).

Following this, the ordinance on the Disaster in Hiroshima Prefecture Due to Rainstorms and Torrential Rains between July 30 and August 25, 2014 was partially revised, and measures to be implemented nationwide were added. These included special financial support for disaster recovery projects for public works facilities and subsidies for disaster recovery projects for public social and educational facilities (announced and enacted October 1).

The Japan Meteorological Agency named the series of heavy rains that fell from July 30 to August 26, which caused the extremely severe disaster in various regions nationwide, the “August 2014 Torrential Rains.”

15-4: 2014 Eruption of Mt. Ontake

(1) Damage

In the latter half of March 2007, there was a very small eruption of Mt. Ontake after which the volcano remained dormant. From September 10 to 11, there was an increase in high-frequency seismic waves around the peak of Mt. Kengamine, but these subsequently subsided. No fumarole near the mountain peak was confirmed in observations using a long-distance camera installed in Mitake Kurosawa (approximately 14 km southeast of Mt. Kengamine). The Chubu Regional Development Bureau confirmed in observations using the Takigoshi camera installed at Takigoshi, Otaki Village (approximately 6 km south-southwest of Mt. Kengamine) that fumarolic gases at a height of 100 m or less were passing from a fumarole on Jigokudani.

Mt. Ontake erupted around 11:52 a.m. on September 27, 2014. Visibility was poor at the time of the eruption, and the conditions around the mountain peak are therefore unknown, but according to the Chubu Regional Development Bureau’s Takigoshi camera, a pyroclastic flow of more than 3 km flowed down in a southwesterly direction. According to weather radar observations, volcanic smoke flowed eastward at an estimated height of 7,000 m above the crater rim. According to a subsequent survey, the pyroclastic flow flowed from crater rows for approximately 2.5 km in a southwesterly direction and for approximately 1.5 km in a northwesterly direction. A series of volcanic tremors were recorded around 11:41 a.m. immediately before the eruption, and after the eruption, large-amplitude tremors continued for approximately 30 minutes. According to a dipmeter at the Tanohara observation point (approximately 3 km southeast of Mt. Kengamine), changes in mountain swelling were observed from 11:45 a.m. immediately after the tremors started, and changes in mountain contraction were observed around 11:52 a.m.

This eruption disaster resulted in human casualties of 57 fatalities, 6 missing persons, 29 serious injuries, and 40 minor injuries (as of October 23, 2014).

(2) Response from Government Ministries and Agencies

At 2:30 p.m. on September 27, the Prime Minister instructed the relevant ministries and agencies to (1) immediately assess the damage, (2) make collective efforts to rescue victims of the disaster and take all possible efforts to ensure the safety of mountain climbers and residents, including evacuation guidance, and (3) strengthen volcano observations and provide mountain climbers and residents with timely and accurate information.

Based on the Prime Minister's instructions, a meeting was held of the relevant staff of the ministries and agencies involved. An overview of the eruption, the damage conditions, and other matters were discussed. At 4:40 p.m., an Inter-Agency Disaster Management Meeting, attended by the Minister of State for Disaster Management, was held to share information on the future volcanic activity forecast and damage conditions as well as the status of the response by ministries and agencies. From the evening onward, a Cabinet meeting and meeting of the directors general of the relevant ministries and agencies were held, where it was confirmed that the government was working in an integrated manner and taking all possible response measures.

On September 28, a government survey team headed by the State-Minister of Cabinet Office for Disaster Management was deployed to Nagano Prefecture and surveyed the eruption and falling ash near Mt. Ontake's crater from the air using a helicopter. The team surveyed the rescue and other activities conducted by police, fire, and Self-Defense Forces personnel, and interviewed local government leaders and others from the disaster-affected areas about the disaster conditions. They discussed search and rescue activities, the identification of missing persons, the prevention of secondary disasters, the monitoring of volcanic activity, information sharing, and other matters.

At 1:00 p.m. on the same day, an Inter-Agency Disaster Management Meeting was held for a second time, attended by the Minister of State for Disaster Management. At the meeting, a teleconference was held with the governor of Nagano Prefecture and a professor from the Nagoya University Graduate School, and information was shared on the forecast of future volcanic activity, damage conditions, and the status of the response by various ministries and agencies.

At 5:00 p.m. on the same day, given that the Mt. Ontake eruption had resulted in many victims and many missing persons, and based on the provisions of Article 24.1 of the Disaster Countermeasures Basic Act (Act No. 223 of 1961), the decision was made to establish the 2014 Mt. Ontake Eruption Major Disaster Management Headquarters (headed by the Minister of State for Disaster Management), and to establish an On-site Major Disaster Management Headquarters (headed by the Parliamentary Vice-Minister of Cabinet Office for Disaster Management) in Nagano Prefecture.

At 7:00 p.m., the first Major Disaster Management Headquarters meeting was held, attended by the head of the Major Disaster Management Headquarters, and the State-Minister of Cabinet Office for Disaster Management presented a report from the government survey team. A teleconference was held with a professor from the Nagoya University Graduate School of Environmental Studies, and information was shared on the forecast of future volcanic activity, damage conditions, and the status of the response by various ministries and agencies. It was determined that that authorities would (1) continue making every effort to rescue and confirm the safety of missing persons, (2) prevent secondary disasters from such phenomena as cinders, volcanic gases, and debris flow, and take all possible steps to ensure the safety of rescue activities, and (3) secure a thorough monitoring system for volcanic activities, striving to prevent the disaster from escalating further (meetings of the Major Disaster Management Headquarters were held a total of 15 times).

On October 11, a government survey team headed by the Minister of State for Disaster Management was deployed to Nagano Prefecture and surveyed the status of the eruption and falling ash near the crater of Mt. Ontake from the air by helicopter as well as the status of search and other activities by police, fire, and Self-Defense Forces personnel. The team also interviewed local government leaders and others from the disaster-affected areas about the disaster. They discussed the monitoring systems for volcanic activity, the cultivation of experts, and countermeasures to prevent damaging rumors from spreading.

On October 28, the Emergency Disaster Management Countermeasures for Volcanic Eruptions were established by the Major Disaster Management Headquarters based on the lessons of this eruption to prevent the recurrence of such a disaster. The contents of the countermeasures were divided respectively into immediate, medium-term, and continuous efforts. These measures are summarized as: (1) emergency efforts, including the implementation of emergency surveys on information communication methods and the preparation status of evacuation facilities, the establishment in fiscal 2014 of Volcanic Disaster Management Councils for all 47 volcanoes under constant observation, and the provision of appropriate information and safety countermeasures for mountain climbers and travelers, (2) medium-term efforts, including the strengthening of evacuation facility preparation and rescue systems, further strengthening of volcano monitoring systems, and the development of investigations and research, and (3) continuous efforts, including the development of DRR education for volcanic disasters and the development of volcanic

DRR drills conducted by the relevant ministries and agencies.

Based on a request for disaster deployment from the governor of Nagano Prefecture, a total of some 7,150 Self-Defense Forces personnel (the number of people actually mobilized on the ground) conducted rescue operations and transport of personnel from related organizations at local sites. Between September 27 and October 16, a team of some 900-–1,900 personnel/day from police, fire, and Self-Defense Forces conducted search and rescue activities. Based on a request for aid from the Nagano Prefecture Public Safety Commission, a total of approximately 1,100 personnel from the Police Disaster Response Units and others conducted search operations for missing persons in addition to collecting information using police helicopters. A total of approximately 3,000 people from firefighting organizations within Nagano Prefecture (from local fire headquarters and fire brigades, as well as auxiliary fire headquarters and fire brigades) conducted rescue and other operations. In addition, in response to a request for deployment from the governor of Nagano Prefecture, a total of approximately 4,300 Emergency Fire Rescue Team personnel from six prefectures (Tokyo, Aichi, Shizuoka, Yamanashi, Toyama, Gifu) were deployed at the request of the Commissioner of the Fire and Disaster Management Agency, and they conducted search and rescue operations and transported victims near the mountain top. A total of some 270 TEC-FORCE members from the Ministry of Land, Infrastructure, Transport and Tourism were deployed locally, as were some 200 vehicles/day, including machines used in disaster countermeasures. These were used in supporting search activities, descending the mountain, assessing disaster conditions, and conducting emergency countermeasures.

The Disaster Relief Act was invoked for Kiso Town and Otaki Village in the Kiso District of Nagano Prefecture due to this eruption disaster (invoked September 27).

15-5: Earthquake Epicentered in Northern Nagano Prefecture

(1) Damage

At 10:08 p.m. on November 22, 2014, a magnitude 6.7 earthquake struck northern Nagano Prefecture. A seismic intensity of Lower 6 was recorded in Nagano City, Otari Village, and Ogawa Village in Nagano Prefecture, while an intensity of Upper 5 was reported in Hakuba Village and Shinano Town, Nagano Prefecture, and intensities of 1 to Lower 5 were reported mainly in the Chubu region and areas from the Tohoku to Chugoku regions.

Damage due to this earthquake included 46 casualties, 77 completely destroyed houses, and 137 half-destroyed houses. Lifelines were affected, with a total of 1,780 houses in the service area of Chubu Electric Power losing power, and up to 1,288 houses in Nagano Prefecture and Niigata Prefecture experiencing water service disruptions.

(2) Response from Government Ministries and Agencies

Immediately after the earthquake, the government assembled an emergency team to assess the situation and determine a course of action, and deployed an information advance team to the Nagano Prefectural Office.
Early in the morning of the next day (November 23), a government survey team headed by the Parliamentary Vice-Minister of Cabinet Office for Disaster Management was deployed to Nagano Prefecture and was briefed on the disaster situation from the governor of Nagano Prefecture and others. Discussions covered rescue activities, preventing secondary disasters, managing evacuees, rapid restoration of infrastructure and lifelines, and other matters. In addition, the team surveyed the damage conditions in Habuka Village and Otari Village from the air using a Self-Defense Forces helicopter.

At 9:00 a.m. on the same day, an Inter-Agency Disaster Management Meeting was held, attended by the Minister of State for Disaster Management. The meeting included a teleconference with the governor of Nagano Prefecture, and covered a situation report on the disaster as well as the status of the response by ministries and agencies (two subsequent meetings were held).

On November 24, the Prime Minister visited Nagano Prefecture to inspect disaster-affected sites and talk with evacuees and others. On December 2, a government survey team headed by the Minister of State for Disaster Management was deployed to meet with leaders of local governments.

Due to this earthquake, the Disaster Relief Act was invoked for Hakuba Village, Otari Village, and Ogawa Village in Nagano Prefecture (on November 22), and the Act on Support for Reconstructing Livelihoods of Disaster Victims was

invoked for Hakuba Village and Otari Village (on November 22).

The Earthquake Disaster of November 22, 2014 was designated an extremely severe disaster for Hakuba Village and Otari Village, Nagano Prefecture, and measures to be applied for this disaster were identified (special financial support for disaster recovery projects for public works facilities, special measures on subsidies for disaster recovery projects for agricultural land, and the inclusion of funds for the redemption of principal and interest related to small disaster bonds in the standard budget request (December 16 Cabinet resolution, announced and enacted December 19).

In response to a request for disaster deployment from the governor of Nagano Prefecture, a total of some 140 Self-Defense Forces personnel (the number of people actually mobilized on the ground) conducted water supply support at local sites. In addition, based on a request for aid from the Nagano Prefecture Public Safety Commission, a total of 700 personnel from the Police Disaster Response Units and others guided the evacuation and conducted activities to confirm people's safety in local communities. A total of approximately 3,100 firefighting personnel (from local fire headquarters and fire brigades, as well as auxiliary fire headquarters and fire brigades) within Nagano Prefecture worked to gather information and confirm people's safety. In addition, based on a deployment request from the governor of Nagano Prefecture, a total of approximately 100 Emergency Fire Rescue Team personnel from six prefectures (Tokyo, Saitama, Gunma, Yamanashi, Toyama, and Niigata) also engaged in these activities mainly using Fire and Disaster Management Agency helicopters, at the request of the Commissioner of the Fire and Disaster Management Agency. A total of some 580 TEC-FORCE members from the Ministry of Land, Infrastructure, Transport and Tourism as well as a total of some 290 vehicles/day, including machines used in disaster countermeasures, were deployed to survey the damage conditions and conduct emergency restoration support.

15-6: Heavy Snowfall Starting December 2014

(1) Damage

From December 2014 to March 2015, the development of a low-pressure system along with a winter pressure pattern temporarily gained in strength, causing snowfall to accumulate at greater-than-average depths at the majority of AMeDAS points (323 snowfall observation points) mainly on the eastern Pacific Ocean side of Hokkaido and in the mountains on the Japan Sea side of Eastern Japan. The highest snowfall accumulations ever recorded were recorded at 12 observation points including Utoro, Hokkaido Prefecture; Hinoemata, Fukushima Prefecture; and Shinano Town, Nagano Prefecture.

The heavy winter snows (December 2014 to March 2015) resulted in human casualties, including 83 fatalities, 460 serious injuries, and 569 minor injuries, as well as damage to houses that included nine completely destroyed houses, 12 half-destroyed houses, 186 partially destroyed houses, five houses with above-floor inundation, and 22 houses with under-floor inundation.

(2) Response from Government Ministries and Agencies

With deep winter approaching, the government held an Inter-Agency Disaster Alert Meeting on the response to the winter's heavy snowfall on December 3. At the meeting, participants discussed the weather forecast and the status of damage and response measures, and confirmed full support for all ongoing and future response efforts.

On December 5, the Minister of State for Disaster Management called on citizens to respond as follows.

1. Until tomorrow December 6, snow is forecast over a wide area from Northern Japan to Western Japan on the Japan Sea side. From the night of the 5th to the 6th especially, there is risk of heavy snow mainly in the Hokuriku region and Western Japan on the Japan Sea side. Heavy snow is already falling in some regions, with expressways and main national routes closed and cars getting stuck in the snow.
2. In regions where heavy snowfall is forecast, please avoid driving if at all possible. If driving is unavoidable, ensure that your car has studless tires, chains, or other devices to prevent becoming stuck in the snow.
3. In addition, accidents during snow removal are always a risk, and nearly 100 people die each year from falls that happen while removing snow from their roofs. Please do not work alone when removing snow. Make sure to tell a family member or a neighbor when performing such work, use a life rope and helmet, and take steps to properly secure ladders.

On the same day, in the Shikoku and Chugoku regions where vehicles had become stuck in the snow, the revised

Disaster Countermeasures Basic Act (enacted on November 21) was invoked for the first time to remove stranded vehicles from National Route 192 and National Route 54.

On December 6, there was heavy snowfall mainly in Hokuriku and Western Japan. As more vehicles became stuck in the snow and certain locations began to be cut off, an Inter-Agency Disaster Management Meeting, attended by the Minister of State for Disaster Management, was held to address the damage from the heavy snow. Discussions covered an update on the damage and the status of the response by ministries and agencies.

On the same day, based on a request for disaster deployment from the governor of Tokushima Prefecture, a total of some 1,390 Self-Defense Forces personnel were mobilized (the number of people actually mobilized on the ground). They opened roads so that villages would no longer be cut off due to fallen trees or other damage, provided support to confirm people's safety and enable evacuation, transported personnel and goods, provided support to restore power, and performed other activities. As a result of the heavy snowfall that started December 5, prefectural police including the Tokushima prefectural police enacted traffic restrictions to prevent vehicles from becoming stuck in the snow, used police helicopters to confirm conditions at locations that had been cut off, and transmitted video taken from helicopters. Mobile prefectural forces and other personnel confirmed the safety of residents in districts that had been cut off and conducted other activities. In addition, the Ministry of Land, Infrastructure, Transport and Tourism's liaison and TEC-FORCE provided support to local governments and conducted snowplowing operations in areas including Miyoshi City, Tokushima Prefecture.

On December 8, a second Inter- Agency Disaster Management Meeting, attended by the Minister of State for Disaster Management, was held to discuss the damage and the status of the response by ministries and agencies. The following was also confirmed.

> Based on the fact that some locations were being cut off for a prolonged period of time, the relevant ministries and agencies are working together with local governments to take all possible preparations per the following in response to the heavy snowfall.
> 1. To ensure residents' safety in areas that have been cut off, further efforts will be taken and the necessary goods should be supplied.
> 2. Every effort will be made to open roads and quickly open up access to areas that are cut off.
> 3. The government will cooperate with business operators to quickly restore power.

On December 9, a government survey team headed by the Minister of State for Disaster Management was deployed to Tokushima Prefecture. The team met with leaders of local government and others affected by the disaster and surveyed the disaster-affected areas. An Inter-Agency Disaster Management Meeting was held to share information on the damage and the status of the response by ministries and agencies.

On December 10, an Inter-Agency Disaster Management Meeting was held, attended by the Minister of State for Disaster Management. Meeting participants reviewed the findings of the government survey team, the weather forecast, damage conditions, and the status of the response by various ministries and agencies, and confirmed full support for all ongoing and future response efforts.

On December 11, the Minister of State for Disaster Management called on citizens to respond as follows:

1. Snow is forecast in lowland areas from Northern Japan to Western Japan on the Japan Sea side, with the risk of heavy snowfall. Snow is also falling from the Tohoku region to Western Japan on the Pacific Ocean side, and there is a risk of snow accumulations. In Hokkaido, caution regarding high winds, snowstorms, and high waves is required.
2. In last week's heavy snowfall, roads were closed and cars became stuck. In regions where heavy snowfall is forecast, please avoid driving if at all possible. If driving is unavoidable, ensure that your car has studless tires, chains, or other devices to prevent becoming stuck in the snow.
3. There have been cases of loss of access to some locations, power outages, and disrupted telephone service. If you live in a region at risk of loss of access, please prepare accordingly by amassing supplies of food, water, fuel, and other goods and confirming a means of communication.
4. In addition, accidents during snow removal are always a risk, and nearly 100 people die each year from falls that happen while removing snow from their roofs. Please do not work alone when removing snow. Make sure to tell a family member or a neighbor when performing such work, use a life rope and helmet, and take steps to properly secure ladders.

On December 16, the Minister of State for Disaster Management called on citizens to respond to the snowstorm as follows. In addition, on the following day (the 17th), an Inter-Agency Disaster Alert Meeting on the snowstorm was held, attended by the Minister of State for Disaster Management. Participants discussed the weather forecast and the status of the damage and response, and confirmed full support for all ongoing and future response efforts.

1. Stormy weather is forecast across a wide area from Northern Japan to Western Japan. In particular, violent winds accompanying snow are forecast in the Hokkaido region, and there is risk of blizzards that could reduce visibility to zero.
2. In March of last year, snowstorms in Hokkaido caused nine fatalities, including people who froze to death after getting out of cars that would no longer run. Please refrain from nonessential travel to avoid these kinds of disasters.
3. If visibility falls to zero while driving, please promptly stop at a safe place if you sense danger. If your car has stopped running, please immediately seek help and wait in your car. If you do have to wait in your car, there is risk of carbon monoxide poisoning if snow accumulates around your car's exhaust pipe, so please regularly clear snow from around your exhaust pipe.
4. Please check the latest weather updates and stay safe.

On December 26, a ministerial meeting on ongoing snow disaster countermeasures was held, attended by Prime Minister Shinzo Abe. At the meeting, participants confirmed that all possible measures would be taken to protect citizens' lives from snow disasters, particularly during the New Year's holiday. In addition, the Minister of State for Disaster Management called on citizens to respond as follows:

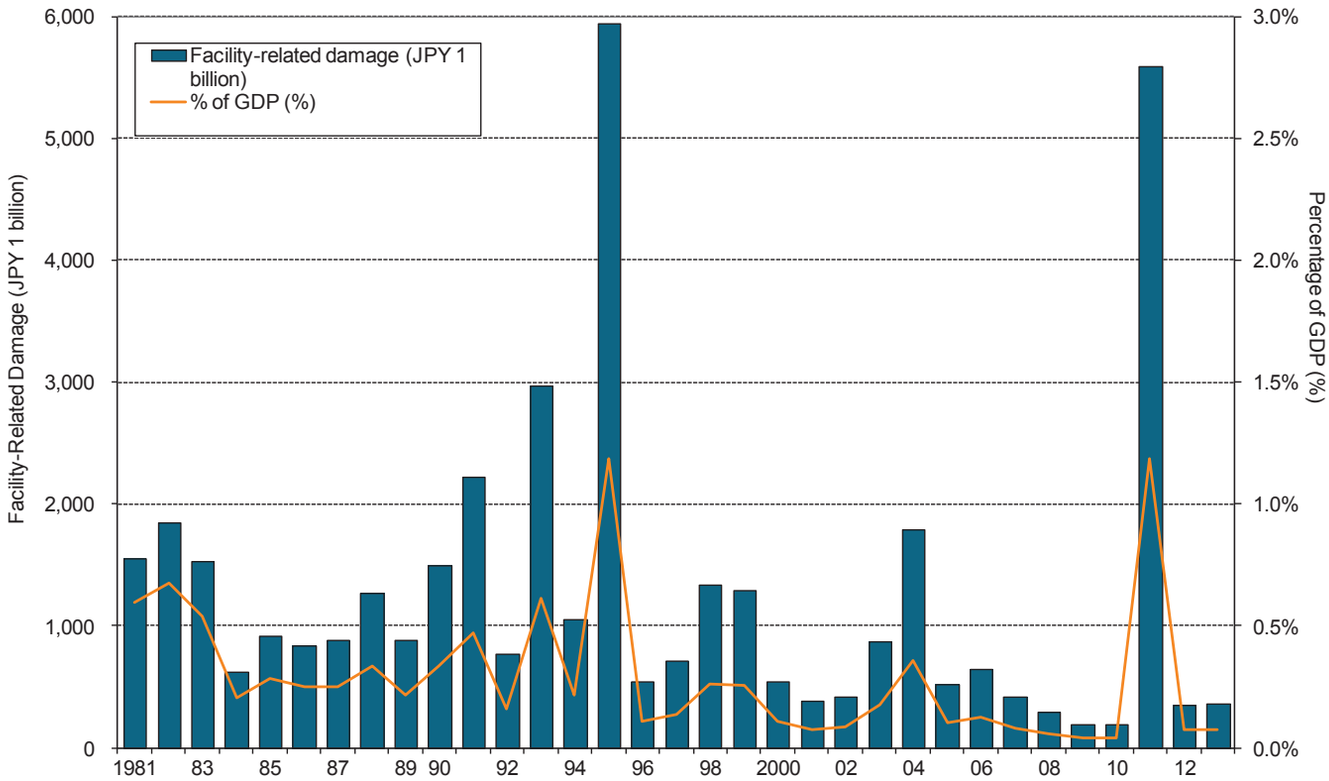
1. After December 30, there is risk of continued intermittent snowfall and quite heavy snowfall mainly on the Japan Sea side during the New Year's holiday. Caution is required.
2. Many people will be returning to their family home or traveling around the New Year's holiday. Since even regions that do not normally get a lot of snow may see heavy snow, please remain vigilant when driving and be prepared for snow conditions (for example, use studless tires or chains). If traveling by public transportation, please monitor service updates and allow extra time when traveling.
3. This year, 24 people have died from snow-related accidents, such as falling while removing snow from roofs and being caught in snowslips and snow-flow channels. Please do not work alone when removing snow. Make sure to tell a family member or a neighbor when performing such work, use a life rope and helmet, and take steps to properly secure ladders.

A total of some 30 TEC-FORCE members from the Ministry of Land, Infrastructure, Transport and Tourism as well as a total of some 50 snowplows/day were deployed to support snow-removal and other operations.

Due to the heavy winter snow, the Disaster Relief Act was invoked (on December 8) for several locations in Tokushima Prefecture: Miyoshi City, Tsurugi Town in Mima District, and Miyoshi Town in Miyoshi District.

(Source: Cabinet Office)

Fig. A-16 Trends in Facility-Related Damage, Actual and as a Percentage of Gross Domestic Product (GDP)



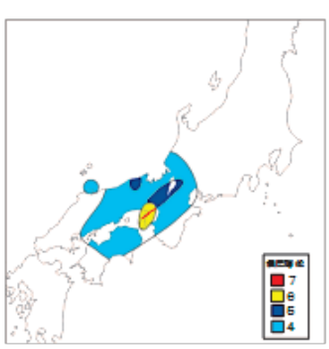
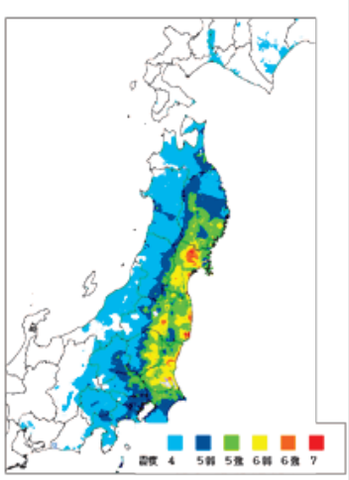
Source: Created by the Cabinet Office using materials from various ministries and agencies.

Fig. A-17 Facility-Related Damage by Disaster Type for Disasters Occurring in 2013

Facility type	Typhoon (1 million)	Heavy rain (1 million)	Earthquake (1 million)	Heavy snow (1 million)	Other (1 million)	Total (1 million)	Notes
Public works	84,885	79,121	149	986	7,775	172,916	Rivers, forestry conservation facilities, ports, etc.
Agriculture, forest, and fisheries industry	68,988	86,295	710	2	3,215	159,209	Farmland, agricultural facilities, forestry roads, fishing facilities, etc.
Educational facilities	1,054	1,055	25	17	735	2,886	School facilities, cultural heritages, etc.
Public welfare facilities	8,227	1,766	525	0	454	10,973	Social welfare facilities, waterworks facilities, etc.
Other facilities	3,591	10,479	0	51	996	15,117	Nature parks, telegraph/ telephone, urban facilities, etc.
Total	166,745	178,718	1,409	1,056	13,175	361,102	

Note: Totals may not agree due to rounding.
Source: Created by the Cabinet Office using materials from various ministries and agencies.

Fig. A-18 **Trends in Facility-Related Damage, Actual and as a Percentage of Gross Domestic Product (GDP)**

	Great Hanshin-Awaji Earthquake (Japan)	Great East Japan Earthquake (Japan)	Sumatra Earthquake (Indonesia)
Date & time	5:46 a.m., Jan. 17, 1995	2:46 p.m., March 11, 2011	9:58 a.m., Dec. 26, 2004
Magnitude	7.3	9.0	9.1
Earthquake type	Inland	Oceanic trench	Oceanic trench
Disaster-affected region	City center	Mainly agricultural, forestry, and fishery regions	
No. of prefectures with seismic intensity of Lower 6 or higher	1 (Hyogo)	8 (Miyagi, Fukushima, Ibaraki, Tochigi, Iwate, Gunma, Saitama, Chiba)	
Tsunami	Reports of tsunami measuring tens of centimeters, no damage	Large tsunami observed in various regions (max. wave height of more than 9.3 m in Soma, more than 8.5 m in Miyako, more than 8.0 m in Ofunato) (*1)	Large tsunami observed in Indonesia as well as other countries with coastline along the Indian Ocean
Damage characteristics	Structures destroyed, large fires erupted mainly in Nagata-ku	Large tsunami caused massive damage in coastal areas, destruction across many districts	Large tsunami caused damage to countries with coastline along the Indian Ocean, with Indonesia suffering particularly massive damage
Fatalities Missing persons	Fatalities: 6,437 Missing persons: 3 (May 19, 2006)	Fatalities: 19,225 Missing persons: 2,614 (as of March 1, 2015)	Fatalities: 126,732 Missing persons: 93,662 (as of March 30, 2005)
Homes damaged (totally destroyed)	104,906	127,830 (as of March 1, 2015)	Unknown*
Invocation of the Disaster Relief Act	25 municipalities (2 prefectures)	241 municipalities (10 prefectures) *Including 4 municipalities (2 prefectures) that invoked the Act for an earthquake centered in northern Nagano prefecture	
Seismic intensity distribution map (showing seismic intensity of 4 and above)			

Note:
*1 Tsunami height measured by tsunami meters and others
*2 The seismic intensity levels were revised in 1996 to newly add Lower 5, Upper 5, Lower 6, and Upper 6.
Source: Created by the Cabinet Office from Cabinet Office materials, Fire and Disaster Management Agency materials, and UNOCHA materials

Fig. A-19 **Damage Estimate for the Great East Japan Earthquake**

Category	Damage (Approx. Value)
Structures (Homes/housing sites, stores/offices, factories, machines, etc.)	JPY 10.4 trillion
Lifeline facilities (Water, gas, electricity, communications/broadcasting facilities)	JPY 1.3 trillion
Infrastructure facilities (Rivers, roads, ports, sewers, airports, etc.)	JPY 2.2 trillion
Agriculture, forest, and fisheries-related facilities (Farmland/agricultural facilities, forests and fields, fisheries-related facilities, etc.)	JPY 1.9 trillion
Other (Educational facilities, healthcare/social welfare facilities, waste treatment facilities, other public facilities)	JPY 1.1 trillion
Total	JPY 16.9 trillion

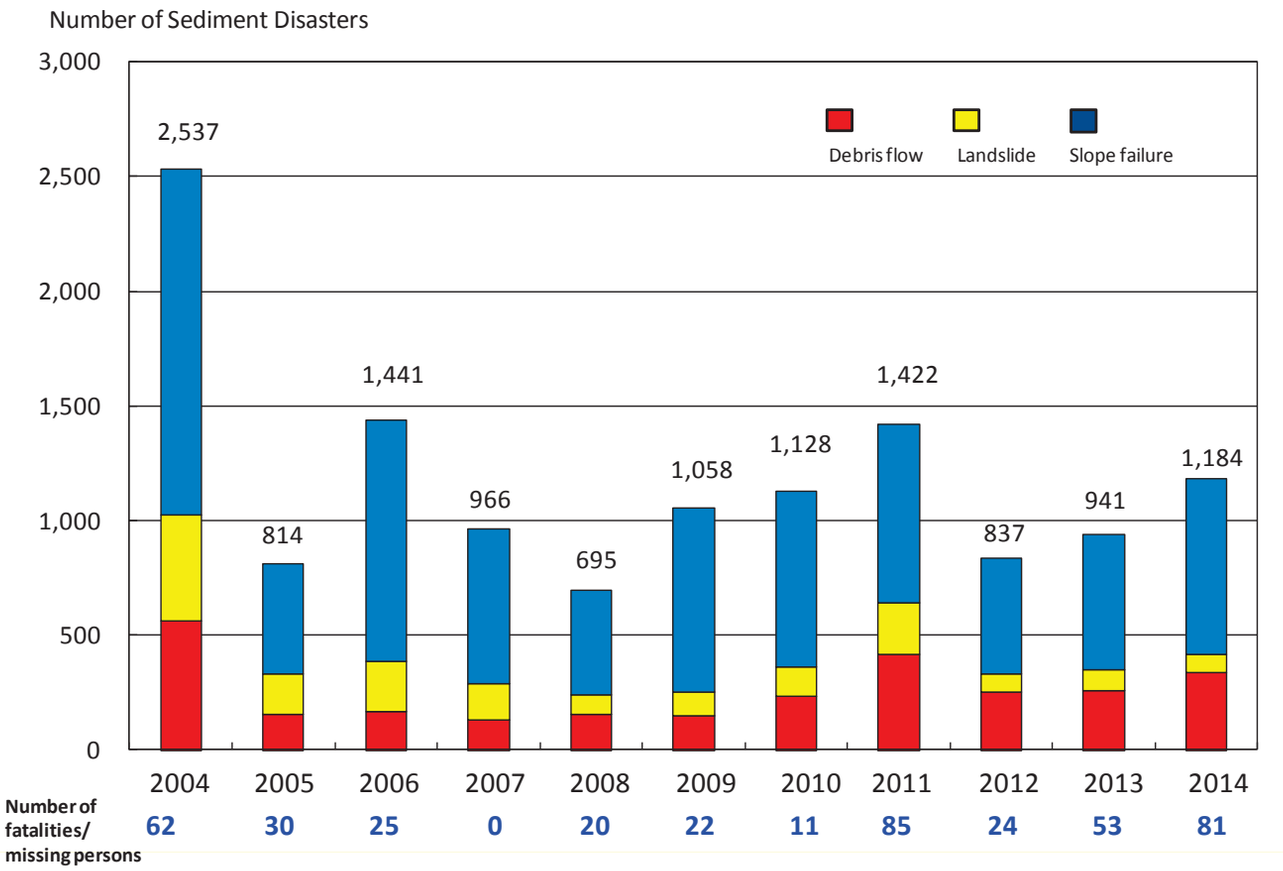
Note: This information has been compiled by the Cabinet Office (for Disaster Management) based on information provided by individual prefectures and relevant ministries and agencies regarding damage to property (including buildings, lifeline facilities, and infrastructure facilities). Information is subject to change as the details become clear. In addition, the total and breakdown may not agree due to rounding.
Source: Cabinet Office

Fig. A-20 **Main Volcanic Eruptions and Eruption Disasters in Japan**

Year of Eruption	Name of Volcano	No. of Victims	Eruption and Damage Characteristics
1640	Hokkaido-Komagatake*	At least 700	Sector collapse, debris flow, tsunami, large amount of falling ash, pyroclastic flow
1663	Mt. Usu*	5	Nearby homes disappeared or were buried in pyroclastic surge/falling ash
1664	Mt. Unzen	At least 30	Lava flow, flood of water from crater
1667	Mt. Tarumae*		Pyroclastic flow, falling pyroclastic material
1694	Hokkaido-Komagatake		Eruption with earthquake/volcanic thunder, falling pumice stone, pyroclastic flow
1707	Mt. Fuji*		”Great Hoei eruption," large amount of falling ash, landslide disaster after eruption
1721	Mt. Asama	15	Cinders
1739	Mt. Tarumae*		Pyroclastic flow, falling pyroclastic material
1741	Oshima-Oshima	1467	Sector collapse, large tsunami occurred due to debris avalanche
1769	Mt. Usu		Large amount of falling ash/pumice, pyroclastic flow
1777	Izu Oshima		”Great Anei eruption," lava flow, scoria fall
1779	Sakurajima*	At least 150	”Great Anei eruption," cinders, lava flow
1781	Sakurajima	15	Eruption on an island off of Komen, tsunami
1783	Mt. Asama	1151	”Great Tenmei eruption," pyroclastic flow, lava flow, debris avalanche, flooding of Agatsuma River and Tone River
1785	Aogashima	130–140	Cinders, mud, more than one-third of islanders became victims. Uninhabited island for more than 50 years thereafter
1792	Mt. Unzen	Approx. 15,000	”Shimabara taihen, Higo meiwaku," tsunami on opposing shore due to collapse of Mt. Mayuyama
1822	Mt. Usu	50–103	Pyroclastic flow, former Abuta village destroyed by fire
1853	Mt. Usu		Large amount of volcanic ash/pumice, formation of lava dome, pyroclastic flow
1856	Hokkaido-Komagatake	21–29	Falling pumice, pyroclastic flow
1888	Mt. Bandai*	461–477	5 towns and 11 villages buried in debris avalanche, debris flow (volcanic mud flow)
1900	Mt. Adatara	72	Cinders, sulfur mine at crater totally destroyed
1902	Torishima	125	Falling pyroclastic material, all islanders became victims
1914	Sakurajima*	58	”Great Taisho eruption," volcanic thunder, lava flow, earthquake, air wave, villages buried, large amount of falling ash
1926	Mt. Tokachi	144	Snowmelt type mudflow , towns of Kamifurano and Biei buried
1929	Hokkaido-Komagatake	2	Large amount of falling ash/pumice, pyroclastic flow, volcanic gas damage
1940	Miyakejima	11	Large amount of volcanic ash/volcanic bombs, lava flow
1943–45	Mt. Usu	1	Large amount of volcanic ash, cinders, formation of Showa-shinzan (new mountain)
1952	Bayonnaise Rocks (Myojin-sho)	31	Pyroclastic surge
1958	Mt. Aso	12	Cinders
1991	Mt. Unzen	43	Pyroclastic flow, debris flow
2014	Mt. Ontake	57	Cinders

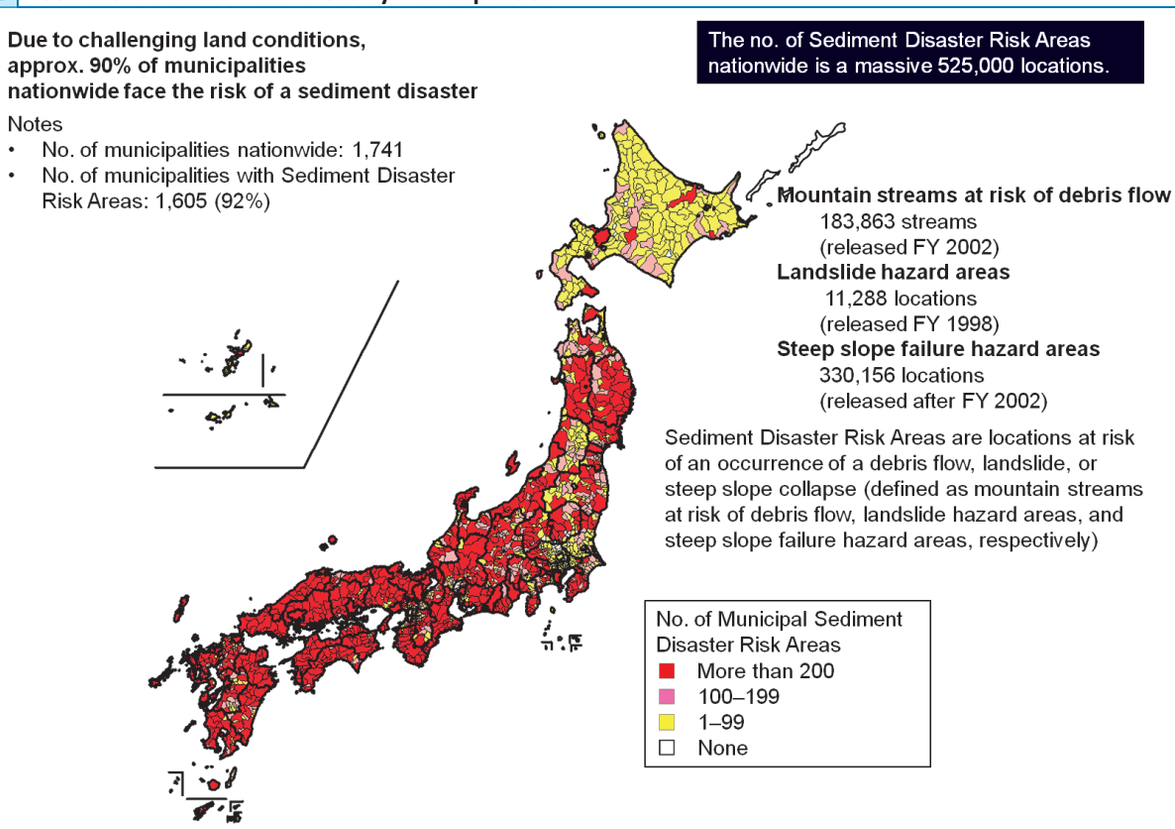
Note: Lists "Eruption disasters with 10 or more fatalities and/or missing persons" and "Large eruptions with an apparent volume of ejecta of 0.1 km^3 or more"
*Indicates eruptions with apparent volume of ejecta of more than 1 km^3
Source: Created by the Cabinet Office based on the National Catalogue of the Active Volcanoes in Japan (4th Edition) (edited by the Japan Meteorological Agency, 2013).

Fig. A-21 Number of Sediment Disasters



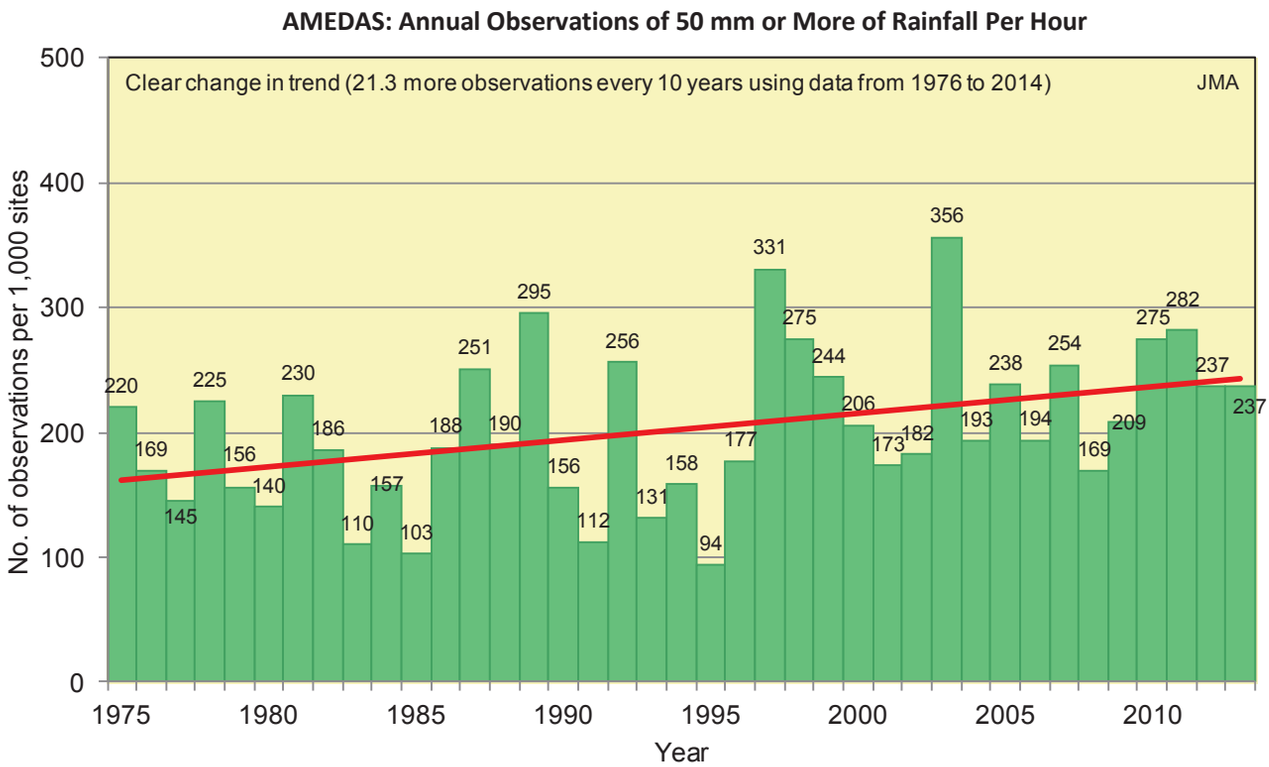
Source: Ministry of Land, Infrastructure, Transport and Tourism

Fig. A-22 Sediment Disaster Risk Areas by Municipalities



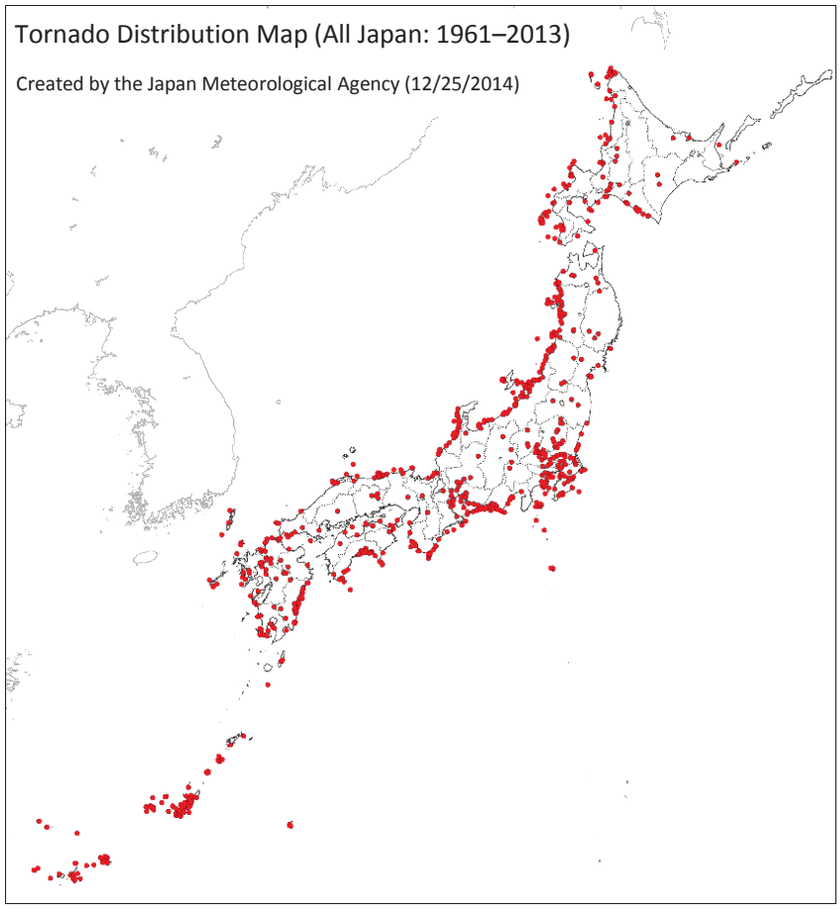
Source: Ministry of Land, Infrastructure, Transport and Tourism, as of March 31, 2015

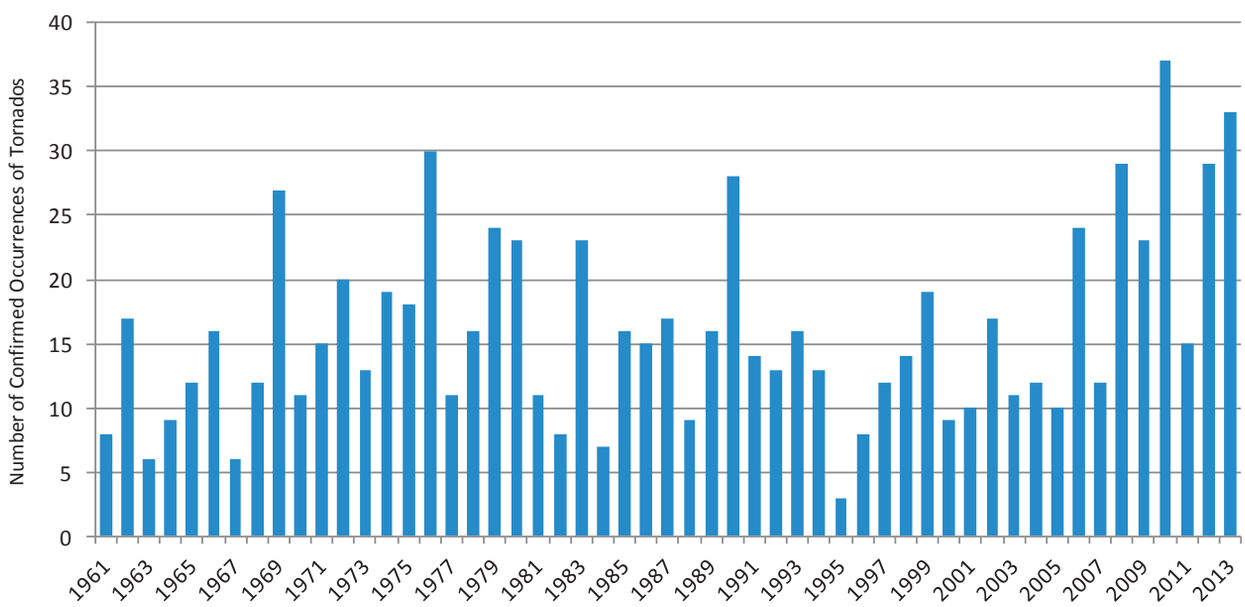
Fig. A-23 **Increase in Torrential Rain During Short Periods**



Source: Japan Meteorological Agency (website)

Fig. A-24 Number of Confirmed Occurrences of Tornados





Note: Because there are few materials from which we can confirm that a “tornado” or “tornado or downburst” occurred prior to 1990, it is impossible to conduct a simple comparison of confirmed occurrences after 1991. Also, because wind gust surveys have improved since 2007, it may appear that tornados have increased since then. it is therefore impossible to conduct a simple comparison of the confirmed occurrences before 2006 and after 2007.

Source: (Upper) Japan Meteorological Agency.
(Lower) Created by the Cabinet Office based on the document, “Number of Confirmed Occurrences by Year (1961–2013)” on the Japan Meteorological Agency website.

Fig. A-25 Major Natural Disasters in the World Since 1900

Year	Disaster Type	Country (Areas)	Fatalities/Missing Persons (approx.)
1900	Hurricane Galveston	Texas, USA	6,000
1902	Volcanic Eruption	Martinique (West Indies, Mt. Pelée)	29,000
1902	Volcanic Eruption	Santa Maria Volcano, Guatemala	6,000
1905	Earthquake	Northern India	20,000
1906	Earthquake (Chiayi earthquake)	Taiwan	6,000
1906	Earthquake/Fire	San Francisco, USA	1,500
1906	Earthquake	Chile	20,000
1906	Typhoon	Hong Kong	10,000
1907	Earthquake	Tianshan, China	12,000
1907	Earthquake	Uzbekistan (former Soviet Union)	12,000
1908	Earthquake (Messina earthquake)	Sicily, Italy	75,000
1911	Flood	China	100,000
1911	Volcanic Eruption	Taal Volcano, Philippines	1,300
1912	Typhoon	Wenzhou, China	50,000
1915	Earthquake	Central Italy	30,000
1916	Landslide	Italy, Austria	10,000
1917	Earthquake	Bali, Indonesia	15,000
1918	Earthquake	Guangdong, China	10,000
1919	Volcanic Eruption	Kelut Volcano, Indonesia	5,200
1920	Earthquake/Landslide (Haiyuan earthquake)	Gansu, China	180,000
1922	Typhoon	Shantou, China	100,000
1923	Earthquake/Fire (Great Kanto earthquake)	Southeast Kanto region, Japan	143,000
1927	Earthquake (Kitatango earthquake)	Northern Kyoto, Japan	2,930
1927	Earthquake	Nanchang, China	200,000
1928	Hurricane/Flood	Florida, USA	2,000
1930	Volcanic Eruption	Merapi volcano, Indonesia	1,400
1931	Flood	Coastal areas of the Yangtze River and other rivers in China	3,700,000
1932	Earthquake (Gansu earthquake)	Gansu, China	70,000
1933	Flood	Henan, China	18,000
1933	Tsunami (Showa Sanriku Tsunami)	Sanriku, Japan	3,000
1933	Earthquake	China	10,000
1935	Flood	China	142,000
1935	Earthquake (Quetta Earthquake)	Baltistan, Pakistan	60,000
1939	Earthquake/Tsunami	Chile	30,000
1939	Flood	Hunan, China	500,000
1939	Earthquake	Eastern Turkey	32,962
1942	Cyclone	Bangladesh	61,000
1942	Cyclone	Orissa, India	40,000
1943	Earthquake	Tottori, Japan	1,083
1944	Earthquake (Showa Tonankai Earthquake)	Tonankai, Japan	1,200
1944	Earthquake	Midwestern Argentina	10,000
1945	Earthquake (Mikawa Earthquake)	Aichi, Japan	2,300
1945	Typhoon (Typhoon Makurazaki)	Western Japan	3,700
1946	Earthquake/Tsunami (Showa Nankai Earthquake)	Nankai, Japan	1,400
1947	Typhoon (Typhoon Catherine)	Northern Tohoku, Japan	1,900
1948	Earthquake (Fukui Earthquake)	Fukui, Japan	3,900
1948	Earthquake (Ashgabat Earthquake)	Turkmenistan (former Soviet Union)	110,000
1949	Earthquake/Landslide	Tajikistan (former Soviet Union)	12,000
1949	Flood	China	57,000
1949	Flood	Guatemala	40,000
1951	Volcanic Eruption	Mt. Lamington, Papua New Guinea	2,900
1953	Flood	Coastal areas of the North Sea	1,800
1953	Flood	Kyushu, Japan	1,000
1953	Flood	Honshu, Japan	1,100
1954	Flood	China	40,000
1954	Typhoon (Typhoon Toyamaru)	Japan	1,700
1959	Flood	China	2,000,000

Year	Disaster Type	Country (Areas)	Fatalities/Missing Persons (approx.)
1959	Typhoon (Typhoon Ise-wan)	Japan	5,100
1960	Flood	Bangladesh	10,000
1960	Earthquake	Southwestern Morocco	12,000
1960	Earthquake/Tsunami	Chile	6,000
1961	Cyclone	Bangladesh	11,000
1962	Earthquake	Northwestern Iran	12,000
1963	Cyclone	Bangladesh	22,000
1965	Cyclone	Bangladesh	36,000
1965	Cyclone	Southern Pakistan	10,000
1968	Earthquake	Northwestern Iran	12,000
1970	Earthquake	Yunnan, China	10,000
1970	Earthquake/Landslide	Northern Peru	70,000
1970	Cyclone Bhola	Bangladesh	300,000
1971	Cyclone	Orissa, India	10,000
1972	Earthquake (Managua earthquake)	Nicaragua	10,000
1974	Earthquake	Yunnan and Sichuan, China	20,000
1974	Flood	Bangladesh	28,700
1975	Earthquake	Liaoning, China	10,000
1976	Earthquake (Guatemala earthquake)	Guatemala	24,000
1976	Earthquake (Tangshan earthquake)	Tianjin, China	242,000
1977	Cyclone	Andhra Pradesh, India	20,000
1978	Earthquake	Northeastern Iran	25,000
1982	Volcanic Eruption	El Chichon Volcano, Mexico	17,000
1985	Cyclone	Bangladesh	10,000
1985	Earthquake	Mexico City, Mexico	10,000
1985	Volcanic Eruption	Nevado del Ruiz Volcano, Colombia	22,000
1986	Toxic gas	Lake Nyos, Western Cameroon	1,700
1986	Earthquake	San Salvador, El Salvador	1,000
1987	Earthquake	Northwestern Ecuador	5,000
1987	Flood	Bangladesh	1,000
1988	Earthquake	India, Nepal	1,000
1988	Flood	Bangladesh	2,000
1988	Earthquake (Spitak Earthquake)	Armenia (former Soviet Union)	25,000
1988	Earthquake	Yunnan, China	1,000
1989	Flood	India	1,000
1989	Flood/Landslide	Sichuan, China	2,000
1990	Earthquake (Manjil Earthquake)	Northern Iran	41,000
1990	Earthquake	Philippines	2,000
1991	Cyclone/Storm Surge	Chittagong, Bangladesh	137,000
1991	Flood	Jiangsu, China	1,900
1991	Typhoon	Philippines	6,000
1992	Flood	Pakistan	1,300
1992	Earthquake/Tsunami	Indonesia	2,100
1993	Flood	Nepal	1,800
1993	Earthquake (Maharashtra Earthquake)	India	9,800
1993	Flood	India	1,200
1994	Heavy Rain, Flood	India	2,000
1994	Typhoon, Flood	6 Southern Provinces of China	1,000
1994	Tropical Storm	Haiti	1,100
1995	Earthquake (Great Hanshin-Awaji Earth-quake)	Japan	6,300
1995	Earthquake	Russia	1,800
1995	Flood	China	1,200
1996	Flood/Typhoon	Seven southern and five northern and north-western provinces of China	2,800
1996	Typhoon/Flood	Viet Nam	1,000
1997	Earthquake	Eastern Iran	1,600
1997	Flood	India	1,400
1997	Flood	Southern Somalia	2,000
1997	Typhoon Linda	Southern Viet Nam	3,700
1998	Earthquake	Northern Afghanistan	2,300

Year	Disaster Type	Country (Areas)	Fatalities/Missing Persons (approx.)
1998	Earthquake	Northern Afghanistan	4,700
1998	Flood/Landslide	Assam state, India	3,000
1998	Cyclone	India	2,900
1998	Flood	Bangladesh	1,000
1998	Flood	Coastal areas of the Yangtze River and other rivers in China	3,700
1998	Tsunami (Aitape Tsunami)	Papua New Guinea	2,600
1998	Hurricane Mitch	Honduras, Nicaragua	17,000
1999	Earthquake (Quindio Earthquake)	Mid-western Colombia	1,200
1999	Earthquake (Izmit Earthquake)	Western Turkey	15,500
1999	Earthquake (Chi-Chi earthquake)	Taiwan	2,300
1999	Cyclone	India	9,500
2000	Flood	Venezuela	30,000
2001	Earthquake (Gujarat earthquake)	India	20,000
2001	Earthquake	El Salvador	1,200
2003	Earthquake	Northern Algeria	2,300
2003	Earthquake (Bam earthquake)	Iran	26,800
2004	Flood	Haiti	2,700
2004	Hurricane	USA, Jamaica, Puerto Rico, Haiti	3,000
2004	Earthquake, Tsunami (2004 Indian Ocean Earthquake and Tsunami)	Sri Lanka, Indonesia, Maldives, India, Thailand, Malaysia, Myanmar, Seychelles, Somalia, Tanzania, Bangladesh, Kenya	Over 226,000
2005	Flood/Landslide	India	1,200
2005	Hurricane Katrina	USA	1,800
2005	Rainstorm	India, Bangladesh	1,300
2005	Hurricane Stan/Flood	Guatemala, El Salvador, Mexico	1,500
2005	Earthquake (Pakistan earthquake)	Northern Pakistan and India	75,000
2006	Landslide	Philippines	1,100
2006	Earthquake/Volcanic Eruption	Merapi volcano, Indonesia	5,800
2006	Typhoon Xangsane	Luzon, Philippines	1,400
2007	Heavy Rain, Flood	India	1,100
2007	Cyclone Sidr	Bangladesh	4,200
2008	Earthquake (Great Sichuan Earthquake)	China	87,500
2008	Cyclone Nargis	Myanmar	138,400
2008	Flood	North-eastern India	1,100
2009	Earthquake (2009 Sumatra Earthquake)	Indonesia	1,200
2009	Flood	South of India	1,200
2010	Earthquake (Haiti Earthquake)	Haiti	222,600
2010	Earthquake (Yushu)	Qinghai, China	3,000
2010	Flood	North-western Pakistan	2,000
2010	Heavy Rain, Debris Flow	Yangtze River Basin, China	1,800
2011	Earthquake, Tsunami (Great East Japan Earthquake)	Tohoku and Kanto regions, Japan	19,000
2011	Typhoon Washi	Mindanao, Philippines	1,400
2012	Typhoon Bopha	Mindanao, Philippines	1,900
2013	Flood	Northern India	1,500
2013	Typhoon Haiyan	Leyte, Philippines	6,200

Source: Prepared by the Cabinet Office based on materials including the Chronological Scientific Tables and EM-DAT: The OFDA/CRED International Disaster Database (www.emdat.be, Université Catholique de Louvain, Brussels, Belgium).

Fig. A-26 Top 10 Largest Earthquakes Since 1900

(As of May 31, 2014)

Ranking	Date (Japan Time)	Location	Magnitude (Mw)
1	May 23, 1960	Chile	9.5
2	March 28, 1964	Gulf of Alaska	9.2
3	December 26, 2004	Off the West Coast of Northern Sumatra, Indonesia	9.1
4	March 11, 2011	Off the Sanriku Coast, Japan (Great East Japan Earthquake)	9.0
	November 5, 1952	Kamchatka Peninsula	9.0
6	February 27, 2010	Offshore Maule, Chile	8.8
	February 1, 1906	Offshore Ecuador	8.8
8	February 4, 1965	Aleutian Islands, Alaska	8.7
9	April 11, 2012	Off the West Coast of Northern Sumatra, Indonesia	8.6
	March 29, 2005	Northern Sumatra, Indonesia	8.6
	March 10, 1957	Aleutian Islands, Alaska	8.6
	August 16, 1950	Tibet, Assam	8.6

Mw: Moment magnitude
Source: US Geological Survey

Fig. A-27 Major Natural Disasters Since 2014

Date	Country	Disaster Type	Fatalities	People Affected	Direct Damages (USD millions)
Apr. 2014	Honduras	Drought		9,331,555	
Apr. 1, 2014	Chile	Earthquake	6	513,387	100
Apr. 2, 2014	Chile	Earthquake	6	513,837	100
Apr. 24-May 2, 2014	Afghanistan	Flood	431	140,100	
27 Apr.-May 1, 2014	USA	Flood	40	250	1,700
May 2014	Burkina Faso	Drought		4,000,000	
3 May-Jun. 6, 2014	Guatemala	flood	5	100,000	
May 11-20, 2014	USA	Forest Fire	2	429	100
May 13-20, 2014	Bosnia and Herzegovina	Flood	25	1,000,000	437
May 13-20, 2014	Serbia	Flood	51	1,600,000	2,172
May 18-23, 2014	USA	Storm			3,900
May 24-28, 2014	China	Flood	37	475,000	1,200
May 24, 2014	China	Earthquake		225,015	60
May 24, 2014	Greece	Earthquake	3	75,002	450
May 30, 2014	China	Earthquake		184,723	
Jun. 2014	Niger	Flood	36	165,578	
Jun. 1, 2014	China	Flood	33	370,000	675
Jun. 1-10, 2014	Iran	Flood	37	440,000	49
Jun. 17-21, 2014	China	Flood	30	15,000,000	925
Jun. 25-30, 2014	China	Flood	24	150,000	483
Jun. 4-10, 2014	Sri Lanka	Flood	27	104,009	
Jun. 7-30, 2014	Brazil	Flood	11	500,052	
Jul. 2014	Somalia	Drought		350,000	
Jul. 3-7, 2014	China	Flood	36	50,000	547
Jul. 7-10, 2014	Japan	Typhoon	7	666	100
Jul. 7-9, 2014	USA	Storm	5		350

Date	Country	Disaster Type	Fatalities	People Affected	Direct Damages (USD millions)
Jul. 13-18, 2014	China	Flood	66		1,250
Jul. 18-19, 2014	China	Typhoon	71	9,960,099	4,233
Jul. 22-24, 2014	China	Typhoon			550
Jul. 25-Sept. 2014	Sudan	Flood	77	260,227	
Jul. 15, 2014	Philippines	Typhoon	100	1,600,735	165
Jul. 30, 2014	India	Landslide	209		
Aug. 2014	Guatemala	Drought		1,180,000	58
Aug.-Oct. 2014	China	Drought		27,500,000	
Aug. 2-25, 2014	Nepal	Landslide	156	184,894	
Aug. 3, 2014	China	Earthquake	617	1,120,513	5,000
Aug. 3-4, 2014	India	Flood	35	179,000	
Aug. 9-16, 2014	India	Flood	47	3,600,000	
Aug. 10-12, 2014	Japan	Typhoon	10	21,750	100
Aug. 11-19, 2014	China	Flood	27	150,000	487
Aug. 11- Sept. 10, 2014	Bangladesh	Flood	59	2,800,447	150
Aug. 22-28, 2014	China	Flood	10	50,000	700
Aug. 24, 2014	USA	Earthquake	1	3,532	1,000
Sept. 2014	India	Flood	298	275,000	16,000
Sept. 1-Oct. 9, 2014	Pakistan	Flood	367	253,000	2,000
Sept. 1-8, 2014	China	Flood	44	121,700	570
Sept. 2, 2014	China	Storm		136,255	
Sept. 10-16, 2014	Philippines	Typhoon	4	431,086	19
Sept. 10-16, 2014	China	Typhoon	9	394,000	2,900
Sept. 10-17, 2014	China	Flood	50	1,065,000	1,400
Sept. 10-17, 2014	Mexico	Hurricane	5	135	2,500
Sept. 17-22, 2014	Philippines	Typhoon	22	2,052,157	76
Sept. 18-24, 2014	Taiwan	Typhoon			400
Sept. 24-Nov. 10, 2014	India	Flood	95	650,000	163
Oct. 6, 2014	Japan	Typhoon	11	8,706	100
Oct. 7, 2014	China	Earthquake	1	255,325	835
Oct. 12, 2014	India	Typhoon	45	920,000	7,000
Oct. 12-13, 2014	Japan	Typhoon	9	1,198	100
Nov. 12-16, 2014	Italy	Storm	5		250
Nov. 15-19, 2014	USA	Storm	24		100
Nov. 21-24, 2014	Morocco	Storm	38	117,000	450
Nov. 22, 2014	China	Earthquake	5	125,055	
Dec. 2014-Jan. 2015	Malawi	Flood	48	106,000	
Dec. 1, 2014-Jan. 5, 2015	Sri Lanka	Flood	41	1,100,000	
Dec. 12, 2014	Philippines	Typhoon	18	4,150,400	
Dec. 12-13, 2014	Indonesia	Landslide	108	1,900	
Dec. 16-30, 2014	Malaysia	Flood	17	230,000	284
Dec. 28-31, 2014	Philippines	Flood	63	543,816	14
Jan. 6-9, 2015	Lebanon	Cold Wave		1,000,000	
Feb. 25, 2015	Bolivia	Flood	30	140,220	
Feb. 25, 2015	Afghanistan	Avalanche	308		
Mar. 3-9, 2015	Papua New Guinea	Flood	6	100,000	
Mar. 13, 2015	Vanuatu	Typhoon	11	166,000	

Source: Prepared by the Cabinet Office based on materials including relevant information from countries, UNOCHA and EM-DAT: The OFDA/CRED International Disaster Database (www.emdat.be, Université Catholique de Louvain, Brussels, Belgium).

(1) Landslide in Kathmandu, Nepal

In Nepal, as a result of the heavy rains that had fallen on August 2, a large-scale landslide occurred in the Sindhupalchowk area to the northeast of the capital, Kathmandu, killing 156 people. Since the landslide blocked the Sunkoshi River, fears that the natural damming of the river would also collapse in downstream areas of India prompted more than 10,000 to flee their homes.

The rain that continued to fall following the disaster created a high risk of flash floods, and rescue activities were conducted by the state and local governments. The Nepal National Disaster Response Team, the District Disaster Response Teams, and the Nepal Red Cross Society of carried out emergency medical treatment and hygiene management.

(2) Earthquake in Yunnan Province, China

A magnitude 6.5 earthquake struck Ludian County, Zhaotong City, Yunnan Province in China at 4:30 pm (local time) on August 3, 2014. This earthquake caused immense damage: 80,000 or more houses collapsed, 617 people were killed, 112 people were reported missing, and more than 3,000 people were injured. In Ludian County, roads and other transportation networks were blocked, and more than 211 aftershocks were predicted before 8:56 am (local time) on August 4. These were the conditions in which rescue activities were carried out.

UNICEF provided medical relief supplies and joined the Chinese government in providing continuous support at the disaster sites in order to improve the environmental health and hygiene in hospitals and schools.

(3) Torrential Rains in East Pakistan

In Punjab in eastern Pakistan and in Kashmir in northeastern Pakistan, torrential rains that started in late September on account of the monsoon killed 367 people and injured 673. There were more than 2.5 million people affected, and more than 680,000 were forced to flee their homes. More than 100,000 houses were destroyed by the rains, with damage extending to 4,065 villages in the four states that were affected.

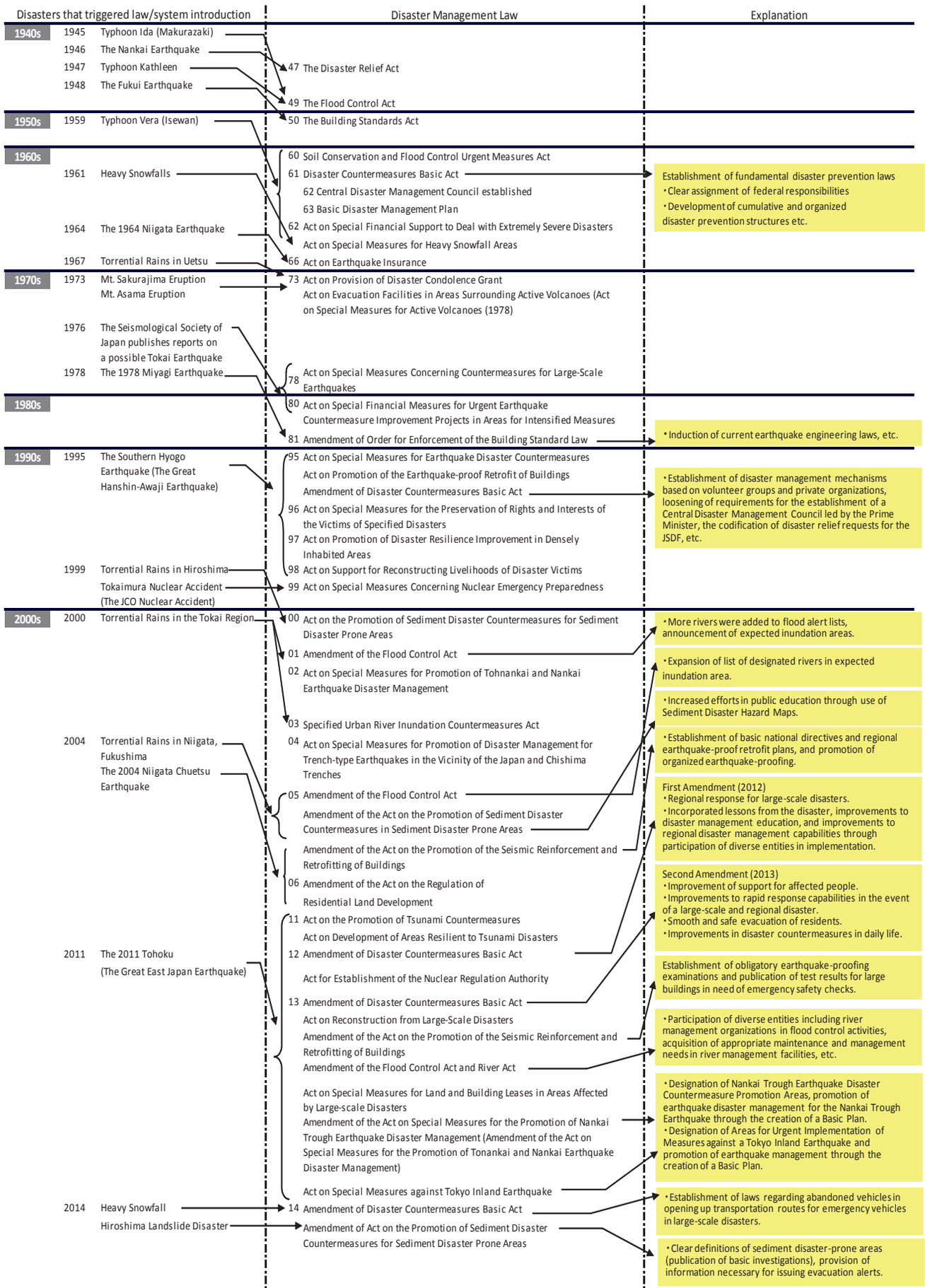
The Japanese government, through the nonprofit organization Japan Platform, provided approximately JPY 23 million worth of emergency relief goods (food, sanitary goods, and relief supplies). In recent years, Pakistan has experienced repeated large-scale damage due to flooding during the monsoon season. For this reason, in November 2014, the Japanese government concluded a grant aid donation agreement (grant limit approximately JPY 3,646 million with Pakistan in order to implement two plans in the state of Punjab: (1) the Mid-term Plan to Establish a Weather Forecasting Center and Strengthen the Weather Forecasting System and (2) the Gujranwala Sewage and Drainage Capacity Improvement Plan.

(4) Nepal Earthquake (as of May 13, 2015)

At midnight (local time) on May 25, 2013, a magnitude 7.8 earthquake occurred with an epicenter about 80 km northwest of the capital Kathmandu. Tremors occurred throughout Nepal and even in neighboring countries. Large buildings collapsed all over Kathmandu, including the surrounding area. Approximately 300,000 houses were completely destroyed, 270,000 houses were partially destroyed, 8,000 or more people were killed, and 18,000 people were injured. In addition, historic buildings were damaged, mountaineers were injured as a result of avalanches on Mount Everest, and there were widespread casualties as a result of the aftershocks. Casualties were also reported in neighboring countries.

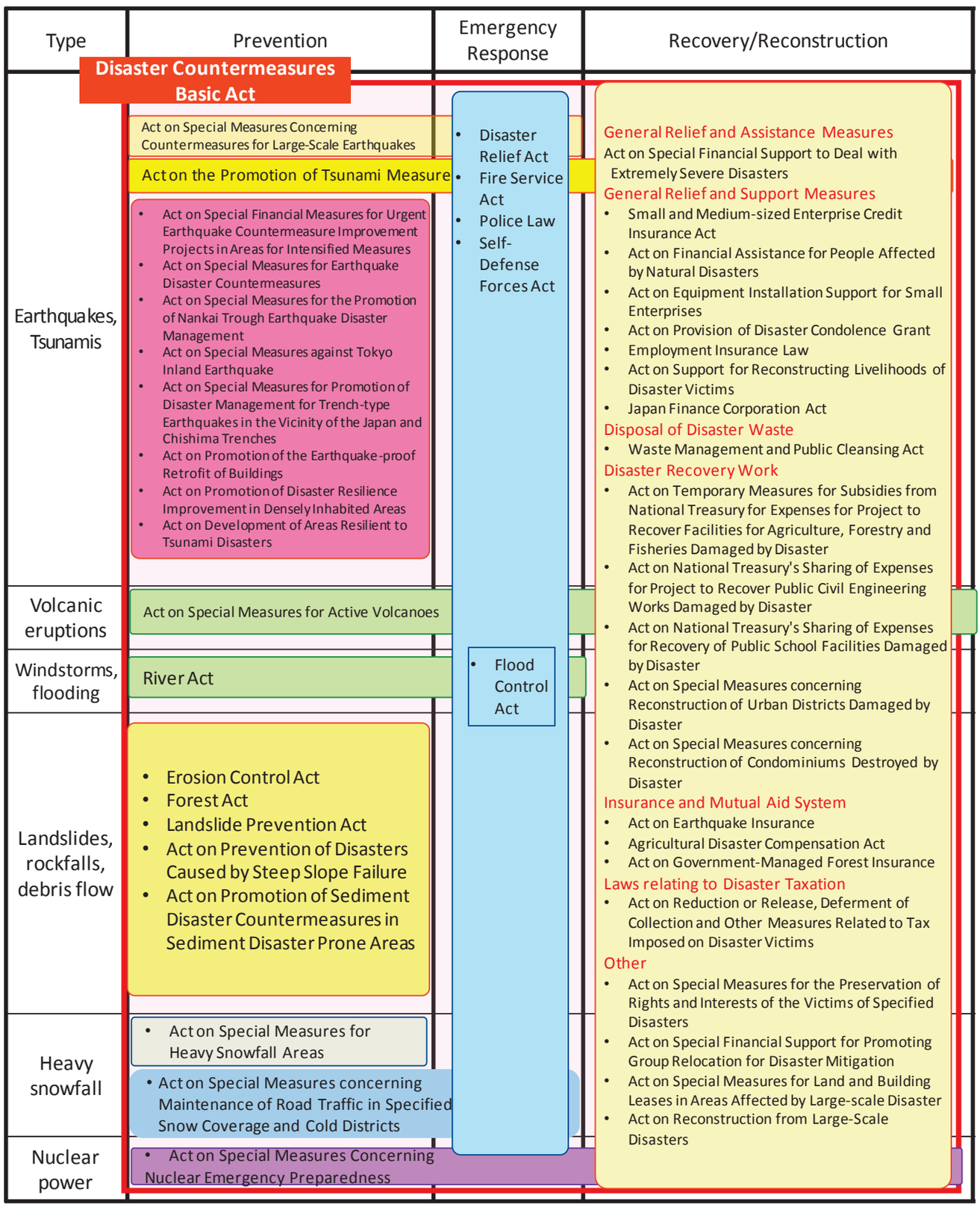
The Japanese government provided tents, blankets, and other disaster relief supplies, and through international institutions provided a total of USD 14 million (approximately JPY 1,680 million) in emergency grants. Japan Disaster Relief Teams were also dispatched to provide assistance with rescue efforts and medical care.

Fig. A-28 Progress on Disaster Management Laws and Systems Since 1945



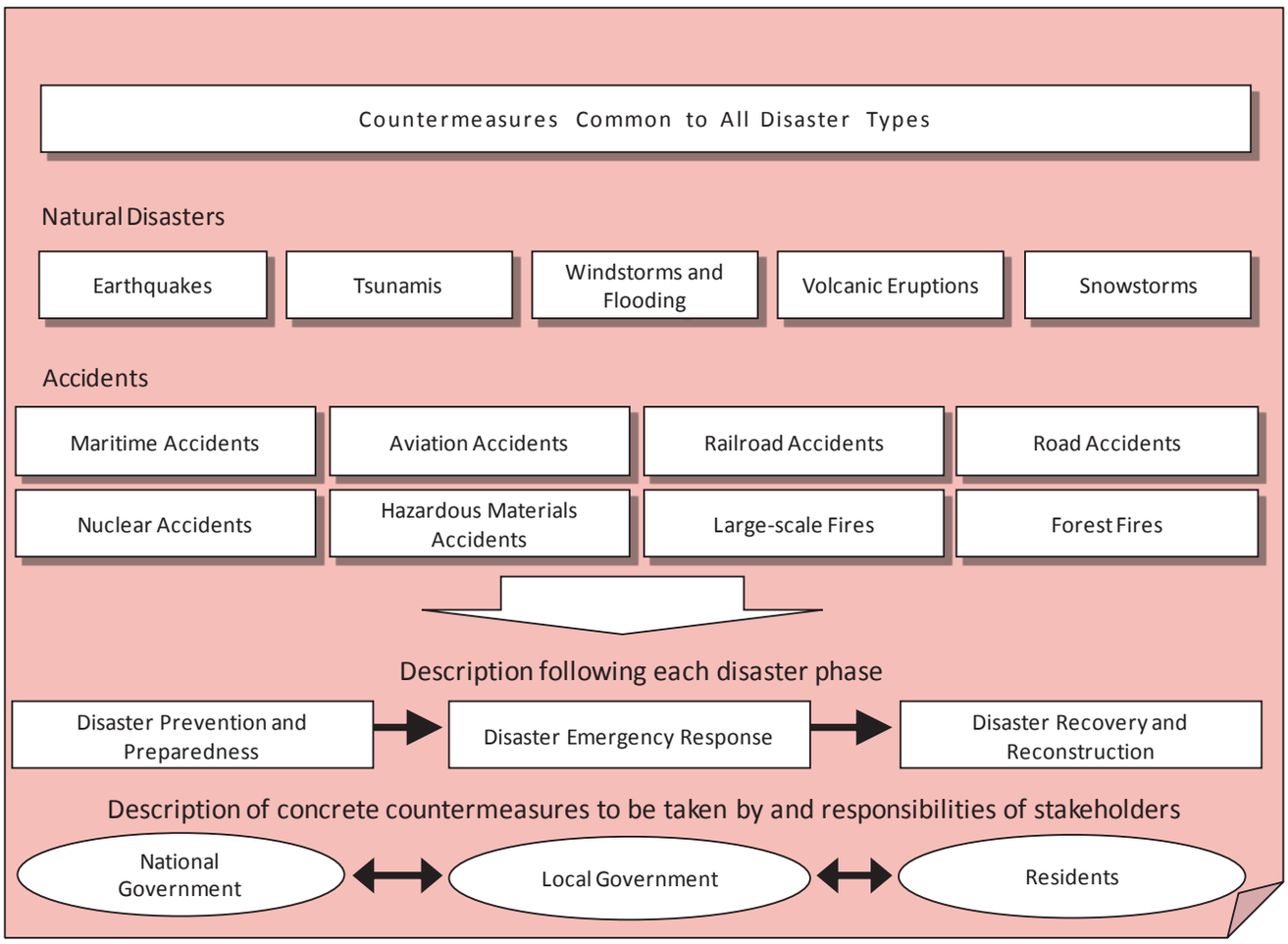
Source: Cabinet Office

Fig. A-29 **Major Disaster Management Laws by Type of Disaster**



Source: Cabinet Office

Fig. A-30 **Structure and System of the Basic Disaster Management Plan**



Source: Cabinet Office

Fig. A-31 **History of Revisions to the Basic Disaster Management Plan**

Revision Date	Outline of Revision	Background
June 1963	- The Basic Disaster Management Plan formulated based on the Disaster Countermeasures Basic Act - Stipulations regarding various measures to prevent natural disasters, mitigate damage, and promote disaster reconstruction	Sep. 26, 1959: Typhoon Isewan Nov. 15, 1961: Enactment of the Disaster Countermeasures Basic Act
May 1971	Partial revision - Enhancement of earthquake countermeasures (facilities for earthquake prediction, preparation of fire fighting helicopters) - Renewed positioning of countermeasures to tackle hazardous materials, petrochemical complexes, and wildfires	Sep. 6, 1967 Recommendation concerning Disaster Prevention Measures (recommending revisions in response to a modern socioeconomy)
July 1995	Complete revision - Structured this version by disaster type, and included stipulations in the following order: prevention, emergency response, recovery/reconstruction - Clearly defined the stakeholders, such as national governments, public agencies, local governments, and businesses, and specified countermeasures - Stipulated that changes in social structure such as the aging of society should be taken into account	Jan. 17, 1995: Great Hanshin-Awaji Earthquake
June 1997	Partial revision - Addition of section on countermeasures to address disasters caused by accidents (structural improvements such as the establishment of an emergency countermeasures headquarters) - Addition of a section on snowstorm countermeasures	Jan. 2, 1997: Nakhodka Oil Spill Accident
May 2000	Partial revision - Revision of the section on countermeasures to tackle nuclear power disasters, following the enactment of the Act on Special Measures Concerning Nuclear Emergency Preparedness	Sep. 30, 1999: Criticality accident at uranium fabrication plant in Tokai-mura, Ibaraki prefecture
December 2000	Partial revision - Revisions resulting from the central government reformation	Central government reformation
April 2002	Partial revision - Enhancement of descriptions relating to information transmission to residents and evacuation measures regarding countermeasures against flooding, sediment disasters, and storm surges - New positioning of nuclear power disasters related to nuclear vessels	Jun. 29, 1999: Heavy rain disaster in Hiroshima Prefecture Sep. 24, 1999: Storm surge disaster in Kumamoto Prefecture
March 2004	Partial revision - Revisions based on the creation of the Basic Plan for the Promotion of Tonankai and Nankai Earthquake Countermeasures (seismic retrofitting of public buildings, etc.) - Revisions based on the development of policies such as the development of an earthquake early warning system	Mar. 31, 2004: Creation of a Basic Plan for the Promotion of Tohnankai and Nankai Earthquake Countermeasures
July 2005	Partial revision - Revisions based on developments in policy, such as the promotion of a nationwide movement to practice disaster preparedness, the promotion of corporate disaster risk reduction efforts, the formulation and implementation of an earthquake DRR strategy, tsunami DRR measures such as the development of tsunami evacuation buildings, information transmission during torrential rains, evacuation support for the elderly, etc.	July 28, 2004: Creation of an Earthquake Disaster Risk Reduction Strategy Dec. 26, 2004: Indian Ocean Tsunami (Sumatra/Andaman Earthquake)
March 2007	Partial revision - Revisions resulting from the transition from Defense Agency to Ministry of Defense	Transition from Defense Agency to Ministry of Defense
February 2008	Partial revision - Implementation of follow-up actions on key issues regarding the Basic Disaster Management Plan, development of strategic national movements, establishment of conditions for the promotion of corporate disaster risk reduction, full-scale introduction of earthquake early warning system, strengthening of nuclear power disaster countermeasures in light of lessons learned from the Niigataken Chuetsu-oki Earthquake	July 16, 2007:The Niigataken Chuetsu-oki Earthquake
December 2011	Partial revision - Radical strengthening of earthquake/tsunami countermeasures in light of the Great East Japan Earthquake (addition of tsunami disaster countermeasure section)	Mar. 11, 2011 The Great East Japan Earthquake
September 2012	Partial revision - Strengthening of countermeasures against large-scale regional disasters in light of revisions to the Disaster Countermeasures Basic Act (First Revision), and the final report of the Central Disaster Management Council's Committee for Policy Planning on Disaster Management (each section) - Strengthening of nuclear power disaster countermeasures in light of the enactment of the Act for Establishment of the Nuclear Regulation Authority (nuclear power disaster countermeasures section)	Mar. 11, 2011 The Great East Japan Earthquake Jun. 27, 2012 Partial revisions to the Disaster Countermeasures Basic Act Sep. 19, 2012 Inauguration of the Nuclear Regulatory Authority
January 2014	Partial revision - Strengthening of countermeasures against large-scale disasters in light of revisions to the Disaster Countermeasures Basic Act (Second Revision) and the enactment of the Act on Reconstruction from Large-Scale Disasters (each section) - Strengthening of nuclear disaster countermeasures in light of investigations by the Nuclear Regulation Authority	Mar. 11, 2011 The Great East Japan Earthquake Jun. 21, 2013 Partial revisions to the Disaster Countermeasures Basic Act, enactment of the Act on Reconstruction from Large-Scale Disasters
November 2014	Partial revision - Strengthening of countermeasures against abandoned and stranded vehicles following revision of the Disaster Countermeasures Basic Act - Addition of descriptions in light of lessons learned from heavy snowfall of February 2014, such as the diversification of information transmission methods such as warnings of heavy snow	Feb. 2014: Heavy snowfall Nov. 21, 2014: Partial revisions to the Disaster Countermeasures Basic Act
March 2015	Partial revision - Improvement and strengthening of nuclear disaster risk reduction systems e.g., through the establishment of local nuclear disaster management committees and national support for the enhancement of local disaster management plans/evacuation plans (nuclear disaster countermeasures section)	Mar. 5, 2015: Cabinet Secretariat Three-Year Revision and Investigation Team "Improvement and Strengthening of the Nuclear Disaster Management System (Second Report)"

Source: Cabinet Office

Section 4: Organizations

Fig. A-32 **Organization of the Central Disaster Management Council**

Central Disaster Management Council (Section I , Chapter II of the Disaster Countermeasures Basic Act)			
Chair	Prime Minister		
Members	Minister of State for Disaster Management Other ministers of state (all appointed by Prime Minister)	Heads of Designated Public Corporations (appointed by Prime Minister) Haruhiko Kuroda Governor of the Bank of Japan Tadateru Konoe President of Japanese Red Cross Society Katsuto Momii President of (Japan Broadcasting Corporation (NHK) Hiroo Unoura President of Nippon Telegraph and Telephone Corporation	Experts (appointed by Prime Minister) Katsuyuki Abe Professor Emeritus of the University of Tokyo Hirohiko Izumida Governor of Niigata Prefecture Hisako Komuro Professor of Tokyo International University Shigeji Watanabe Vice Chairman of the Japan Firefighters Association
Committees for Technical Investigation			
● Disaster Management Implementation Committee (established March 26, 2013)			
Officers' Meeting			
Chair: Parliamentary Vice-Minister of Cabinet Office Vice Chair: Director General for Disaster Management, Cabinet Office, and Deputy Manager of the Fire and Disaster Management Agency Advisor: Deputy Chief Cabinet Secretary for Crisis Management Secretary: Relevant directors-general of each ministry and agency			

Inquiry ←
→ Report
→ Offer Opinion

Prime Minister, Minister of State for Disaster Management

Role

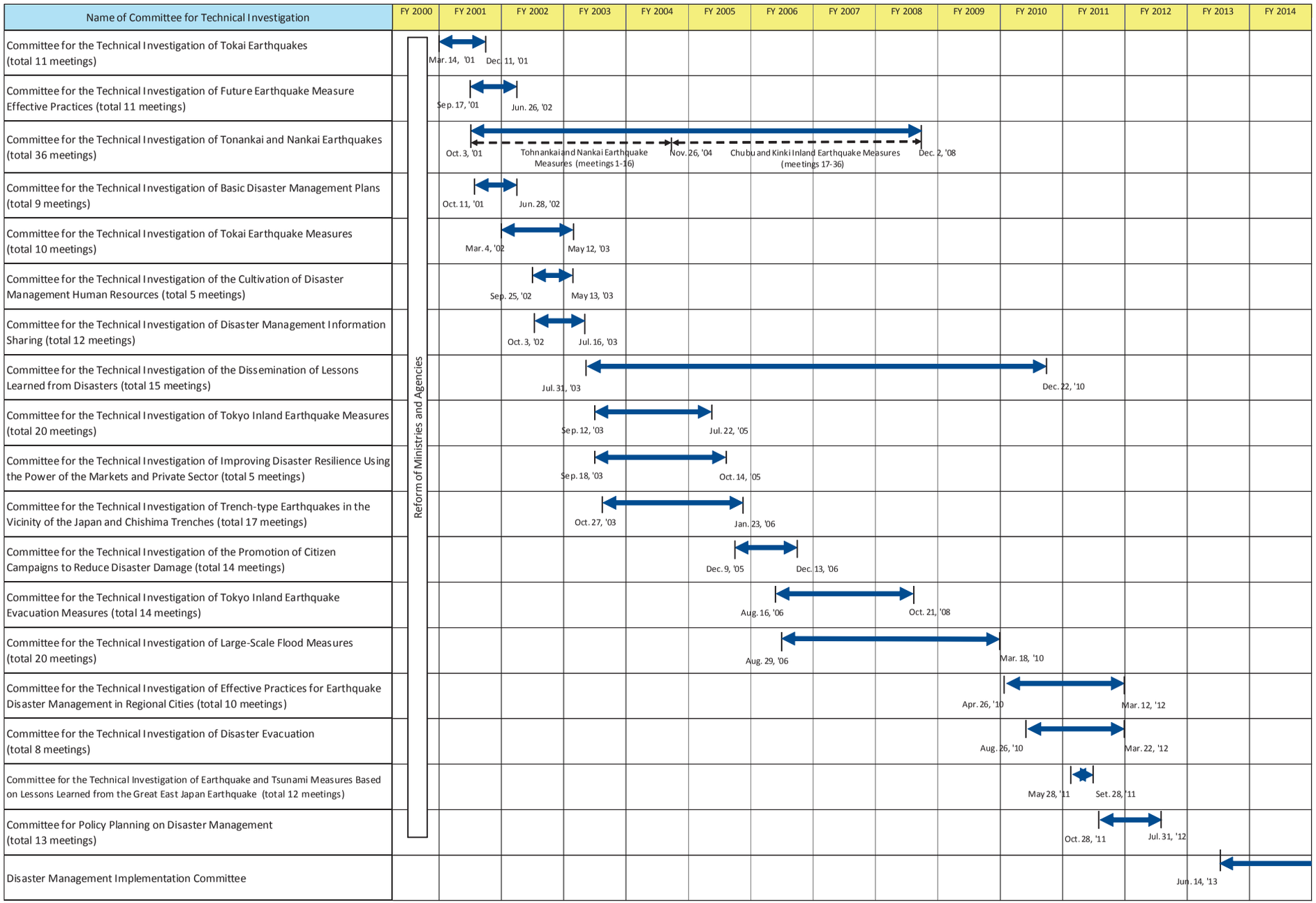
- ○ Formulate a Basic Disaster Management Plan and Earthquake Disaster Management Plan and promote their implementation
- ○ Discuss important issues related to disaster management in response to inquiries from the Prime Minister or the Minister of State for Disaster Management (e.g., basic approaches to disaster management, comprehensive coordination of disaster management policies, and the declaration of states of emergency)
- ○ Offer opinions on important issues related to disaster management to the Prime Minister or the Minister of State for Disaster Management

Source: Cabinet Office

Fig. A-33 Recent Meetings of the Central Disaster Management Council (Since 2008)

FY 2008	
Apr. 23, 2008	• FY 2008 Comprehensive Disaster Management Drill Framework • Comprehensive plan for achieving "zero victims" of natural disasters • Explanation: Shinya Izumi (Cabinet Office, Minister of State for Disaster Management)
Dec. 12, 2008	• Disaster Management Strategy for Trench-type Earthquakes in the Vicinity of the Sea of Japan and Chishima Trenches • Report by the Committee for the Technical Investigation of Tokyo Inland Earthquake Evacuation Measures • Formulation status of business continuity plans by central government ministries and agencies • Report on Chubu and Kinki Region Inland Earthquakes • Measures for handling evacuees and stranded persons following a Tokyo Inland Earthquake
FY 2009	
Apr. 21, 2009	• FY 2009 Comprehensive Disaster Management Drill Framework • Framework for Chubu and Kinki Region Inland Earthquake Countermeasures • Promotion of new earthquake surveys and research • Volcanic eruption possibilities and DRR measures
Jan. 15, 2010	• Establishment of the Committee for the Technical Investigation of Best Practices for Earthquake Disaster Management in Regional Cities • Revisions to the General Framework for Tokyo Inland Earthquake Countermeasures • Report of the Committee for the Technical Investigation of the Dissemination of Lessons Learned from Disasters • Earthquake DRR measures in Japan
FY 2010	
Apr. 21, 2010	• FY 2010 Comprehensive Disaster Management Drill Framework • Establishment of the Committee for the Technical Investigation of Disaster Evacuation • Report of the Committee for the Technical Investigation of Large-Scale Flood Measures • Tsunamis caused by earthquakes centered along the coast of Chile • Tokyo Metropolitan Area Flooding: Measures Needed for Damage Mitigation • (Overview of the Report of the Committee for the Technical Investigation of Large-Scale Flood Measures)
FY 2011	
Apr. 27, 2011	• Great East Japan Earthquake: Characteristics and Challenges • Conventional earthquake and tsunami policies
Oct. 11, 2011	• Report of the Committee for the Technical Investigation of Earthquake and Tsunami Measures Based on Lessons Learned from the Great East Japan Earthquake • Government ministry and agency efforts related to future DRR efforts • Establishment of the Committee for Policy Planning on Disaster Management
Dec. 27, 2011	• Revisions to the Basic Disaster Management Plan • Revisions to the Central Disaster Management Council Operation Guidelines • Report of the Committee for the Technical Investigation of the Dissemination of Lessons Learned from Disasters • Status of the investigations by the Committee for Policy Planning on Disaster Management
Mar. 29, 2012	• Interim Report of the Committee for Policy Planning on Disaster Management • Current efforts aimed at bolstering and reinforcing DRR measures • FY 2012 Comprehensive Disaster Management Drill Framework
FY 2012	
Sept. 6, 2012	• Revisions to the Basic Disaster Management Plan • Framework for Large-Scale Flood Measures in the Capital Region • Promotion of new earthquake surveys and research • Final Report of the Committee for Policy Planning on Disaster Management • Report of the Committee for the Technical Investigation of Best Practices for Earthquake Disaster Management in Regional Cities • Report of the Committee for the Technical Investigation of Disaster Evacuation • Report on Tsunami Heights and Inundation Areas Resulting from a Nankai Trough Megaquake (Secondary Report) and Damage Estimates (Primary Report)
Mar. 26, 2013	• Review of the legal systems for disaster management; status of investigations into Nankai Trough Megaquake Measures and Tokyo Inland Earthquake Measures • Establishment of the Disaster Management Implementation Committee • FY 2013 Comprehensive Disaster Management Drill Framework
FY 2013	
Jan. 17, 2014	• Designation of Areas for the Promotion of Nankai Trough Earthquake DRR Measures and Areas for the Special Reinforcement of Nankai Trough Earthquake Tsunami Evacuation Measures • Designation of Tokyo Inland Earthquake Emergency Management Zones • Revisions to the Basic Disaster Management Plan • Final Report of the Working Group to Investigate Tokyo Inland Earthquake Measures and a Central Government Business Continuity Plan Proposal
Mar. 28, 2014	• Act on Special Measures for the Promotion of Nankai Trough Earthquake Disaster Management • Act on Special Measures against Tokyo Inland Earthquake • Framework for Large-Scale Earthquake Disaster Management and Reduction • FY 2014 Comprehensive Disaster Management Drill Framework

Source: Cabinet Office



Source: Cabinet Office

Section 5: Budget

Fig. A-35 **Disaster Management Budgets by Year**

Fiscal Year	Science and Technology Research		Disaster Prevention		Land Conservation		Disaster Reconstruction		Total
	(JPY million)	Share (%)	(JPY million)	Share (%)	(JPY million)	Share (%)	(JPY million)	Share (%)	(JPY million)
1962	751	0.4	8,864	4.3	97,929	47.1	100,642	48.3	208,006
1963	1,021	0.4	8,906	3.7	116,131	47.7	117,473	48.2	243,522
1964	1,776	0.7	13,724	5.4	122,409	48.3	115,393	45.6	253,302
1965	1,605	0.5	17,143	5.6	147,858	48.3	139,424	45.6	306,030
1966	1,773	0.5	20,436	5.9	170,650	49.0	155,715	44.7	348,574
1967	2,115	0.6	23,152	6.1	197,833	52.3	154,855	41.0	377,955
1968	2,730	0.7	25,514	6.8	207,600	55.4	138,815	37.1	374,659
1969	2,747	0.7	30,177	7.5	236,209	59.0	131,270	32.8	400,403
1970	2,756	0.6	36,027	8.2	269,159	60.9	133,998	30.3	441,940
1971	3,078	0.5	50,464	8.6	352,686	60.3	178,209	30.5	584,437
1972	3,700	0.4	93,425	10.3	488,818	54.1	316,895	35.1	902,838
1973	6,287	0.7	111,321	12.4	493,580	54.9	287,082	32.0	898,270
1974	14,569	1.5	118,596	12.1	505,208	51.5	342,556	34.9	980,929
1975	17,795	1.5	159,595	13.3	615,457	51.3	405,771	33.9	1,198,618
1976	21,143	1.3	186,297	11.5	711,159	43.9	700,688	43.3	1,619,287
1977	22,836	1.4	234,409	13.9	904,302	53.6	525,886	31.2	1,687,433
1978	29,642	1.7	307,170	17.3	1,093,847	61.6	345,603	19.5	1,776,262
1979	35,145	1.6	435,963	20.4	1,229,401	57.6	432,759	20.3	2,133,268
1980	29,929	1.2	456,575	18.9	1,229,615	50.8	705,168	29.1	2,421,287
1981	29,621	1.2	474,926	18.9	1,240,788	49.5	761,950	30.4	2,507,285
1982	28,945	1.1	469,443	17.2	1,261,326	46.3	963,984	35.4	2,723,698
1983	29,825	1.1	489,918	18.4	1,268,712	47.6	875,851	32.9	2,664,306
1984	28,215	1.2	485,219	20.7	1,350,592	57.7	475,878	20.3	2,339,904
1985	27,680	1.1	512,837	20.2	1,355,917	53.5	640,225	25.2	2,536,659
1986	28,646	1.2	482,889	19.7	1,354,397	55.3	581,462	23.8	2,447,394
1987	38,296	1.4	612,505	21.9	1,603,599	57.2	548,337	19.6	2,802,737
1988	31,051	1.1	587,073	20.8	1,550,132	54.9	657,681	23.3	2,825,937
1989	34,542	1.2	588,354	20.7	1,638,104	57.5	587,819	20.6	2,848,819
1990	35,382	1.1	625,239	20.0	1,669,336	53.4	796,231	25.5	3,126,188
1991	35,791	1.1	628,596	19.8	1,729,332	54.3	788,603	24.8	3,182,322
1992	36,302	1.1	745,405	22.8	2,017,898	61.6	475,411	14.5	3,275,015
1993	43,152	0.9	866,170	18.6	2,462,800	52.9	1,280,569	27.5	4,652,691
1994	40,460	1.0	747,223	18.9	1,945,295	49.1	1,230,072	31.0	3,963,050
1995	105,845	1.4	1,208,134	16.0	2,529,386	33.5	3,696,010	49.0	7,539,375
1996	52,385	1.2	1,029,658	24.5	2,156,714	51.3	968,182	23.0	4,206,938
1997	49,128	1.2	1,147,102	28.2	2,014,695	49.4	864,370	21.2	4,075,295
1998	62,435	1.1	1,228,539	22.3	2,905,921	52.8	1,310,515	23.8	5,507,411
1999	78,134	1.7	1,142,199	25.0	2,400,534	52.6	941,886	20.6	4,562,752
2000	73,502	1.8	1,011,535	24.4	2,376,083	57.3	689,225	16.6	4,150,346
2001	49,310	1.2	1,060,445	26.7	2,238,816	56.4	618,427	15.6	3,966,998
2002	48,164	1.3	1,202,984	31.9	1,981,686	52.5	543,949	14.4	3,776,783
2003	35,133	1.1	814,101	25.7	1,625,670	51.4	689,255	21.8	3,164,159
2004	30,478	0.7	815,059	19.3	1,753,418	41.5	1,622,112	38.4	4,221,067
2005	11,097	0.4	866,290	28.6	1,426,745	47.0	728,606	24.0	3,032,738
2006	11,627	0.4	689,505	25.1	1,439,129	52.3	610,302	22.2	2,750,563
2007	9,687	0.4	706,853	29.0	1,332,222	54.6	391,637	16.0	2,440,399
2008	8,921	0.4	819,359	33.2	1,275,135	51.7	363,471	14.7	2,466,886
2009	8,761	0.4	498,397	23.0	1,383,254	63.7	279,789	12.9	2,170,201

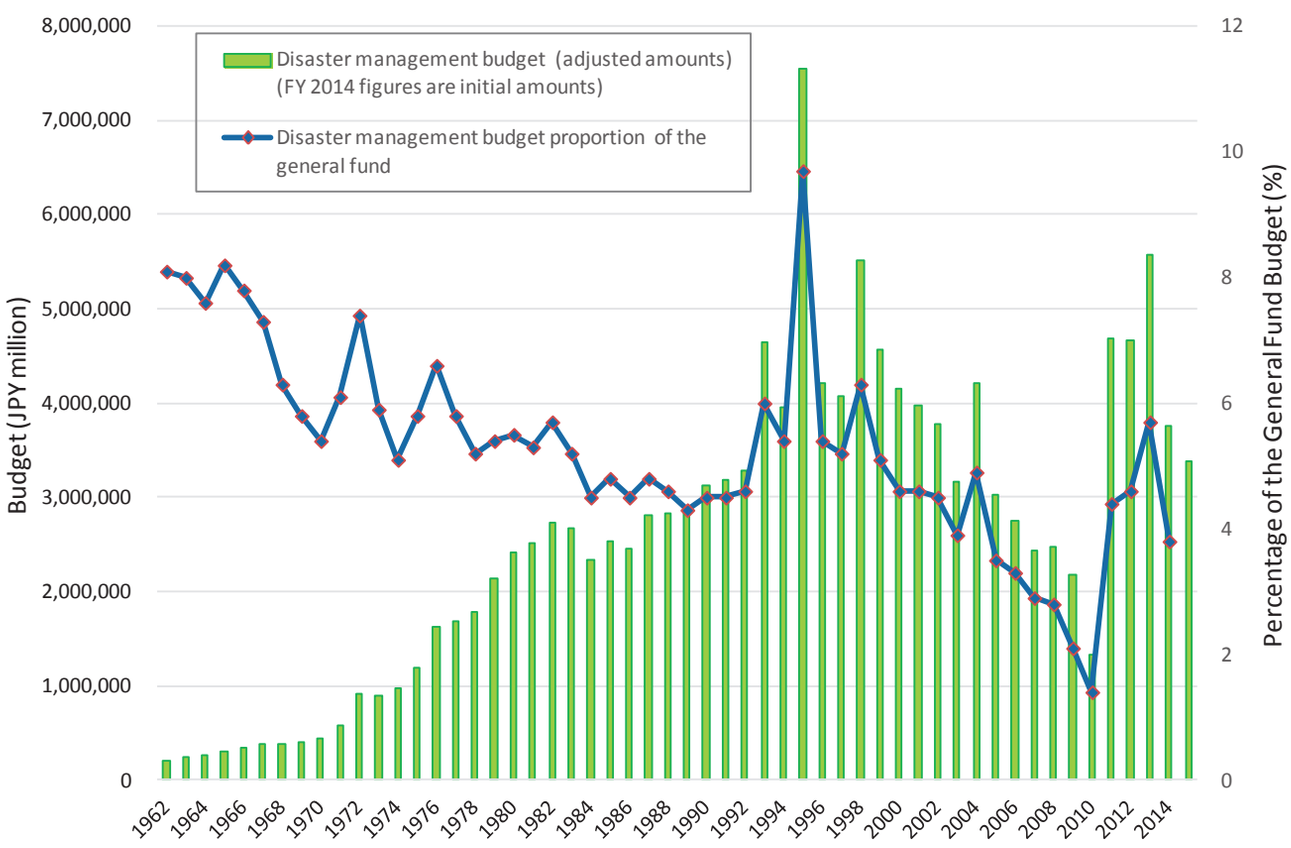
Fiscal Year	Science and Technology Research		Disaster Prevention		Land Conservation		Disaster Reconstruction		Total
	(JPY million)	Share (%)	(JPY million)	Share (%)	(JPY million)	Share (%)	(JPY million)	Share (%)	(JPY million)
2010	7,695	0.6	224,841	16.9	813,359	61.1	285,038	21.4	1,330,933
2011	28,072	0.6	376,169	8.0	743,936	15.9	3,536,475	75.5	4,684,652
2012	29,422	0.6	561,021	12.0	790,422	17.0	3,129,561	67.2	4,656,656
2013	15,339	0.3	788,576	14.1	879,932	15.8	3,883,911	69.6	5,578,036
2014	12,683	0.3	412,904	11.0	803,404	21.3	2,535,673	67.4	3,764,664
2015	9,966	0.3	495,654	14.7	137,192	4.1	2,733,771	81.0	3,376,583

Notes:

1. These are adjusted budget (national expenditures) amounts. However, the FY 2014 figures are preliminary figures reflecting the initial budget.
2. The reduced amount allocated to science and technology research in FY 2007 is largely due to the structural conversion of national lab and research institutions into independent administrative agencies (the budgets of independent administrative agencies are not included in this table).
3. The amount allocated to disaster prevention in FY 2009 is reduced because a portion of the revenue sources set aside for road construction were converted to general fund sources making it impossible to allocate certain portions to the disaster management budget.
4. The reduced amount allocated to disaster prevention and land conservation in FY 2010 is due to the fact that, following the creation of the General Grant for Social Capital Development, some disaster prevention policies and many subsidy programs in land conservation were established using those grants.
5. The reduced amount allocated to land conservation in FY 2011 is a result of the fact that relevant personnel expenses were accounted for separately.

Source: Cabinet Office using materials from various ministries and agencies.

Fig. A-36 Trends in Disaster Management Budget



Source: Created by the Cabinet Office using materials from various ministries and agencies.

Fig. A-37 Earthquake Emergency Development Project Plans

(As of the end of FY 2014; Unit: JPY million)

Category	FY 1980 - FY 2014		
	Planned Amount (a)	Estimated Actual Amount (b) *1	Rate of Progress (b)/(a)
1 Evacuation sites	157,275	157,275	100.0%
2 Evacuation roads	82,316	81,342	98.8%
3 Firefighting facilities	129,797	124,501	95.9%
4 Emergency transport routes	756,712	620,593	82.0%
4-1 Emergency transport routes	675,702	516,882	76.5%
4-2 Emergency transport ports	63,823	65,724	103.0%
4-3 Emergency transport fishing ports	39,641	37,987	95.8%
5 Telecommunications facilities	19,617	18,480	94.2%
6 Public medical institutions	54,012	54,012	100.0%
7 Social welfare facilities	47,835	62,145	129.9%
8 Public elementary and junior high schools	425,150	446,602	105.0%
9 Tsunami countermeasures	158,868	156,897	98.8%
9-1 River management facilities	56,860	56,128	98.7%
9-2 Coastal preservation facilities	103,933	100,769	97.0%
10 Landslide prevention	474,627	457,785	96.5%
10-1 Erosion control facilities	78,788	80,291	101.9%
10-2 Security facilities	142,330	140,190	98.5%
10-3 Landslide facilities	76,686	75,636	98.6%
10-4 Steep slope facilities	146,105	145,614	99.7%
10-5 Ponds	16,896	16,054	95.0%
Total	2,306,209	2,179,632	94.5%

Notes:
*1 The content of Earthquake Emergency Development Project Plans (FY 1980-2014) is as of the end of FY 2014. Estimated actual amounts are calculated using actual amounts for FY 1980-2009 and estimated actual amounts for FY 2010-2014.
*2 Project expenses include expenses for projects that may not be solely designed for earthquake disaster management, but that, while having other policy objectives, also are intended to have an overall effect on earthquake disaster management. Project expenses are not comprised solely of expenses used entirely for disaster management.

Source: Cabinet Office

Based on lessons learned from the Great Hanshin-Awaji Earthquake, the Act on Special Measures for Earthquake Disaster Countermeasures was enacted in July 1995 to protect citizens' lives, heath, and assets from earthquake-related damage. This law allows prefectural governors to create a Five-Year Plan for Emergency Earthquake Disaster Management Projects for communities where there are concerns about the occurrence of a severe earthquake disaster and a portion of the projects to be implemented based on this plan are eligible for an increased rate of financial support from the national government. Thus far, these plans have been created by the prefectural governors over four terms, and earthquake disaster projects have begun to be implemented. These plans are five-year plans created for 29 facilities that need to be urgently developed from the perspective of achieving earthquake disaster reduction. When a prefecture wants to create a plan, hearings are held to listen to the opinions of the municipalities involved, and the consent of the Prime Minister must be obtained. Project budgets for these plans over four terms are shown in the table below.

(All prefectures, as of FY 2014. Unit: JPY 1,000,000)

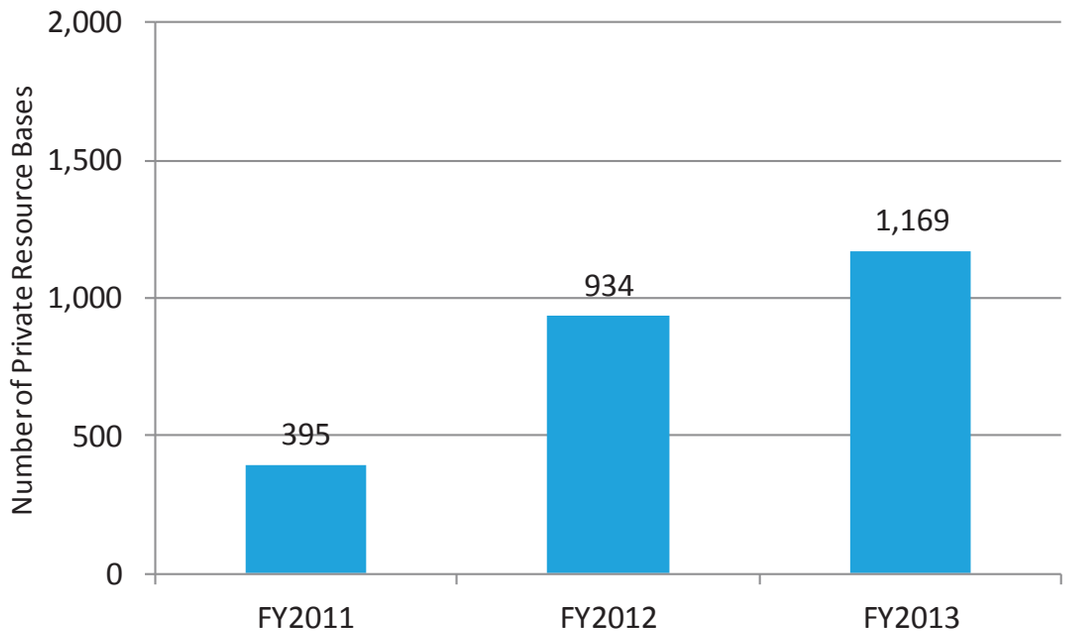
Category	First Five-Year Plan (FY 1996-2000)			Second Five-Year Plan (FY 2001-2005)				Third Five-Year Plan (FY 2006-2010)				Fourth Five-Year Plan (FY 2011-2015)			
	Planned Amt. (a)	Actual Amt. (b)	% Complete (b)/(a)	Project Scope (Unit) (c)	Planned Amt. (d)	Actual Amt. (e)	% Complete (e)/(d)	Project Scope (Unit) (f)	Planned Amt. (g)	Actual Amt. (h)	% Complete (h)/(g)	Project Scope (Unit) (f)	Planned Amt. (g)	Actual Amt. (h)	% Complete (h)/(g)
1. Evacuation sites	1,462,542	959,276	65.6%	3,168 ha	931,413	543,233	58.3%	2,515 ha	488,257	400,283	82.0%	1,458 ha	303,558	172,696	56.9%
2. Evacuation routes	1,481,509	1,105,639	74.6%	2,601 km	1,188,051	900,446	75.8%	1,405 km	952,865	625,957	65.7%	885 km	1,333,127	505,740	37.9%
3. Firefighting facilities	917,213	697,067	76.0%	28,153 sites	540,784	297,301	55.0%	21,039 sites	448,460	246,745	55.0%	20,013 sites	672,698	237,791	35.3%
4. Roads for firefighting activities	168,387	128,163	76.1%	161 km	119,329	92,958	77.9%	102 km	46,719	49,136	105.2%	54 km	23,416	12,737	54.4%
5. Emergency transport roads, etc.	6,067,258	5,719,897	94.3%		5,267,908	4,242,139	80.5%		3,813,169	3,291,461	86.3%		2,722,034	1,548,791	56.9%
5-1. Emergency transport roads	5,555,626	5,355,365	96.4%	3,920 km	4,998,577	4,067,023	81.4%	2,552 km	3,557,657	3,106,165	87.3%	2,254 km	2,548,081	1,429,326	56.1%
5-2. Emergency transport/traffic control facilities	23,900	21,017	87.9%	3,448 facilities	16,855	8,473	50.3%	2,439 acilitie	9,242	6,844	74.0%	4,837 acilitie	15,300	7,960	52.0%
5-3. Emergency transport heliports	6,327	2,094	33.1%	1 sites	550	387	70.4%	0 sites	0	0	—	2 sites	117	78	66.7%
5-4. Emergency transport port facilities	359,671	237,940	66.2%	113 sites	181,503	119,869	66.0%	100 sites	198,676	136,895	68.9%	73 sites	137,802	99,193	72.0%
5-5. Emergency transport fishing port facilities	121,734	103,481	85.0%	73 sites	70,423	46,387	65.9%	43 sites	47,594	41,558	87.3%	25 sites	20,734	12,233	59.0%
6. Multipurpose underground utility conduits	261,385	275,928	105.6%	844 km	394,948	257,890	65.3%	591 km	259,420	175,571	67.7%	470 km	254,399	132,979	52.3%
7. Medical institutions	784,899	526,548	67.1%	115 facilities	391,016	277,721	71.0%	93 acilitie	239,424	150,877	63.0%	216 acilitie	656,327	284,270	43.3%
8. Social welfare facilities	482,317	219,490	45.5%	857 facilities	280,028	176,408	63.0%	521 acilitie	114,756	56,400	49.1%	654 acilitie	121,238	66,155	54.6%
8-2. Public kindergartens	-	-	-	-	-	-	-	995 schools	35,198	7,074	20.1%	1,178 schools	54,705	14,420	26.4%
9. Public elementary and jr. high schools	1,359,672	765,344	56.3%	5,840 schools	1,078,849	594,777	55.1%	16,256 schools	3,077,544	1,399,624	45.5%	13,896 schools	2,308,893	1,059,322	45.9%
10. Public special education schools	84,577	29,685	35.1%	114 schools	32,094	12,070	37.6%	264 schools	56,834	23,262	40.9%	195 schools	40,262	19,404	48.2%
11. Public buildings	24,169	5,267	21.8%	29 facilities	2,662	1,199	45.0%	670 acilitie	62,975	24,429	38.8%	1,676 acilitie	345,868	93,267	27.0%
12. Coast and river facilities	235,686	187,310	79.5%	334 sites	272,744	225,598	82.7%	491 sites	237,787	182,911	76.9%	674 sites	322,875	148,044	45.9%
12-1. Coastal preservation facilities	140,865	109,501	77.7%	215 sites	196,496	146,699	74.7%	423 sites	187,407	146,044	77.9%	520 sites	220,549	97,598	44.3%
12-2. River management facilities	94,821	77,809	82.1%	119 sites	76,248	78,899	103.5%	68 sites	50,380	36,867	73.2%	154 sites	102,326	50,446	49.3%
13. Erosion control facilities, etc.	1,729,574	1,702,042	98.4%	14,332 sites	1,622,048	1,339,438	82.6%	10,504 sites	1,069,686	976,742	91.3%	9,296 sites	842,555	525,811	62.4%
13-1. Erosion control facilities	268,151	247,050	92.1%	2,278 sites	436,635	409,636	93.8%	2,033 sites	354,972	325,910	91.8%	2,057 sites	303,286	171,284	56.5%
13-2. Security facilities	409,216	469,126	114.6%	5,583 sites	330,719	263,907	79.8%	3,673 sites	210,861	202,299	95.9%	2,683 sites	146,012	122,502	83.9%
13-3. Landslide prevention facilities	359,433	356,531	99.2%	1,651 sites	275,558	219,200	79.5%	1,151 sites	158,479	160,883	101.5%	853 sites	117,841	76,346	64.8%
13-4. Steep slope failure prevention facilities	522,261	497,690	95.3%	3,568 sites	446,098	356,530	79.9%	2,500 sites	244,461	220,779	90.3%	2,619 sites	193,937	117,272	60.5%
13-5. Reservoirs	170,513	131,645	77.2%	1,252 sites	133,038	90,165	67.8%	1,147 sites	100,913	66,870	66.3%	1,084 sites	81,479	38,407	47.1%
14. Community DRR base facilities	162,319	102,857	63.4%	121 sites	81,642	40,342	49.4%	78 sites	60,905	34,277	56.3%	154 sites	72,534	35,467	48.9%
15. Disaster management radio communications system	224,276	126,236	56.3%	1,702 sites	126,944	38,693	30.5%	5,844 sites	239,525	78,112	32.6%	8,147 sites	185,950	56,640	30.5%
16. Potable water facilities/power generation systems	221,622	126,320	57.0%	444 sites	89,822	55,599	61.9%	405 sites	142,958	72,142	50.5%	514 sites	116,594	43,313	37.1%
17. Storage warehouses	17,763	8,028	45.2%	437 sites	10,338	5,292	51.2%	296 sites	4,081	838	20.5%	616 sites	5,800	1,813	31.3%
18. Response and relief systems	3,595	659	18.3%	610 groups	1,133	687	60.6%	515 groups	314	262	83.4%	304 groups	136	39	28.7%
19. Downtown areas with high density dilapidated housing	2,814,605	1,431,714	50.9%	6,960 ha	1,725,532	916,981	53.1%	7,839 ha	846,197	563,811	66.6%	7,339 ha	502,993	207,610	41.3%
	18,503,368	14,117,470	76.3%		14,157,285	10,018,773	70.8%		12,197,074	8,359,916	68.5%		10,885,963	5,166,308	47.5%

1. The content of the Fourth Five-Year Plan (FY 2011-2015) is current as of the end of FY 2014.
2. The expenses for each project are not limited to projects aimed at achieving earthquake DRR; they include expenses for projects that have other policy purposes, such as those related to urban infrastructure development, but that also are effective in terms of earthquake DRR.
3. Public special education schools include schools known as schools for the blind, schools for the deaf, and schools for the physically or mentally/physically handicapped prior to FY 2006.

Source: Cabinet Office materials.

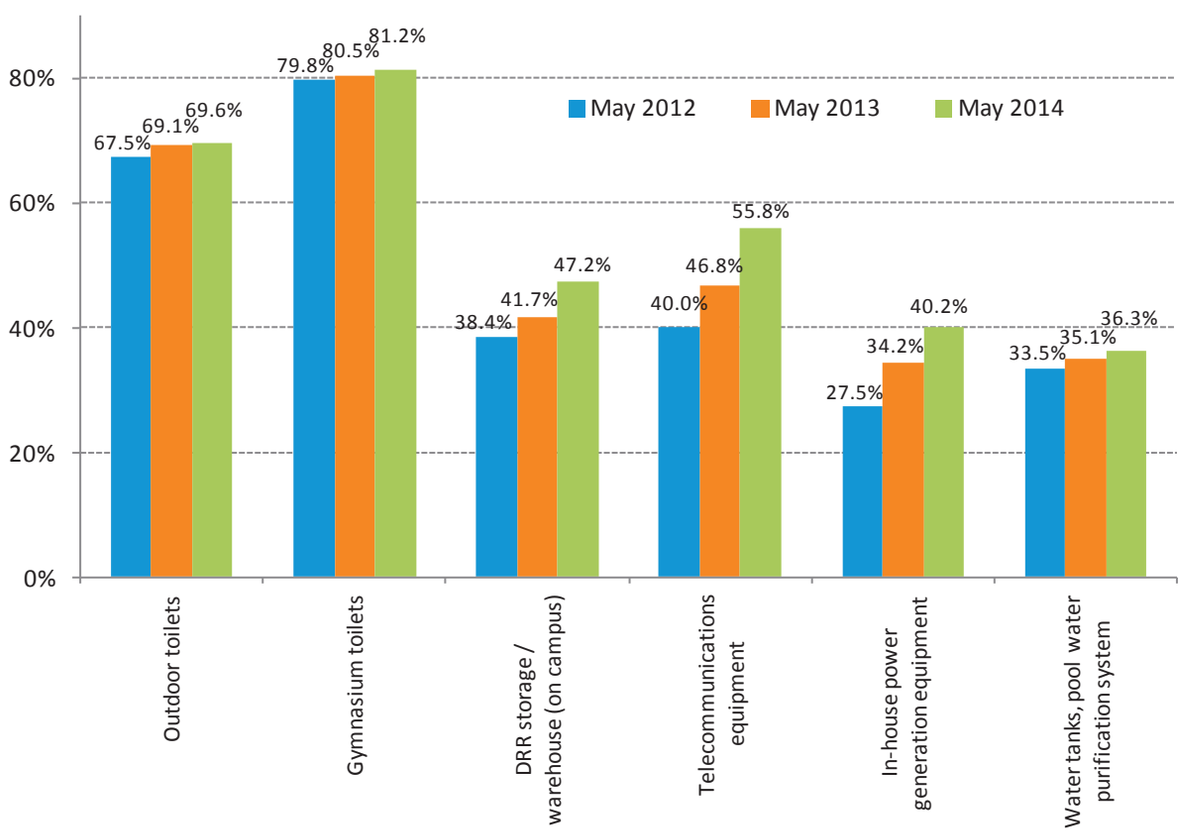
Section 6: Status of Disaster Management Facilities and Equipment

Fig. A-39 MLIT Resource Base Designation Status



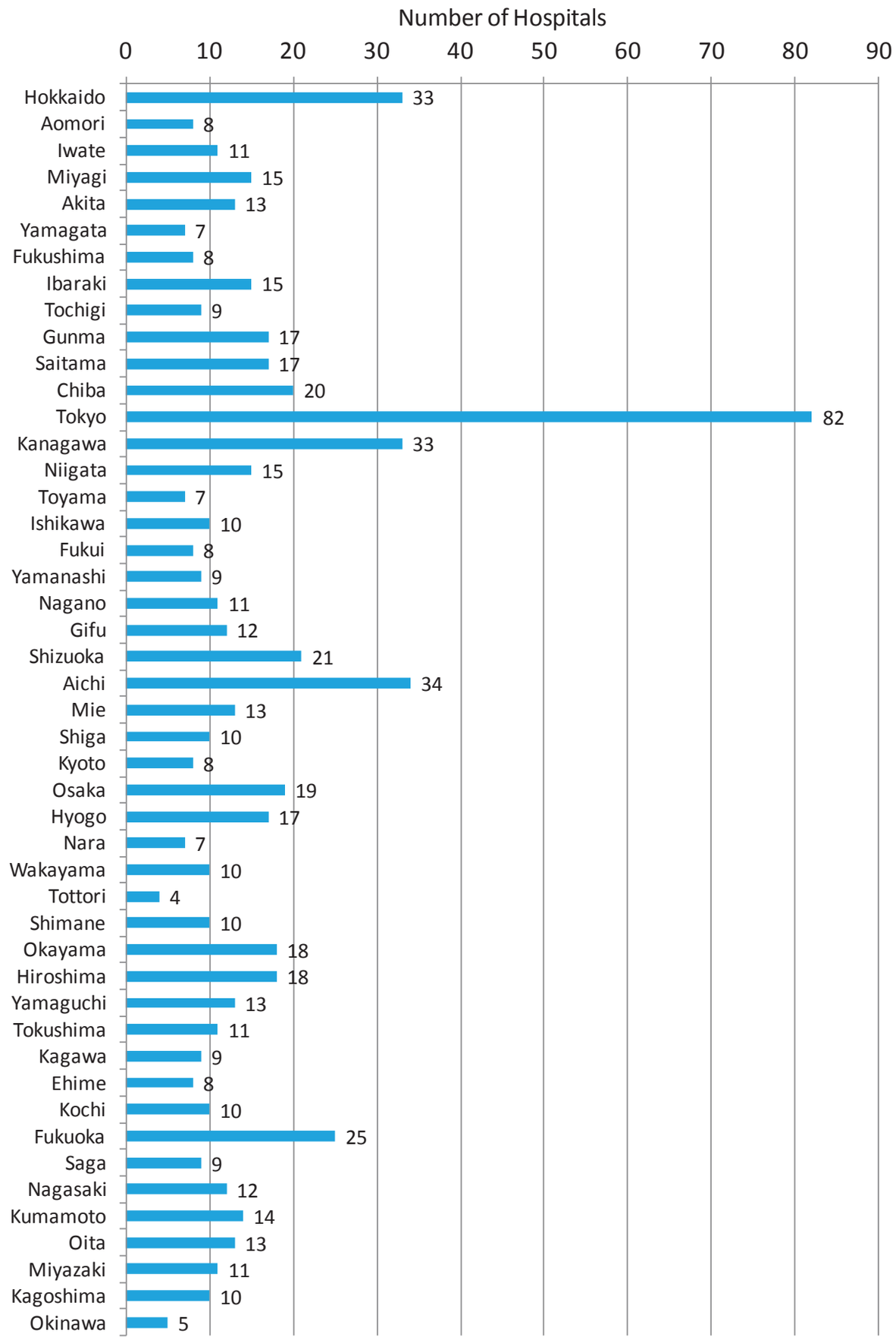
Source: Prepared by the Cabinet Office based on a report compiled by the Ministry of Land, Infrastructure, Transport and Tourism (MLIT) entitled "The Construction of a Disaster-Resistant Distribution System (March 2014)."

Fig. A-40 Preparation Status of Disaster Management Facilities and Equipment at Schools Designated as Emergency Evacuation Sites



*The FY 2012 survey did not include Iwate Prefecture, Miyagi Prefecture, or Fukushima Prefecture
Source: Prepared by the Cabinet Office using materials from MEXT

Fig. A-41 Number of Medical Facilities for Disasters by Prefecture



Source: Prepared by the Cabinet Office based on the website of the Emergency Medical Information System

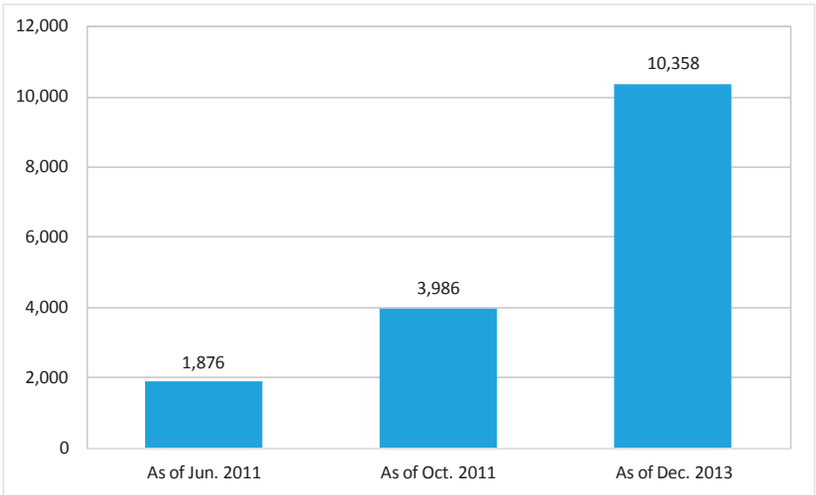
Fig. A-42 Number of Red Cross Hospitals, Emergency Medical Centers, and DMAT-Designated Medical Facilities

	Red Cross Hospital	Emergency Medical Center	DMAT-Designated Facility		Red Cross Hospital	Emergency Medical Center	DMAT-Designated Facility
Hokkaido	10	11	34	Shiga	3	4	10
Aomori	1	2	10	Kyoto	3	6	11
Iwate	1	3	11	Osaka	2	13	18
Miyagi	2	6	15	Hyogo	4	7	19
Akita	1	1	14	Nara	0	3	7
Yamagata	0	2	8	Wakayama	1	3	11
Fukushima	1	4	8	Tottori	1	2	4
Ibaraki	2	6	18	Shimane	2	3	10
Tochigi	3	5	11	Okayama	1	5	10
Gunma	2	3	17	Hiroshima	3	5	18
Saitama	3	8	17	Yamaguchi	2	5	16
Chiba	1	11	21	Tokushima	1	3	13
Tokyo	4	23	71	Kagawa	1	2	10
Kanagawa	3	16	33	Ehime	1	3	8
Niigata	1	5	15	Kouchi	1	3	16
Toyama	1	2	8	Fukuoka	3	8	24
Ishikawa	1	2	12	Saga	1	5	9
Fukui	1	2	9	Nagasaki	2	3	15
Yamanashi	1	1	12	Kumamoto	2	3	15
Nagano	6	8	12	Oita	1	3	21
Gifu	2	6	12	Miyazaki	0	3	12
Shizuoka	5	9	21	Kagoshima	1	2	13
Aichi	2	18	34	Okinawa	1	3	15
Mie	1	3	13	**Total**	92	254	741

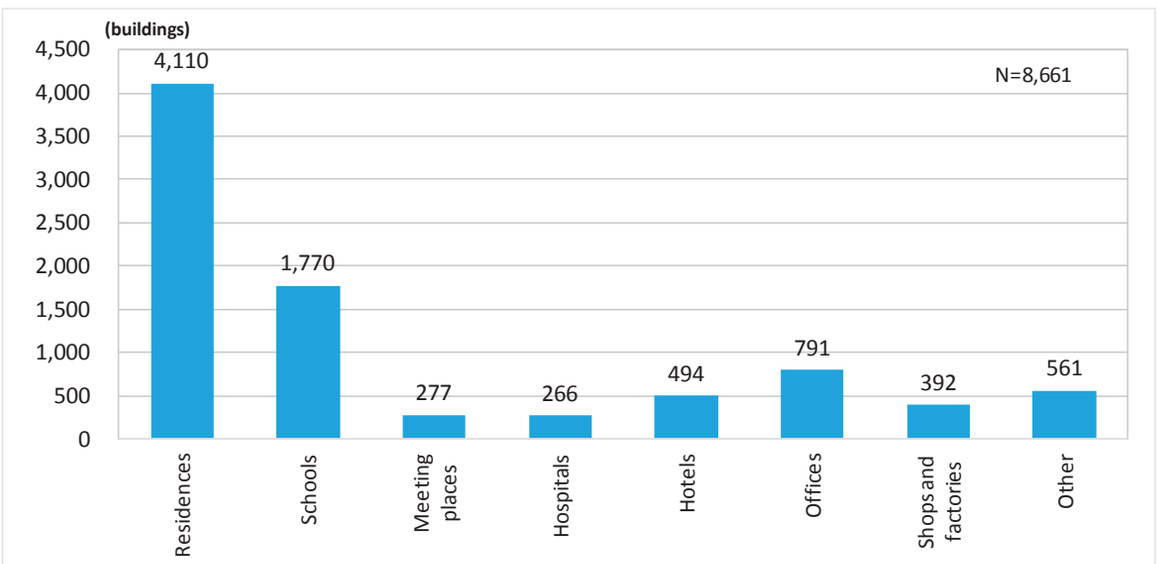
Source: Red Cross Hospital information was prepared by the Cabinet Office based on the website of the Japanese Red Cross Society. Information on Emergency Medical Centers and DMAT-Designated Facilities was prepared by the Cabinet Office based on the website of the Emergency Medical Information System.

Fig. A-43 Designation of Tsunami Evacuation Buildings in Municipalities

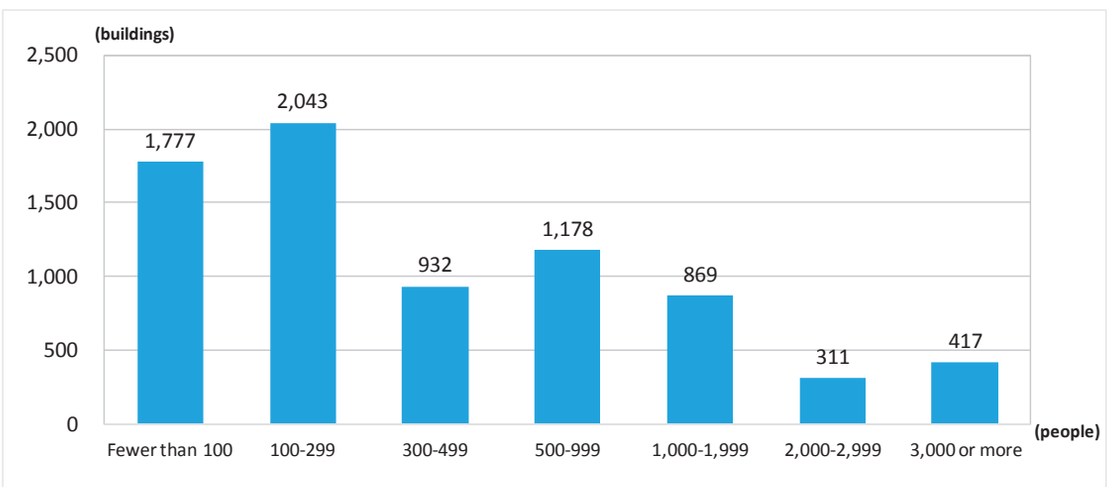
Trends in the Number of Buildings Designated as Tsunami Evacuation Buildings (by Time Period)



Trends in the Number of Buildings Designated as Tsunami Evacuation Buildings (by Type)



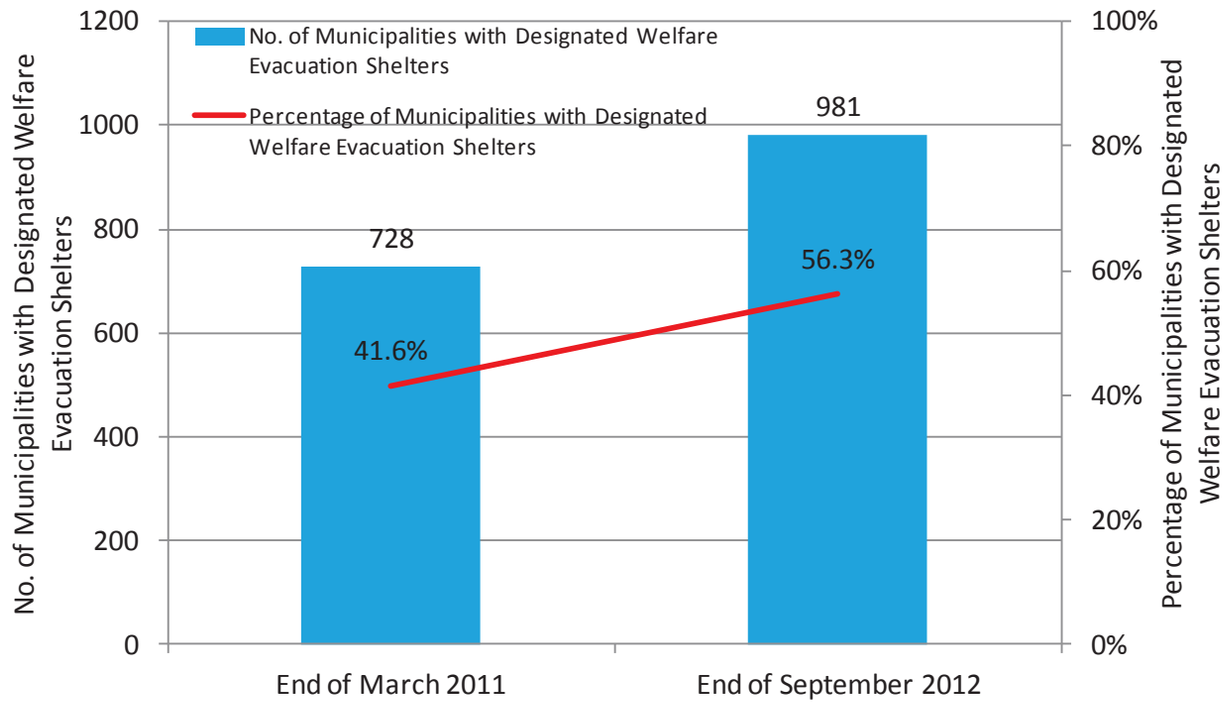
Capacity of Tsunami Evacuation Buildings



Note: Surveys conducted in June and October 2011 did not include the prefectures of Iwate, Miyagi, or Fukushima due to the impacts of the Great East Japan Earthquake. These results are from a survey conducted by the Cabinet Office and MLIT among coastal municipalities (initial survey conducted June 2011, with a follow-up survey conducted in October that same year).

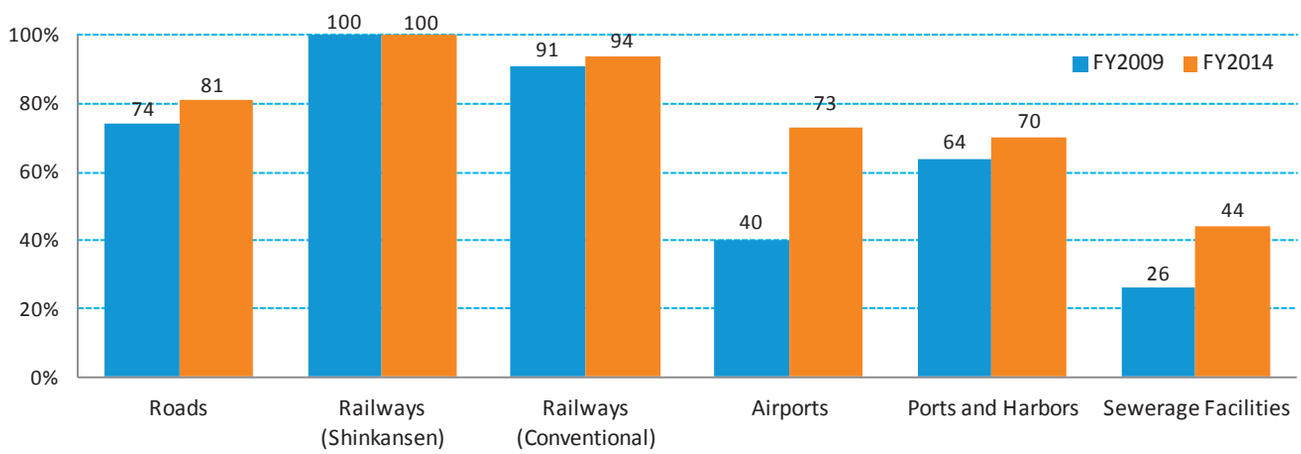
Source: "Results of a Survey on Tsunami Evacuation Buildings," MLIT and the Cabinet Office (June and October, 2011).
"Survey of Tsunami Evacuation Initiatives by Local Governments," Cabinet Office (December 2013).

Fig. A-44 Designation of Welfare Evacuation Shelters



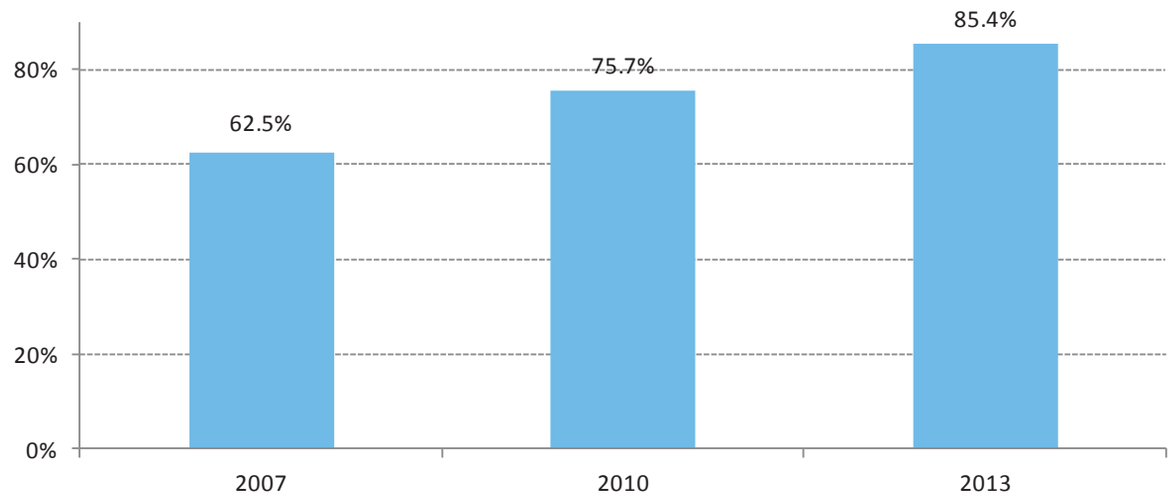
Note: A welfare evacuation shelter is a shelter for people who cannot use ordinary shelters because they are elderly, handicapped, or otherwise require accommodations that ordinary shelters cannot provide. Existing buildings are used for these shelters, which aim to help provide care to evacuees. They are designed to be barrier free, with portable toilets, handrails, and temporary ramps built for handicapped users.
Source: "Welfare Evacuation Shelter Designation Status Survey Results (as of the end of September 2012)," Ministry of Health, Labour and Welfare (MHLW)

Fig. A-45 Seismic Reinforcement of Public Infrastructure



Notes
Roads: Rate of seismic reinforcement of bridges of emergency transport roads (important roads that have to be secured for the passage of emergency vehicles to facilitate evacuation and rescue as well as relief supply delivery activities starting immediately after the earthquake; national expressways, national highways, and the arterial roads that connect them.
Railway (Shinkansen): Elevated bridges.
Railway (Conventional): Elevated bridges of major railway lines in regions where a seismic intensity of 6 Upper or greater would be expected to occur in the case of a Tokyo Inland Earthquake or Nankai Trough Earthquake. (Left: As of end of FY 2012. Right: As of end of FY 2013.)
Airports: Percentage of population in a 100 km area around an airport that could be used for emergency transport.
Ports and Harbors: Seismically reinforced piers (ratio of developed piers to the total number of 336 piers targeted for development).
Sewerage Facilities: Important main lines (pipes that can accommodate drainage from river basin lines, DRR bases, and evacuation sites, main pipes connected to pump stations and disposal stations, pipes buried beneath emergency transport roads and railroad tracks. (Left: As of end of FY 2009. Right: As of end of FY 2013.)
Source: Prepared by the Cabinet Office using materials from the Ministry of Land, Infrastructure, Transport and Tourism (MLIT)

Fig. A-46 Trends in the Seismic Reinforcement Rate of Public Facilities That Serve as Disaster Management Bases

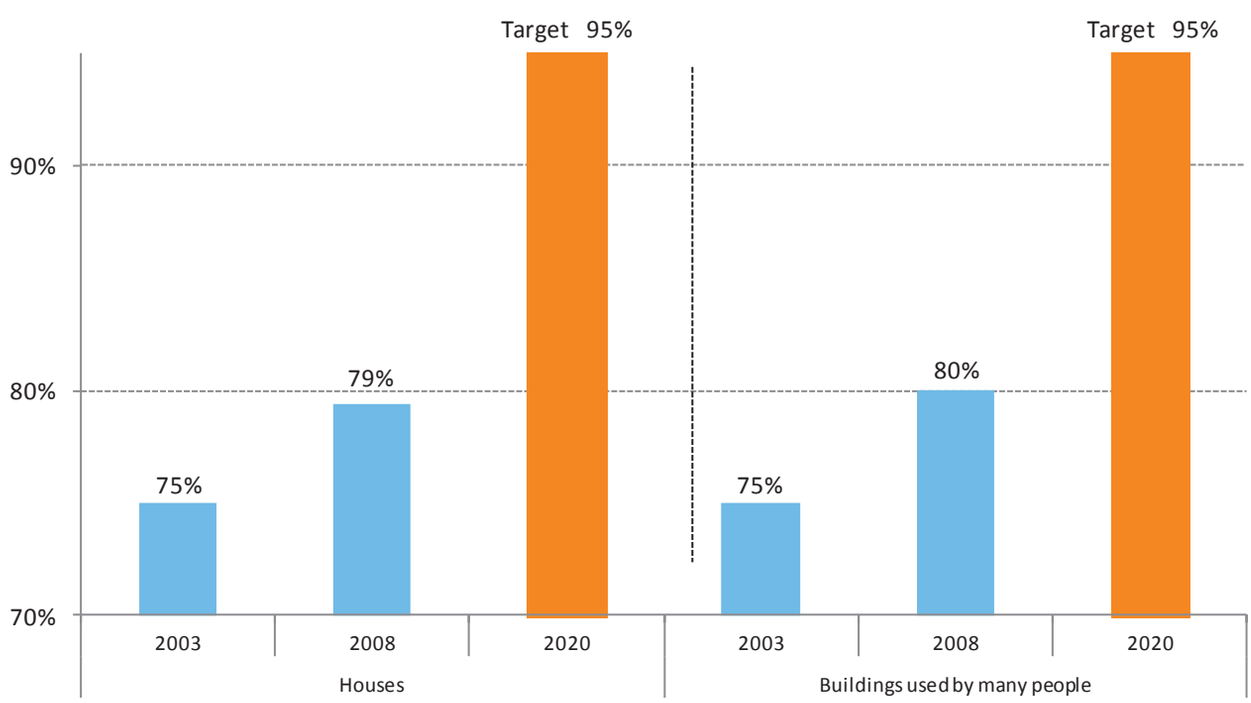


*Of all the public facilities owned or managed by local governments (buildings for public or public-private use: non-wooden structures built two stories or taller or buildings with a floor area of 200m^2 or more), those that could serve as disaster management bases for implementing disaster response measures were extracted, tabulated, and analyzed based on the criteria shown below.

(1) Social welfare facilities	All facilities
(2) Education facilities (classrooms, gymnasiums)	Facilities designated as evacuation sites
(3) Government buildings	Facilities that will be used for the implementation of disaster response measures
(4) Prefectural civic halls, civic centers	Facilities designated as evacuation sites
(5) Gymnasiums	Facilities designated as evacuation sites
(6) Health care facilities	Facilities positioned in local disaster management plans as medical care facilities
(7) Police headquarters and police stations	All facilities
(8) Fire headquarters and fire stations	All facilities
(9) Public housing	None
(10) Employee dorms	None
(11) Other	Facilities designated as evacuation sites

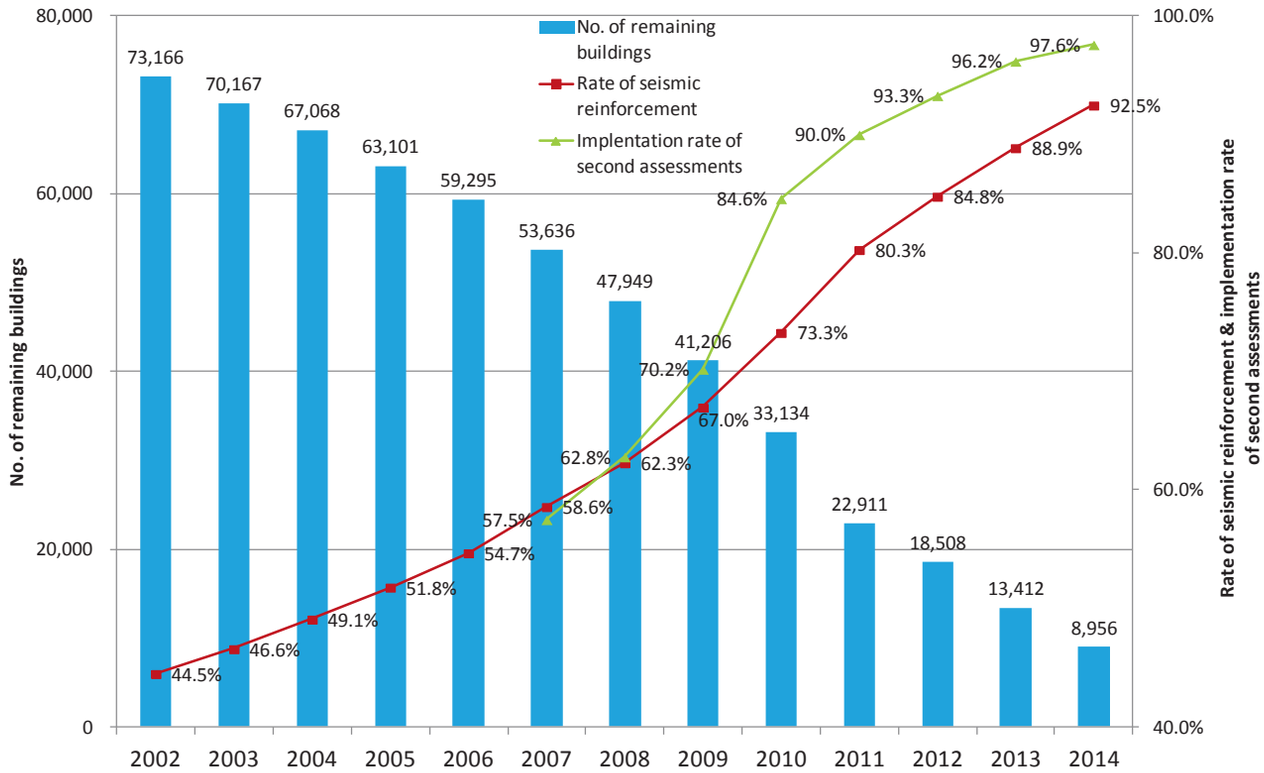
Source: Prepared by the Cabinet Office based on the "Fire and Earthquake Disaster Prevention Status Survey" compiled by the Fire and Disaster Management Agency

Fig. A-47 Seismic Reinforcement of Houses and Buildings Used by Many People



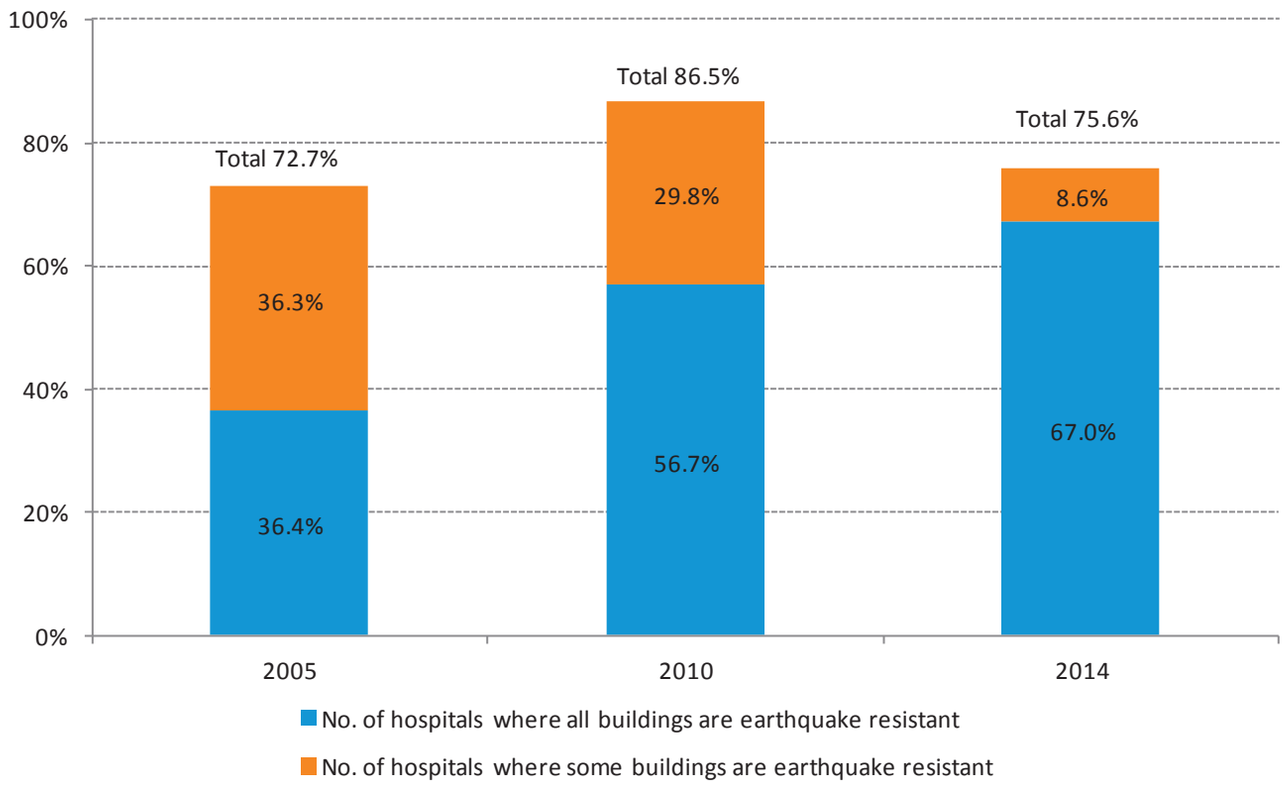
Source: Prepared by the Cabinet Office based on materials of the Ministry of Land, Infrastructure, Transport and Tourism (MLIT)

Fig. A-48 **Seismic Reinforcement Status of Public Elementary and Junior High Schools**



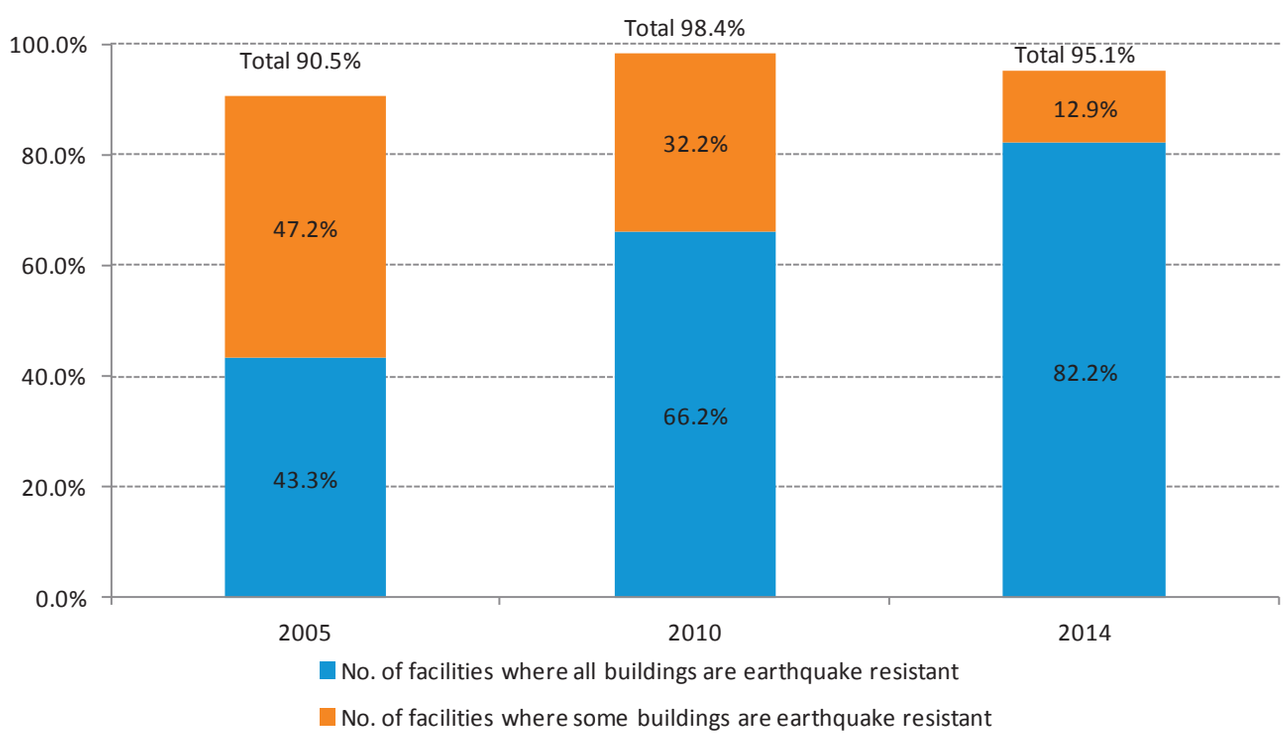
Source: "Results of the Survey on the Seismic Reinforcement Status of Public School Facilities," Ministry of Education, Culture, Sports, Science and Technology (MEXT) (April 2014)

Fig. A-49 Seismic Reinforcement Status of Hospitals



Source: Prepared by the Cabinet Office based on the "Results of the 2014 Survey on the Seismic Reinforcement Status of Hospitals" compiled by the Ministry of Health, Labour and Welfare (MHLW)

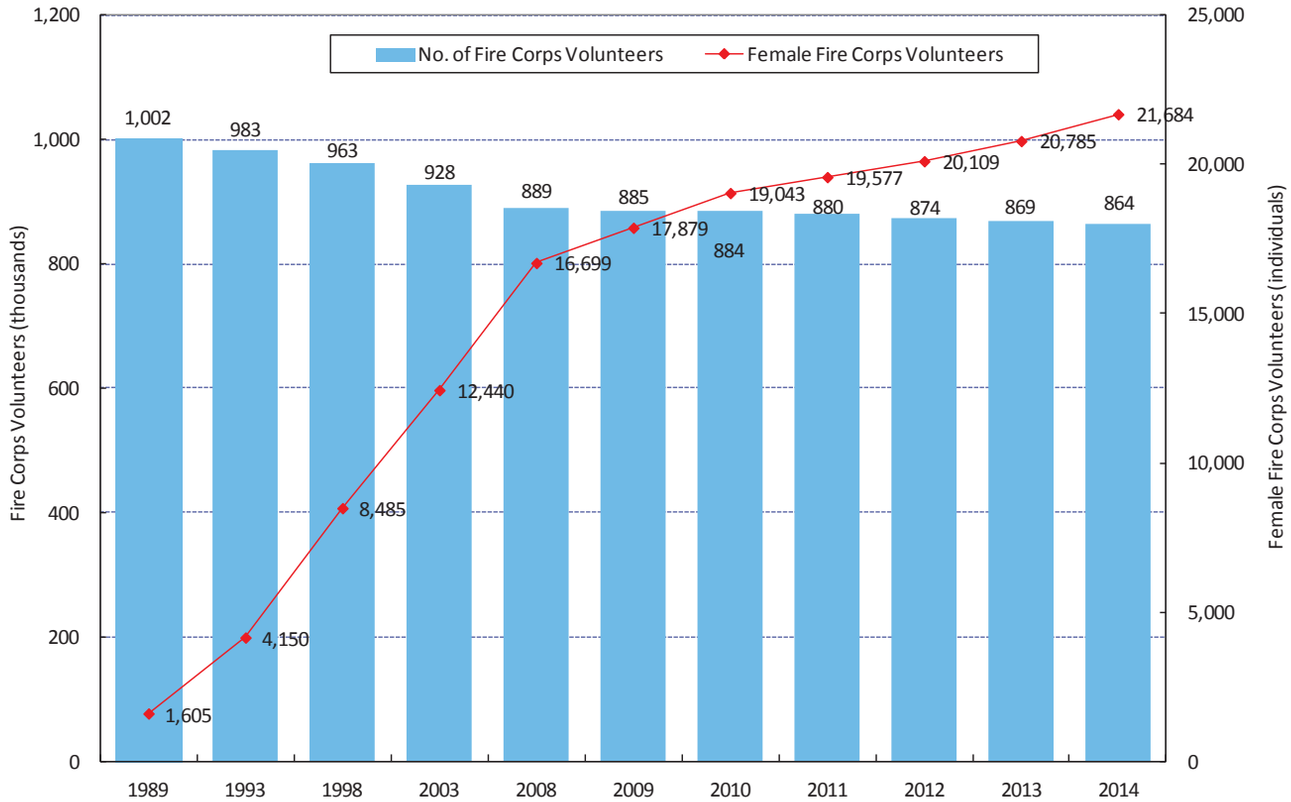
Fig. A-50 Seismic Reinforcement Status of Disaster Management Base Hospitals and Emergency Medical Centers



Source: Prepared by the Cabinet Office based on the "Results of the 2014 Survey on the Seismic Reinforcement Status of Hospitals" compiled by the MHLW

Section 7: Trends in Numbers of Workers in Disaster Management

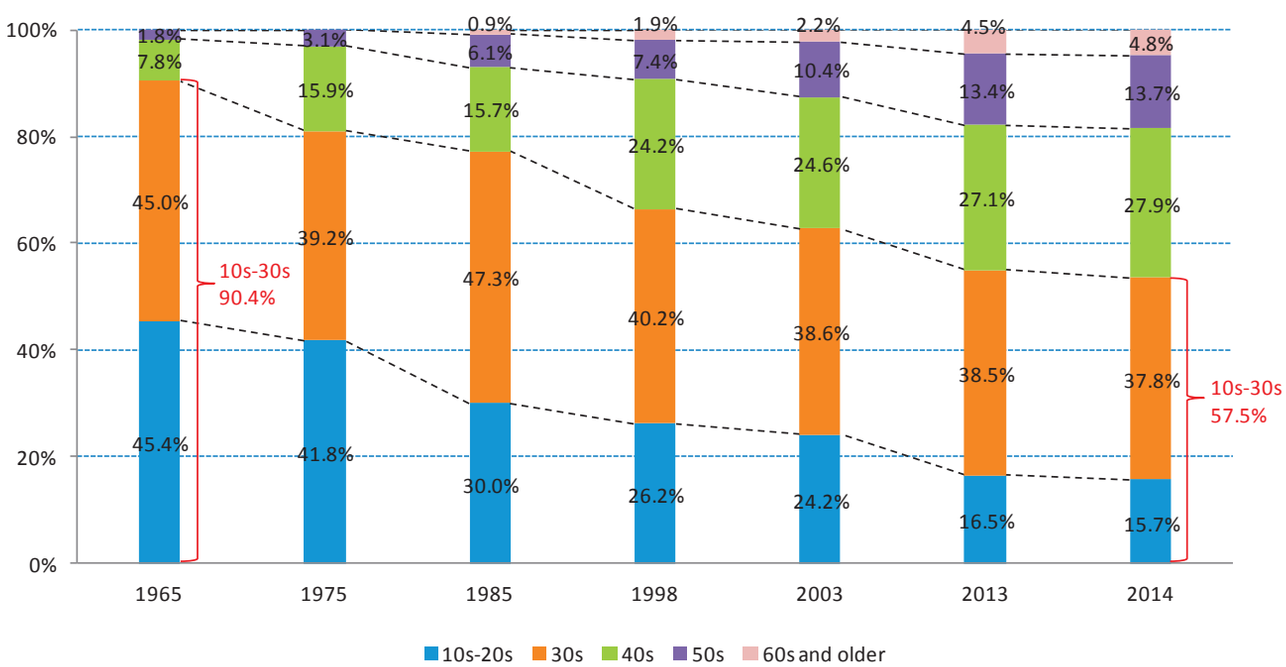
Fig. A-51 Trends in Numbers of Fire Corps Volunteers



Note: As a result of the Great East Japan Earthquake, the figure for 2012 for Onagawa-cho, Meshika-gun, Miyagi prefecture is the figure from 2010 (as of April 1, 2010).

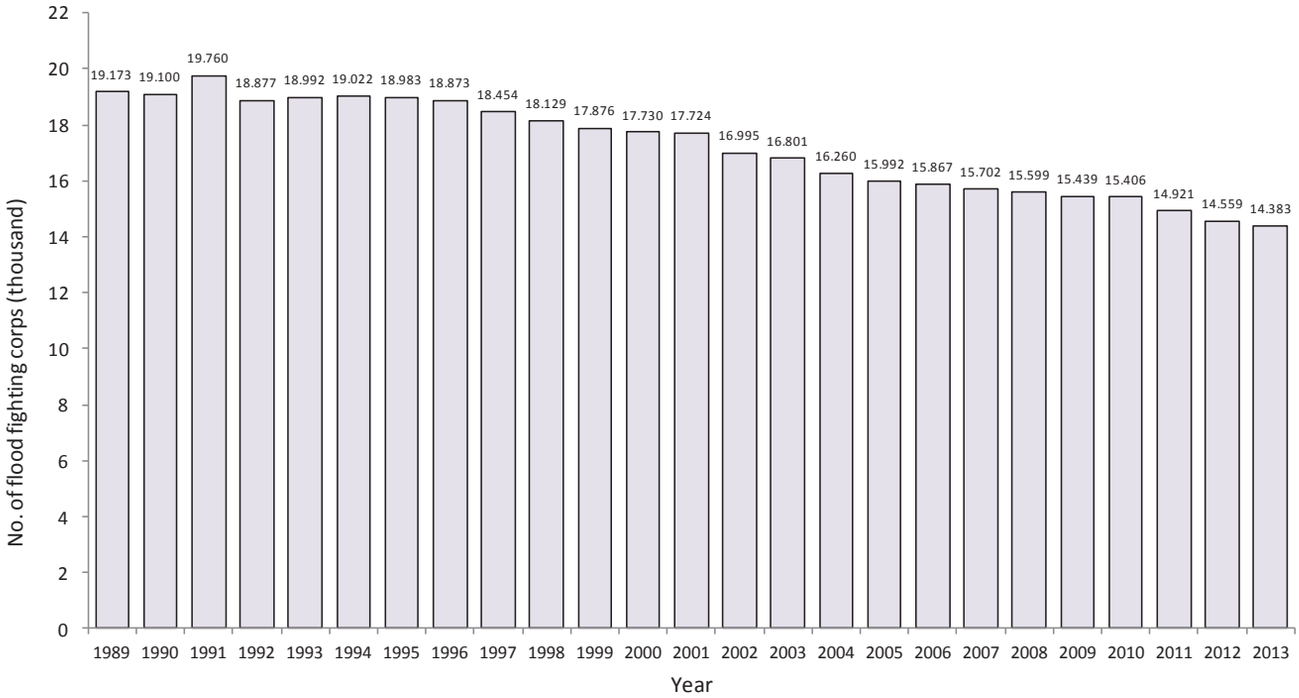
Source: Produced by the Cabinet Office based on the Survey on the Current Status of Fire and Earthquake Disaster Management Measures of the Fire and Disaster Management Agency

Fig. A-52 Trends in Age Composition Ratios among Fire Corps Volunteers



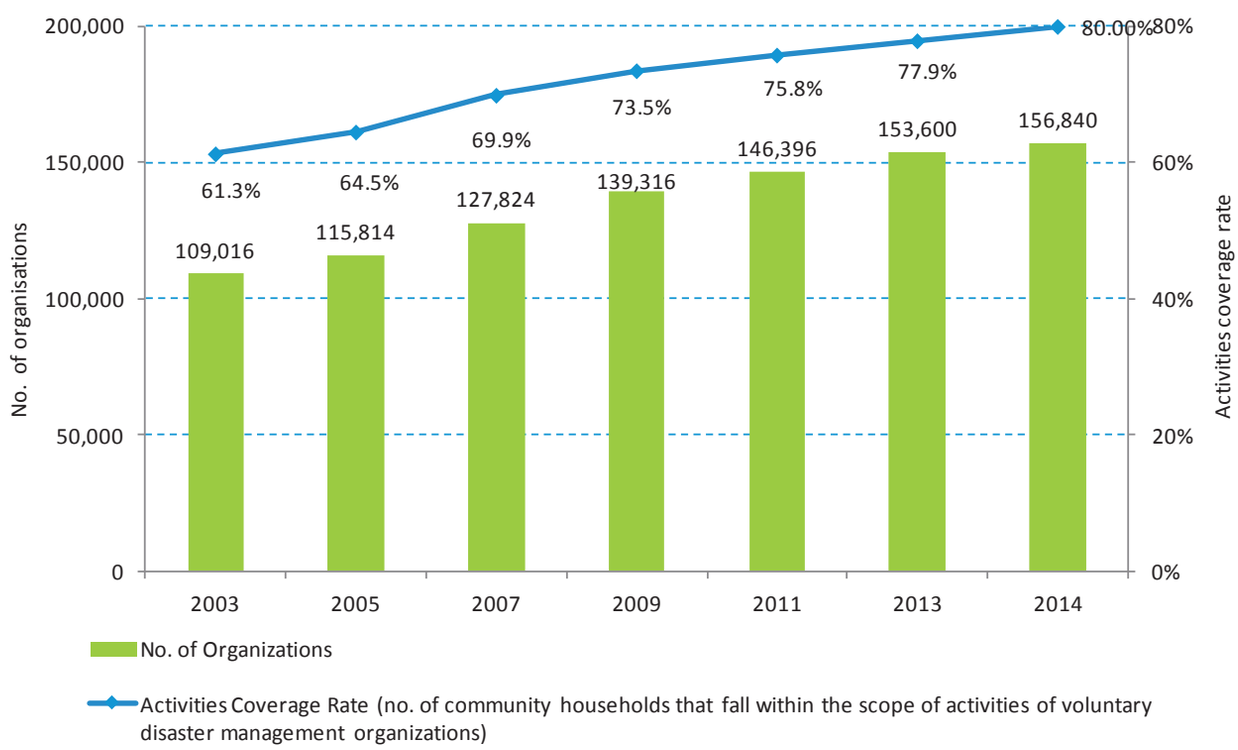
Source: Produced by the Cabinet Office based on the Survey on the Current Status of Fire and Earthquake Disaster Management Measures of the Fire and Disaster Management Agency

Fig. A-53 Trends in Numbers of Flood Fighting Corps Personnel



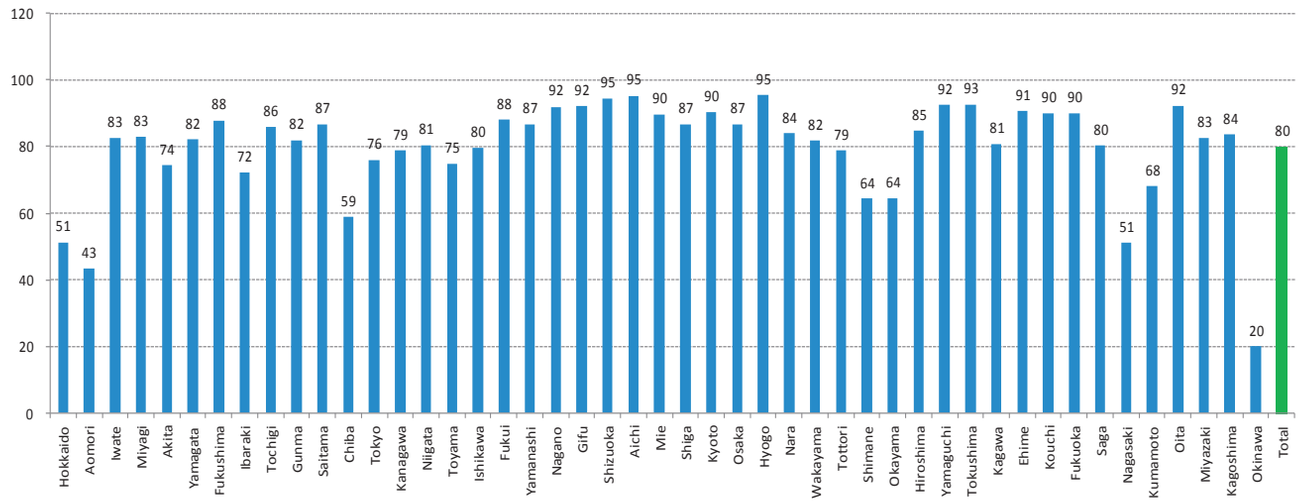
Source: Ministry of Land, Infrastructure, Transport and Tourism (MLIT)

Fig. A-54 Trends in Voluntary Disaster Management Organizations



Source: Produced by the Cabinet Office based on the Survey on the Current Status of Fire and Earthquake Disaster Management Measures of the Fire and Disaster Management Agency. Figures as of April 1 each year.

Fig. A-55 Coverage of Voluntary Disaster Management Organizations by Prefecture (%)



Note: Figures as of April 1, 2014

Source: Produced by the Cabinet Office based on the "Survey on the Current Status of Fire Fighting, Disaster Management, and Earthquake Measures" conducted by the Fire and Disaster Management Agency

Fig. A-56 Trends in Age Composition Ratios among Fire Corps Volunteers

Year	Number of municipalities	Level of funding (number of municipalities)		
		System	Performance record	
		Number of municipalities with a system	No. of municipalities with a performance record	Amount (unit: JPY 1,000)
2003	3,213	1,977	1,635	4,330,406
2004	3,123	1,945	1,631	2,391,375
2005	2,418	1,691	1,448	2,351,204
2006	1,843	1,516	1,296	3,636,344
2007	1,827	1,538	1,308	4,236,251
2008	1,811	1,600	1,343	3,669,089
2009	1,800	873	825	2,825,592
2010	1,750	850	813	2,818,480
2011	1,619	795	753	2,755,277
2012	1,742	893	831	2,918,428
2013	1,742	964	902	3,524,318
2014	1,742	1,017	954	3,715,437

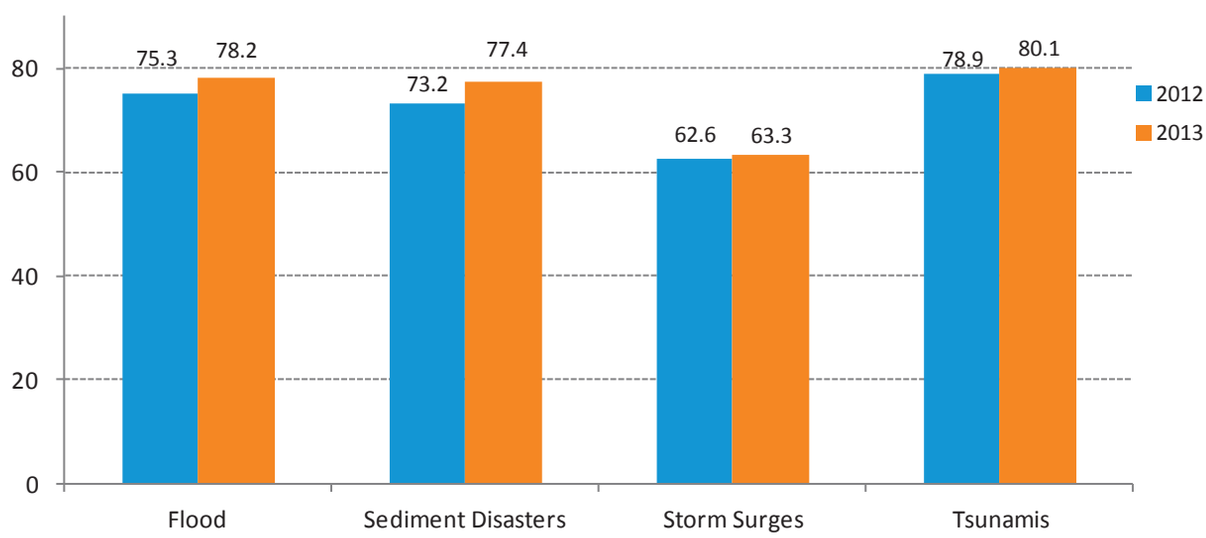
Note: Figures as of April 1 each year (the "Amount" indicates the amount of actual funding provided in the previous fiscal year)

Source: Produced by the Cabinet Office based on the "Current Status of Community Disaster Management Administration (2004-2015)," compiled by the Fire and Disaster Management Agency

Fig. A-57 Hazard Map Development

Source: Produced by the Cabinet Office based on materials of the Ministry of Land, Infrastructure, Transport and Tourism

Fig. A-58 Formulation Status of Official Announcement Criteria for Evacuation Advisories in Municipalities where Natural Disasters are Anticipated



Note: Figures are percentages of municipalities with criteria already formulated or under review. The 2013 survey assumes disasters will occur as follows: flooding in all municipalities (1,742 municipalities), sediment disasters in 1,603 municipalities, storm surges in 641 municipalities, and tsunamis in 667 municipalities.

Source: Produced by the Cabinet Office based on the "Results of a Survey into the Formulation Status of Specific Official Announcement Criteria for Evacuation Advisories" from the Fire and Disaster Management Agency.

Fig. A-59 Methods of Communicating Evacuation Orders to Residents in Municipalities

Year	Disaster management radio communications system		Using the communication facilities of agricultural/fishery cooperatives (including wired systems)	Patrols by loud-speaker vans	Siren	Bell ringing	News media	Through voluntary disaster management organizations	Other
	Individual Home Receivers System	Simultaneous Broadcasting System							
2003	1,748 54%	2,126 66%	591 18%	2,942 92%	2,537 79%	698 22%	675 21%	1,065 33%	1,106 34%
2004	1,731 55%	2,095 67%	559 18%	2,864 92%	2,463 79%	659 21%	663 21%	1,064 34%	1,106 35%
2005	1,365 56%	1,670 69%	449 19%	2,254 93%	1,927 80%	525 22%	642 27%	942 39%	925 38%
2006	1,118 61%	1,349 73%	362 20%	1,739 94%	1,487 81%	414 22%	666 36%	887 48%	781 42%
2007	1,125 62%	1,350 74%	343 19%	1,722 94%	1,462 80%	383 21%	718 39%	939 51%	800 44%
2008	1,117 62%	1,348 74%	323 18%	1,713 95%	1,455 80%	358 20%	750 41%	987 55%	829 46%
2009	1,118 62%	1,361 76%	311 17%	1,702 95%	1,440 80%	345 19%	782 43%	1,015 56%	830 46%
2010	1,096 63%	1,333 76%	289 17%	1,647 94%	1,383 79%	324 19%	811 46%	1,033 59%	830 47%
2011	1,006 62%	1,240 77%	248 15%	1,530 95%	1,271 79%	270 17%	787 49%	1,002 62%	806 50%
2012	1,086 62%	1,340 77%	245 14%	1,644 94%	1,357 78%	285 16%	848 49%	1,129 65%	955 55%
2013	1,097 63%	1,377 79%	219 13%	1,648 95%	1,347 77%	276 16%	878 50%	1,154 66%	998 57%
2014	1,112 64%	1,398 80%	206 12%	1,651 95%	1,334 77%	256 15%	925 50%	1,169 67%	1,049 60%

upper	Number of Municipalities
lower	Rate of Municipalities Utilizing the Methods

Note: As of April 1 each year
Source: Produced by the Cabinet Office based on the "Current State of Local Disaster Risk Management (2004-2015)" compiled by the Fire and Disaster Management Agency

Fig. A-60 **Instances of Assistance based on Mutual Support Agreements between Prefectures and Support Agreements with Private-Sector Institutions in Recent Years**

Year	Instances of Support Based on Mutual Support Agreements Between Prefectures		Status of Support Agreements with Private-Sector Institutions													
			Broadcasting Agreements (agmts.)		Reporting Agreements		Emergency relief Agreements		Transportation Agreements		Disaster Recovery Agreements		Resources Agreements		Other	
	Total no.	No. of orgs.	Total no. of concluded agmts.	No. of orgs.	Total no. of concluded agmts.	No. of orgs.	Total no. of concluded agmts.	No. of orgs.	Total no. of concluded agmts.	No. of orgs.	Total no. of concluded agmts.	No. of orgs.	Total no. of concluded agmts.	No. of orgs.	Total no. of concluded agmts.	No. of orgs.
2003	23	6	288	47	347	31	191	37	148	39	400	37	711	34	124	19
2004	4	2	288	47	359	33	218	39	165	41	474	39	828	36	134	23
2005	13	8	304	47	362	32	221	43	178	42	504	40	873	40	182	31
2006	5	2	301	46	370	33	241	44	201	40	587	43	992	42	212	37
2007	0	0	304	46	337	34	272	43	211	41	778	43	1,196	44	317	36
2008	12	1	306	46	400	36	316	45	239	43	818	45	1,294	46	461	39
2009	5	1	314	46	399	36	339	44	247	43	857	45	1,364	46	546	41
2010	24	5	329	47	393	36	420	45	254	43	1,590	46	1,431	45	676	42
2011	18	4	318	44	373	33	472	43	235	41	1,568	43	1,357	44	676	39
2012	25	6	334	47	395	36	495	46	291	44	1,825	46	1,461	47	931	46
2013	29	8	360	47	419	38	575	47	317	46	1,913	47	1,558	47	1,178	46
2014	28	6	351	47	445	40	703	47	374	46	2,360	47	1,672	47	1,299	46

Source: Produced by the Cabinet Office based on the "Current State of Local Disaster Risk Management (2004-2015)" compiled by the Fire and Disaster Management Agency

Fig. A-61 Status of Mutual Support Agreements in Municipalities

Year	No. of Municipalities	No. of mutual support agreements to which municipalities belong within the prefecture	No. of municipalities that have concluded mutual support agreements with other municipalities
2003	3,213	1,459	2,363 / 74%
2004	3,123	1,527	2,306 / 74%
2005	2,418	1,502	1,771 / 73%
2006	1,843	1,408	1,457 / 79%
2007	1,827	1,512	1,471 / 81%
2008	1,811	1,625	1,656 / 91%
2009	1,800	1,725	1,646 / 91%
2010	1,750	1,778	1,571 / 90%
2011	1,619	1,738	1,476 / 91%
2012	1,742	2,254	1,645 / 94%
2013	1,742	2,920	1,650 / 95%
2014	1,742	3,419	1,697 / 97%

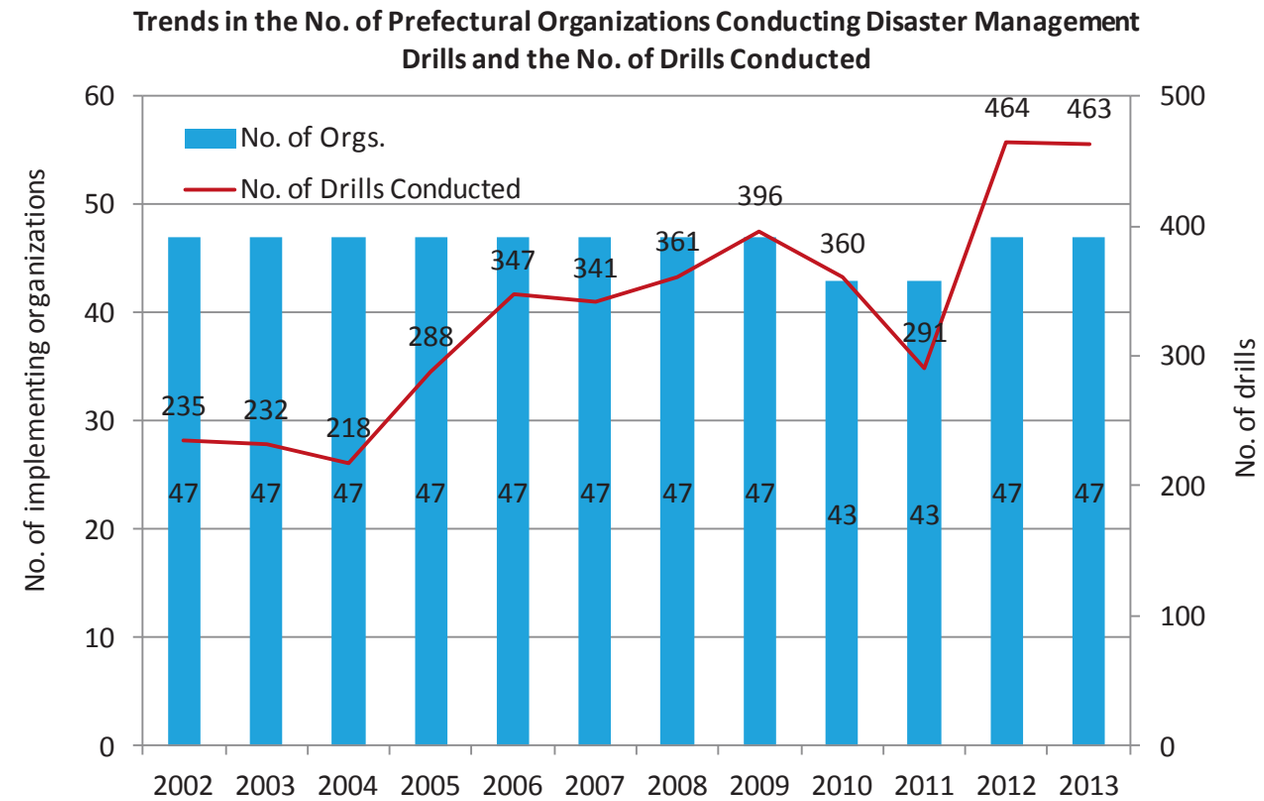
Note: As of April 1 each year
Source: Produced by the Cabinet Office based on the "Current State of Regional Disaster Risk Reduction (2004-2015)" compiled by the Fire and Disaster Management Agency

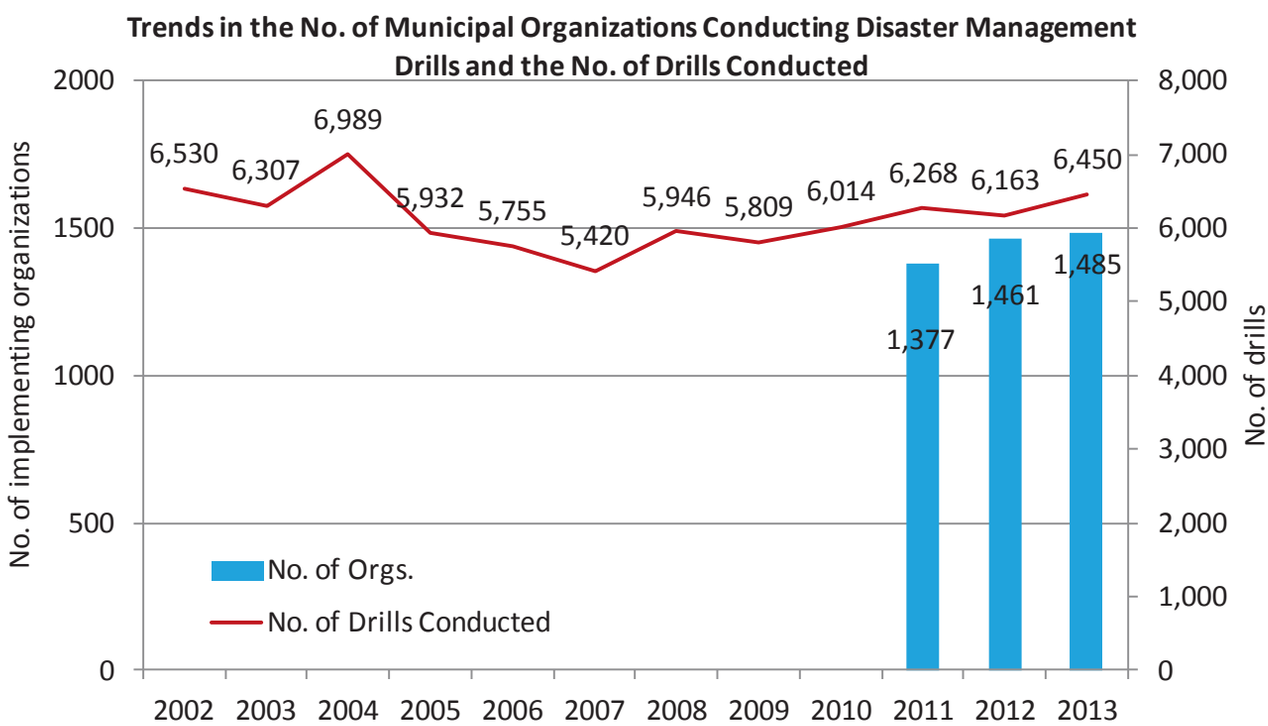
Fig. A-62 Status of Municipalities' Support Agreements with Private-Sector Institutions

Year	Broadcast Agreements		Reporting Agreements		Emergency Relief Agreements		Transportation Agreement		Disaster Recovery Agreements		Resources Agreements		Other	
	No. of orgs.	No. of support instances	No. of orgs	No. of support instances	No. of orgs	No. of support instances	No. of orgs	No. of support instances	No. of orgs	No. of support instances	No. of orgs	No. of support instances	No. of orgs	No. of support instances
2003	150	10	22	2	726	4	253	2	392	21	562	7	334	6
2004	171	20	20	2	713	4	260	2	445	18	589	5	361	5
2005	191	50	27	2	647	6	271	15	445	39	583	17	376	9
2006	225	38	18	2	574	10	267	3	451	24	619	8	401	2
2007	275	35	24		596	7	292	2	662	23	794	6	484	9
2008	315	62	33		619	2	319	5	813	35	936	17	510	5
2009	362	48	33		658	3	355	2	979	35	1,060	33	559	11
2010	378	35	35		683	6	376	3	1,052	42	1,125	22	580	8
2011	376	107	36	2	645	17	386	109	1,066	548	1,118	226	579	57
2012	437	59	41	3	719	19	462	48	1,242	167	1,309	123	684	54
2013	495	81	58		778	3	519	9	1,318	42	1,412	20	743	6
2014	554	59	66		827	2	602	3	1,360	131	1,466	40	800	17

Note: As of April 1 each year
Source: Produced by the Cabinet Office based on the "Current State of Regional Disaster Risk Reduction (2004-2015)" compiled by the Fire and Disaster Management Agency

Fig. A-63 Status of Disaster Management Drill Implementation

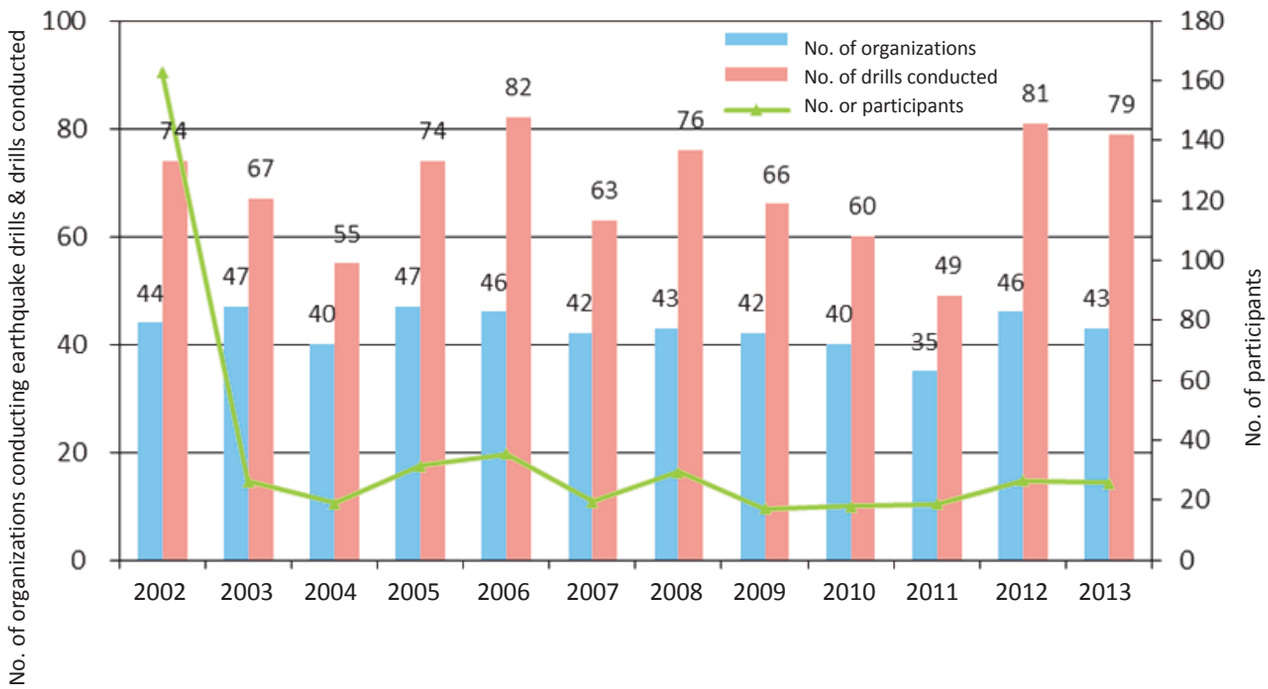




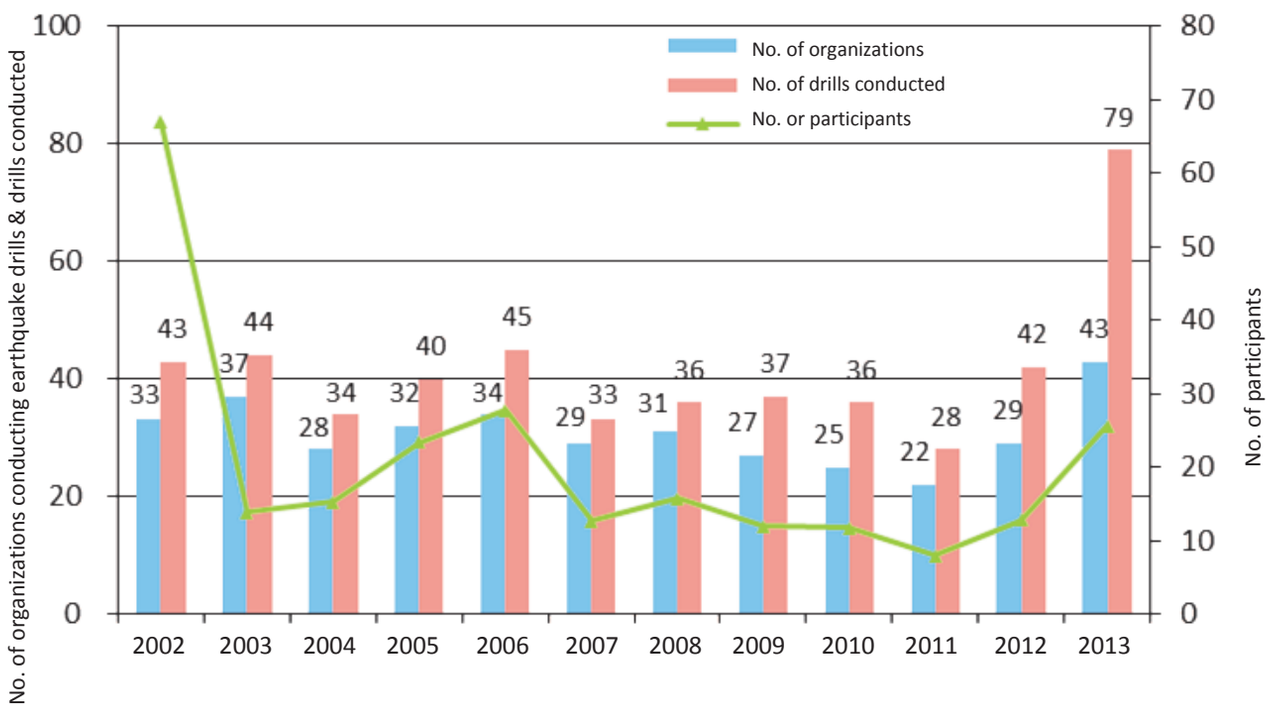
Note: The no. of drills is the sum total of “comprehensive drills (actually conducted),” “tabletop exercises,” “communications drills,” and “others.”
Source: Produced by the Cabinet Office based on the "Current State of Regional Disaster Risk Reduction (2004-2015)" compiled by the Fire and Disaster Management Agency

Fig. A-64 Coverage of Voluntary Disaster Management Organizations by Prefecture (%)

Trends in the No. of Prefectural Organizations Conducting Earthquake Disaster Management Drills, No. of Drills Conducted, and the No. of Participants (Comprehensive Drills)



Trends in the No. of Prefectural Organizations Conducting Earthquake Disaster Management Drills, No. of Drills Conducted, and the No. of Participants (Including Region-Wide Drills)



Note: Drills are for earthquake disasters.
Source: Produced by the Cabinet Office based on the "Current State of Regional Disaster Risk Reduction (2004-2015)" compiled by the Fire and Disaster Management Agency

Fig. A-65 Implementation Status of Tsunami Countermeasures

Year	No. of govts	Along the Coast?		Designated as likely tsunami inundation areas	Recorded in local DM plan	Evacuation Routes		Evacuation Sites		Tsunami Breakwaters	
		Yes	No			No. of routes	No. of govts	No. of facilities	No. of govts	Extended distance (km)	No. of govts
2003	3,213	1,014	2,199	401	812	1,700	108	5,355	311	1,631	204
2004	3,123	984	2,139	420	799	1,817	104	5,609	306	1,535	204
2005	2,418	806	1,612	374	465	2,099	111	6,442	316	1,472	180
2006	1,843	666	1,177	367	299	3,066	107	6,830	286	1,233	149
2007	1,827	667	1,160	374	384	2,297	108	7,307	292	1,231	143
2008	1,811	659	1,152	417	393	2,593	118	7,647	297	11,051	33
2009	1,800	655	1,145	424	353	2,674	118	7,919	307	1,042	125
2010	1,750	648	1,102	439	385	2,757	118	8,396	304	1,025	123
2011	1,619	609	1,010	425	357	2,448	106	7,448	276	787	93
2012	1,742	646	1,096	492	379	4,058	130	12,110	323	886	107
2013	1,742	646	1,096	539	383	5,054	139	16,238	361	905	104
2014	1,742	646	1,096	576	403	5,591	155	19,405	380	848	96

Note:
“Designated as likely tsunami inundation areas” indicates areas to which tsunami damage would be expected to extend based on past earthquake records, the coastal topography, and the presence of breakwaters. (The figures for 2003-2010 reflect areas “Designated as tsunami hazard areas.”) The “number of evacuation routes” and “number of evacuation sites” are calculated based on the assumption of a tsunami. The “Implementation of tsunami disaster drills” is the total number of drills conducted based on the assumption of an impending tsunami, and drills conducted based on complex disaster scenarios that include a tsunami. Only the “tsunami inundation distance” for the tsunami breakwater is shown in units of km.

Source: Produced by the Cabinet Office based on the "Current State of Regional Disaster Risk Reduction (2004-2015)" compiled by the Fire and Disaster Management Agency

Section 9: Japan's International Cooperation

Fig. A-66 List of Cooperation Projects Conducted by Ministries and Agencies

Ministry/ Agency	Project	Partner/ Target Country (Target Institution)	Description	Budget for FY 2014 (in JPY million; if applicable)	Department Responsible
Cabinet Office (CAO)	Disaster Risk Reduction Cooperation between Cabinet Office and US FEMA	US (FEMA)	In December 2014, a memorandum of cooperation was executed between the Cabinet Office and FEMA to promote cooperation on disaster risk management between the two institutions, and to construct a framework for information and knowledge sharing.	—	Disaster Preparedness, Public Relations and International Cooperation Division, Disaster Management Bureau, CAO
	Japan-China-Republic of Korea Ministerial Meeting on Disaster Management	China, Republic of Korea	Based on the Trilateral Joint Announcement on Disaster Management Cooperation at the First Japan-China-Republic of Korea Trilateral Summit Meeting held in 2008, the 3rd Japan-China-Republic of Korea Ministerial Meeting on Disaster Management was held in the Republic of Korea in 2013. A joint declaration was made to confirm the sharing of technology and information relating to DRR and the strengthening of cooperative structures for education and training.	—	Disaster Preparedness, Public Relations and International Cooperation Division, Disaster Management Bureau, CAO
	Japan-China-Republic of Korea Trilateral Tabletop exercise on disaster management	China, Republic of Korea	Based on the matters agreed upon in the Leaders' Declaration at the 4th Japan-China-Republic of Korea Summit Meeting held in Tokyo in March 2011, the 2nd Japan-China-Republic of Korea Trilateral Tabletop exercise on disaster management (hypothetical scenario: large-scale earthquake in Tokyo) took place in Japan in March 2014, with related institutions from Japan, China, and Republic of Korea participating.	—	Disaster Preparedness, Public Relations and International Cooperation Division, Disaster Management Bureau, CAO
	Japan-Republic of Korea Disaster Management Meeting	Republic of Korea	These meetings are to be held in both countries to exchange opinions with respect to initiatives taken to address disasters in recent years. In November 2014, the14th Japan-Republic of Korea Disaster Management Meeting was held on Cheju Island, Republic of Korea, and opinions were exchanged on countermeasures to address sediment disasters, snow disasters, volcanic eruptions, and victim support.	—	Disaster Preparedness, Public Relations and International Cooperation Division, Disaster Management Bureau, CAO
Cabinet Secretariat	US-Japan Workshop on National Resilience	US	In July 2014, experts on national resilience from Japan and the US were invited to share experiences from Operation Tomodachi at the time of the Great East Japan Earthquake as well as to discuss national resilience.	—	National Resilience Promotion Office, Cabinet Secretariat
	Forum on PR and Outreach on National Resilience at the 3rd UN World Conference on Disaster Risk Reduction	UN	In March 2015, as part of the Great East Japan Earthquake Forum at the UN World Conference on Disaster Risk Reduction, information was shared and opinions exchanged on national resilience initiatives in Japan and in the ASEAN/East Asian Region.	—	National Resilience Promotion Office, Cabinet Secretariat
	International Symposium on National Resilience in the ASEAN Countries	ASEAN	In April 2015, Japan attended the International Symposium on National Resilience organized by the Economic Research Institute for ASEAN and East Asia (ERIA). The symposium aimed to allow Japan to share its knowledge and experience in national resilience with the ASEAN countries, to increase the understanding of other countries of these issues, and to promote international collaboration.	—	National Resilience Promotion Office, Cabinet Secretariat
Ministry of Internal Affairs and Communica-tions (MIC)	Promotion of International Development of ICT System for Disaster Management	ASEAN and others	Through this project, MIC will test disaster management ICT systems, which have been cultivated based on Japan's many years of experience and expertise, in countries in the ASEAN region that are prone to natural disasters, taking the needs of each country into account. It will also approach other governments in cooperation with private enterprises and will promote the overseas development of Japan's ICT systems for disaster management.	Included in ICT International Development Package Aid Project 2015 (JPY 1,145m)	International Cooperation Division, Global ICT Strategy Bureau (GISB), MIC
	ICT Phase 3 for the support to AHA Center (ASEAN Coordinating Centre for Humanitarian Assistance on disaster management)	AHA Center (ASEAN)	Since FY 2011, MIC and MOFA have been utilizing the Japan-ASEAN Integration Fund (JAIF) to support the development of the ICT system of the AHA Center, which is the disaster management information hub for the ASEAN region. In FY 2015, they plan to support ICT development and human resource development to help improve the AHA Center's emergency response capacity as ICT Phase 3.	—	International Cooperation Division, Global ICT Strategy Bureau (GISB), MIC/ Regional Policy Division, Asian and Oceanian Affairs Bureau, MOFA

Ministry/ Agency	Project	Partner/ Target Country (Target Institution)	Description	Budget for FY 2014 (in JPY million; if applicable)	Department Responsible
Ministry of Internal Affairs and Communications (MIC)	Collaborative Project with ITU Using Movable and Deployable ICT Resource Unit (MDRU)	ITU (International Telecommunication Union), Philippines Department of Science and Technology	Starting in FY 2014, MIC has cooperated with the ITU and the Philippines Department of Science and Technology to implement a project to conduct demonstration experiments using mobile ICT units (MDRU*) as measures against natural disasters on the island of Cebu in the Philippines, which was affected by a typhoon. *MDRU: Movable and Deployable ICT Resource Units were developed through research and development by MIC based on lessons learned from the Great East Japan Earthquake. They consist of transmission equipment that can be sent to disaster sites following natural disasters to enable prompt emergency response and restoration transmissions, and come in small in-vehicle and attache-case models.	—	Telecommunication Systems Division, Telecommunications Business Department, Telecommunications Bureau/ International Policy Division, Global ICT Strategy Bureau (GISB), MIC
Fire and Disaster Management Agency (FDMA)	Asian International Forum on Fire and Disaster Management	Asian countries	The International Forum on Fire and Disaster Management has been held since 2007 to enable the countries of Asia to enhance their firefighting and disaster management capacity, and to introduce Japan's firefighting technologies, systems, and structures in those countries. In September 2014, it was held in Phnom Penh, Cambodia.	3.3	(Councellor of) Civil Protection and Disaster Management Department, FDMA
	Japan-Republic of Korea Firefighting Administration Seminar	Republic of Korea	On the occasion of the 2002 FIFA World Cup, jointly held by Japan and Republic of Korea, the "Year of Japan-Republic of Korea National Exchange," a Japan-Republic of Korea Firefighting Administration Seminar was held in both countries to promote Japanese-Republic of Korean exchange, collaboration, and cooperation, through the sharing of information and the exchange of ideas on the issues of firefighting and disaster management in both countries.	2	(Councellor of) Civil Protection and Disaster Management Department, FDMA
Ministry of Foreign Affairs (MOFA)	Provision of International Emergency Relief Goods		In March 2015, following the cyclone in Vanuatu, and in January 2015, following the flooding in Mozambique, MOFA contributed international emergency relief goods to support the immediate needs of the disaster victims through the Japan International Cooperation Agency (JICA) (23rd occasion).	280 (*FY 2014 settlement amount)	Humanitarian Assistance and Emergency Relief Division, International Cooperation Bureau, MOFA
	Emergency Grant Aid		Following the flood disaster that occurred in northern India and northeastern Pakistan in September 2014, MOFA contributed emergency grant aid and has provided grant funding since then for disaster recovery from typhoons and earthquakes, and for disaster risk mitigation.	10383 (*FY 2014 settlement amount)	Humanitarian Assistance and Emergency Relief Division, International Cooperation Bureau, MOFA
	Japan Disaster Relief Team's Inspection by IER		Japan Disaster Relief Teams were inspected by the IER (INSARAG External Re-Classification) that evaluates the capacity of the rescue teams in each country, and once again (as in 2010) received the highest classification of "heavy."	—	Humanitarian Assistance and Emergency Relief Division, International Cooperation Bureau, MOFA
	Disaster Risk Reduction Collaboration/ Disaster Restoration Support in Cooperation with Japan's International Cooperation NGOs	Countries affected by natural disasters	This project promotes DRR cooperation in developing countries through the Grant Aid for Japanese NGO's Projects, emergency humanitarian relief and disaster recovery support through the Japan Platform,[1] and by establishing an international DRR network in the Asia Pacific region and carrying out emergency humanitarian relief through the Asia Pacific Alliance (PAD).[2] 1: A framework by which Japanese NGOs, the business community, and the government work together to provide emergency humanitarian support following the occurrence of a natural disaster or conflict either in Japan or overseas. 2: A framework that aims to develop an international DRR network for NGOs, the business community, and the governments of the APAD member states to tackle large-scale natural disasters in the Asia Pacific region, under the leadership of Japanese NGOs. The Japanese government contributed approx. JPY 100 million in FY 2013 and plans to contribute JPY 100 million in FY 2015.	Grant Aid for Japanese NGO's Projects: approx. 566 (including JPF) (*FY 2014 settlement amount)	Non-Governmental Organizations Cooperation Division, International Cooperation Bureau, MOFA
	Operation of IAEA RANET Capacity Building Centre (CBC)	IAEA member countries (IAEA)	In December 2012, the "Practical Arrangements Between the Ministry of Foreign Affairs of Japan and the International Atomic Energy Agency on Cooperation in the Area of Emergency Preparedness and Response" was signed by MOFA and the IAEA. Given this, in May 2013, the IAEA RANET Capacity Building Centre (CBC) was designated in Fukushima Prefecture. IAEA staff are permanently stationed there. Equipment that would be necessary in an emergency is stored at the Center and used for emergencies, and several times a year, training is held for those connected to international and Japanese local governments.	—	International Nuclear Energy Cooperation Division, Disarmament, Non-proliferation and Science Department, MOFA

Ministry/ Agency	Project	Partner/ Target Country (Target Institution)	Description	Budget for FY 2014 (in JPY million; if applicable)	Department Responsible
Ministry of Education, Culture, Sports, Science and Technology (MEXT)	Promotion of "Sentinel Asia" Project to Share Information on Natural Disasters Between Asia -Pacific Countries	25 countries of the Asia Pacific Region/15 inter-national organiza-tions	This project is led and implemented by Japan to contribute to disaster management efforts in the Asia-Pacific Region. It uses satellites to share information relating to natural disasters. Participants consist of 25 countries and regions, 81 institutions, and 15 international institutions (as of April 2015).	—	Office for Space Utilization Promotion, Space Development and Utilization Division, Research and Development Bureau, MEXT
	Science and Technology Research Partnership for Sustainable Development (SATREPS) Program	136 countries that are the object of ODA	MEXT and the Japan Science and Technology Agency (JST) together with MOFA and the Japan International Cooperation Agency (JICA), through leading science and technology and Official Development Assistance (ODA), have set up SATREPS in order to promote joint international research on solutions to global issues that occur in developing countries, including DRR.	(MOFA) Included in JICA Management Expenses Grant (MEXT) Included in JST Management Expenses Grant	International Science and Technology Affairs Division, Science and Technology Policy Bureau, MEXT
The Secretariat of the Nuclear Regulation Authority (NRA)	Participation and Cooperation in Japan-China-Republic of Korea Nuclear Disaster Management Drills	Republic of Korea and China	The Japan-China-Republic of Korea Top Regulators' Meeting (TRM) is a framework for the exchange of information between organizations that regulate atomic energy in Japan, China, and Republic of Korea. Under one initiative of the TRM, one participating country invites the other two to participate in its nuclear DRR drills. In November 2014, representatives from the regulatory authorities of Japan and China took part in drills in Republic of Korea. The project is also working towards the development of an information-sharing system between the three countries for emergency situations.	—	International Affairs Office, Policy Planning and Coordination Division, Secretary-General's Secretariat
	Participation in ConvEx: Convention Exercise	IAEA	Japan participates in communication training performed by the International Atomic Energy Agency (IAEA) to ensure that the provisions of the Convention on Early Notification of a Nuclear Accident and the Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency (two conventions relating to nuclear accidents) are implemented in an orderly manner.	—	International Affairs Office, Policy Planning and Coordination Division, Secretary-General's Secretariat
	IAEA Safety Measure Contributions for Nuclear Power Plants (Emergency Measures Project)	IAEA	Japan also participates in IAEA projects to promote the publication and sharing of information relating to accidents and issues that are reported to the IAEA by member countries regarding their nuclear facilities.	29	International Affairs Office, Policy Planning and Coordination Division, Secretary-General's Secretariat
Ministry of Agriculture, Forestry and Fisheries (MAFF)	Investigative Project into Global Environment Issues for Overseas Agricultural and Rural Development (Survey to consider agricultural disaster management plans)	Targeted widely, particularly in Asian countries	Between 2013 and 2017 this project will work in the rural areas of developing countries to disseminate education to raise residents' awareness of DRR, to develop system to prevent and reduce damage from natural disasters through resident participation under the leadership and support of local governments, and to investigate methods for creating rural disaster management plans.	41	Overseas Technical Team, Overseas Land Improvement Cooperation Office, Design Division, Rural Infrastructure Department, Rural Development Bureau, MAFF
	Promotion of Forest Management Focusing on the Effects of Forests for Disaster Prevention and Mitigation in Developing Countries	Food and Agriculture Organizati on of the United Nations (FAO)	This is a field project made possible through contributions to the FAO, which works in developing countries to establish efficient methods of evaluating soil conservation functions of applicable forests. In so doing, it seeks to promote appropriate forestry management that will contribute to such conservation features, with a view to improving disaster resilience and securing stable water resources.	35	Overseas Planning Team, International Forestry Cooperation Office, Planning Division, Forestry Agency
	International seminar "Soils as the foundation for resilient forests in a changing environment"	Govern-ments of individual countries, inter-national institutions and research institutes	This project takes into account the important role that forested soil plays in preventing and reducing damage caused by mountain disasters, to coincide with the International Year of Soil 2015. International seminars will be held to share knowledge relating to work on forested soils to increase the health of forests, and methods of monitoring the soundness of forested soil. Messages will be compiled for the Secretariat of the International Year of Soils, the 11th UN Forum on Forests Meeting, and the 14th World Forestry Congress.	11	Overseas Planning Team, International Forestry Cooperation Office, Planning Division, Forestry Agency
Ministry of Defense (MOD)	ASEAN Disaster Relief Exercise	ASEAN nations, Canada, China, EU, France, and the US	This exercise, which was co-organized by the Thai and Malaysian militaries, was held in Eastern Thailand in April 2014. It involves the implementation of all kinds of training related to humanitarian support and disaster relief. MOD joined drills related to medical activities.	—	Operations Support Division, Bureau of Operational Policy, MOD

Ministry/ Agency	Project	Partner/ Target Country (Target Institution)	Description	Budget for FY 2014 (in JPY million; if applicable)	Department Responsible
Ministry of Defense (MOD)	Multi-National Joint Training Exercise, RIMPAC	Australia, Canada, US, and others	This is a joint training exercise planned by the US Navy and conducted with the involvement of foreign vessels. Japan participates in humanitarian support and disaster relief training.	—	Operations Support Division, Bureau of Operational Policy, MOD
	ARF Disaster Relief Exercise	ARF countries and inter-national institutions	This exercise aims to enhance the capacity to provide regional disaster relief, and is a field training exercise conducted within the framework of the ASEAN Regional Forum (ARF). Japan participates in training relating to medical activities.	—	Operations Support Division, Bureau of Operational Policy, MOD
	Multinational Joint Training on Humanitarian Aid and Disaster Relief "Southern Cross" organized by French military based in New Caledonia	France, Australia, Tonga, Vanuatu, UK, US, and others	Following the press release issued in May 2014, at the time of the Prime Minister's visit to France, personnel were dispatched to this training between August and September 2014, and field training was conducted in connection with relief activities for disasters on islands.	—	Operations Support Division, Bureau of Operational Policy, MOD
	Multinational Joint Training "Cobra Gold"	Indonesia, Republic of Korea, Malaysia, Singapore, Thailand, US, and others	In addition to the existing bilateral training drills conducted between the US and Thailand, this training has been implemented in recent years as a multinational training program focusing on peace operations in areas of conflict, UN peace-keeping activities, and humanitarian and public welfare support activities. Japan participated in medical activity drills.	—	Operations Support Division, Bureau of Operational Policy, MOD
	Japan, US, and Australia Joint Exercises in Humanitarian Aid and Disaster Relief	Australia and US	This is a training program that aims to improve interoperability with the US and Australian militaries with respect to humanitarian aid and disaster relief activities. The participating countries conducted air transport training, supply-drop training, soft-field take-off and landing training, and search training.	—	Operations Support Division, Bureau of Operational Policy, MOD
	ADMM-Plus Exercise in Humanitarian Aid, Disaster Relief and Defense Medicine	Every ADMM-Plus country	This training exercise aims to enhance the capacity for providing regional disaster relief, and consists of field training conducted within the framework of the extended ASEAN Defense Ministers' Meeting (ADMM-Plus). Japan participated in medical activity drills.	—	Operations Support Division, Bureau of Operational Policy, MOD
Ministry of Land, Infrastructure Transport and Tourism (MLIT)	Discussion with India on DRR Technology Through a Bilateral Conference	India	The 1st Japan-India Road Interchange Meeting was held in Delhi following the framework for cooperation that was executed in September 2014. Opinions were exchanged in connection with useful slope protection technologies for road maintenance in the mountainous northeastern states of India. The 2nd Meeting is planned to be held in Tokyo in May 2015.	—	International Affairs Office, Planning Division, Road Bureau, MLIT
	Japan-ASEAN Project to Promote Disaster Risk Reduction Cooperation in the Field of Transportation	All ASEAN nations	This project works toward the enhancement of disaster management capacity in the transport sector in ASEAN countries. An experts' meeting is convened to share knowledge about disaster countermeasures in that sector and the development of good DRR practices in the field of transport in Japan and the ASEAN nations.	11	International Policy Division, Policy Bureau, MLIT
	Disaster Risk Reduction Cooperation between Japan and Chile on Ports	Chile	The Research Project on the Enhancement of Technology to Develop Tsunami-Resilient Communities, a SATREPS project, has been in progress since 2012. In May 2005, at the time of the visit to Chile by Mr. Nishimura, Senior Vice Minister for Diplomatic Relations, a memorandum of understanding was executed on coastal disaster risk reduction measures, which included an introduction from Japan to Chile of technology standards relating to ports.	—	International Policy Planning Office, Industrial Port Policy Division, Ports and Harbors Bureau/ Risk Management Office, Coastal Administration and Disaster Management Division, Ports and Harbors Bureau, MLIT
	ASEAN-Japan Port Technology Group (Formulation of Port DRR Guidelines)	ASEAN nations	This meeting is part of a three-year plan, starting in 2015, to share the lessons learned from the Great East Japan Earthquake with all of the ASEAN nations and to compile Port DRR Guidelines (provisional title) that all of the ASEAN nations can refer to when implementing initiatives relating to port DRR.	—	International Policy Planning Office, Industrial Port Policy Division, Ports and Harbors Bureau/ Risk Management Office, Coastal Administration and Disaster Management Division, Ports and Harbors Bureau, MLIT

Ministry/ Agency	Project	Partner/ Target Country (Target Institution)	Description	Budget for FY 2014 (in JPY million; if applicable)	Department Responsible
Ministry of Land, Infrastructure, Transport and Tourism (MLIT)	INTERPRAEVENT 2014	25 countries and regions including the EU, Asia, and Central and South America	Japan's advanced erosion control technologies were introduced at the Pan-Pacific INTERPRAENENT, an integrated international conference held to promote and disseminate academic research on the prevention and mitigation of natural disasters caused by flooding, debris flows, landslides, avalanches, and other disasters.	—	Sabo (Erosion and Sediment Control) Planning Division, Water and Disaster Management Bureau, MLIT
	Disaster Management Collaboration Dialogues	Vietnam, Thailand, Myanmar, Indonesia, Turkey, South Africa	Held since 2013, these dialogues aim to enhance the DRR functions of developing nations principally in Asia, while also expanding Japan's DRR technology overseas. They also aim to develop a lasting structure for cooperation in each individual country through collaborations between industry, government, and academia.	25	River Planning Division, Water and Disaster Management Bureau/ Overseas Projects Division, Policy Bureau, MLIT
	Collaboration between MLIT and the European Commission's Humanitarian Aid and Civil Protection Department (ECHO)	ECHO	Following the exchange of correspondence between Japan's MLIT and EU's ECHO in March 2013, an information exchange has been conducted every year to share DRR knowledge and experience through the reciprocal exchange of experts and practitioners, with the objective of enhancing disaster management systems on both sides.	—	River Planning Division, Water and Disaster Management Bureau, MLIT
Japan Metrological Agency (JMA)	International Cooperation through WMO	WMO member countries	The JMA, as a constituent member of the WMO (one of the specialized institutions of the UN which functions to collect and promote the distribution of observations and data on weather around the world, and to improve information relating to the weather and the climate), sends experts to international conferences, and is responsible for international centers.	—	Office of Disaster Management and Planning, Planning Division, Administration Department, JMA
	International Cooperation through UNESCO	UNESCO member countries, etc.	The JMA provides technological contributions relating to the field of oceans and tsunami, within the framework of the UNESCO Intergovernmental Oceanographic Commission (IOC). - It collects, analyzes, and provides data on oceans and maritime meteorology for the northeast Asian region, in cooperation with other related countries (China, Republic of Korea, and Russia). - It provides each country with information on tsunamis caused by earthquakes that occur in the northwest Pacific region.	—	Office of Disaster Management and Planning, Planning Division, Administration Department, JMA
	International Cooperation through International Civil Aviation Organization (ICAO)	ICAO member countries	The JMA participates in meetings relating to aeronautical meteorology organized by the ICAO, as well as investigations into adopting and improving standard international criteria for aviation weather services. It has also been appointed by the ICAO to operate international centers such as the Tokyo Volcanic Ash Information Center, and the Tropical Cyclone Information Center, thus contributing to the safe operation of global aircraft.	—	Office of Disaster Mitigation, Planning Division, Administration Department, JMA
	Collaboration on International Research Plans	All relevant countries	The JMA promotes various international research projects in cooperation with other countries. On climate change, it has been involved in writing evaluation reports on the activities of the Intergovernmental Panel on Climate Change (IPCC) since the panel was established in 1988.	—	Office of Disaster Management and Planning, Planning Division, Administration Department, JMA
	Human Resource Development Aid and Technological Cooperation to Developing Countries	All relevant countries	Together with the Japan International Cooperation Agency (JICA), the JMA has spent more than 40 years conducting trainings designed for the staff of the national meteorological institutions of developing countries, in order to improve their meteorological services. Also, in response to demands from the WMO and individual countries, the JMA dispatches staff who are experts in observations using meteorological radar, weather analysis, and weather forecasting, and receives trainees from the national meteorological institutions.	—	Office of Disaster Management and Planning, Planning Division, Administration Department, JMA

Note: SATREPS: Science and Technology Research Partnership for Sustainable Development

Source: Produced by the Cabinet Office based on the Materials from Ministries and Agencies

Fig. A-67 Examples of Technical Cooperation Projects in Disaster Risk Reduction (FY2014)

Country	Cooperation Period	Project Name	Description
Indonesia	2007-2014	Project on Building Administration and Enforcement Capacity Development for Seismic Resilience (Phase I and II)	Supports the development of building codes relating to earthquake -resistant construction, the creation and distribution of proposed model local legislation, the adoption and dissemination of legislation in model cities, as well as the dissemination of earthquake-resistant improvement technologies to stakeholders, such as towns, prefectures, and construction companies.
Indonesia	2011-2015	Project for Enhancement of Disaster Management Capacity of BNPB and BPBD	Centered on the Indonesian National Disaster Management Agency (BNPB) that bears responsibility for the country's DRR, this project supports the strengthening of disaster management capacity through the formulation of local disaster management plans and standard operating procedures (SOP) for Regional Disaster Management Agencies (BPBD) in pilot communities, and the implementation of drills, at the provincial, prefectural, and municipal levels.
Indonesia	2013-2016	Project for Assessing and Integrating Climate Change Impacts into the Water Resources Management Plans for Brantas and Musi River Basins	Supports the implementation by Indonesia of water resources management that takes into account the effects of climate change, by providing advice on the formulation of water resource management plans in Indonesia's Brantas and Musi River Basins that take such effects into consideration, and by drafting guidelines that can also be applied to other river basins.
Indonesia	2013-2018	Project for Integrated Study on the Mitigation of Multimodal Disasters Caused by the Ejection of Volcanic Products (SATREPS)	Aims to comprehensively reduce disaster risks caused by the ejection of volcanic products through the development of a "Multimodal Sediment Disaster Countermeasures Decision-Making Support System" composed of a "Volcanic Eruption Early Warning System", an "Integrated GIS Multimodal Sediment Disaster Simulator", and a "Floating Volcanic Ash Warning System", all addressing the five volcanoes within Indonesia (Merapi, Semeru, Kelud, Galunggung and Guntur), and through the practical use of such system by the institutions related to DRR.
Indonesia	2014-2018	Project on Capacity Development for River Basin Organizations (RBOs) in Integrated Water Resources Management in the Republic of Indonesia (Phase II)	In the field of integrated water resources management in Indonesia (operation and maintenance of river facilities, coordination of water use and allocation, preservation of aquatic environments, flood management, etc.), supports the improvement of the structure and capacity of the RBOs and the continuous strengthening of efforts relating to integrated water resources management, by means of (1) site confirmations using field practice, (2) development and management of organizational structures and systems for strengthening the capacity of the RBOs, and (3) improving access to reliable guidelines and manuals.
Malaysia	2011-2016	Research and Development for Reducing Geo-Hazard Damage in Malaysia caused by Landslides and Floods (SATREPS)	Observes the environment around the surface of the earth using remote sensing and conducts research into the production of the trial version of a high level disaster risk management system including an integrated database relating to sediment and flood disasters, in order to implement and promote a disaster management program in Malaysia.
Philippines	2012-2015	Disaster Risk Reduction and Management (DRRM) Capacity Enhancement Project	Based on the National Disaster Risk Reduction and Management Act of the Philippines and National Disaster Risk Reduction and Management Plan, supports capacity enhancement for disaster response by drawing up plans and standardizing activities around the axis of the Office of Civil Defense, which is the core institution responsible for DRR, and by constructing a human resource development system.
Philippines	2010-2015	Enhancement of Earthquake and Volcano Monitoring and Effective Utilization of Disaster Mitigation Information Project (SATREPS)	While introducing the latest earthquake and volcano observation and monitoring systems to the Philippines, supports the enhancement of observation and analysis capacity, transmits highly accurate observation data relating to earthquakes and volcanoes, and contributes to the strengthening of disaster management systems. Also implements technology transfer relating to the construction of a tsunami prediction simulation system.

Country	Cooperation Period	Project Name	Description
Philippines	2014-2017	Project for Enhancing Capacity on Weather Observations, Forecasting and Warnings	Enhances weather observation, forecasting, and warning capacity in the Philippines through capacity development for weather observations, weather data analysis and forecasting, establishment of warning criteria for Southern Luzon, and improvements in communication methods for and details of weather information, as well as awareness-raising activities relating to weather information in Southern Luzon.
Thailand	2010-2014	The Project on Capacity Development in Disaster Management in Thailand (Phase 2)	Working closely with the Department of Disaster Prevention and Mitigation of the Thai Ministry of Interior and Ministry of Education, this project provides technological support with the aims of developing administrative disaster management systems in the central government and areas at high risk of disaster, disseminating DRR activities and human resources development, as well as constructing and introducing DRR education systems in schools at the local level.
Laos	2010-2014	Project on Riverbank Protection Works Phase II	Project promotes human resources development through a pilot program involving low-cost and environmentally-friendly Soda Mattress Works in three provincial prefectures to roll out across Laos the riverbank erosion control techniques using traditional river works methods (which had been implemented in the capital city of Vientiane in Phase I).
Vietnam	2011-2016	Development of Landslide Risk Assessment Technology along Transport Arterials in Vietnam (SATREPS)	In the mountainous area of Vietnam, landslides are a frequent occurrence due to soft ground and increasingly strong tropical winds and tropical monsoons. This project therefore aims to develop landslide disaster risk assessment technologies for the protection of trunk roads that connect the north and the south of the country and to ensure the safety of the residents of mountainous areas, as well as to develop landslide disaster risk reduction technologies that include early warning systems and human resources development.
Vietnam	2013-2016	Project for Building Disaster Resilient Societies in the Central Region of Vietnam (Phase II)	Project aims to strengthen the implementation capacity and integrated flood control plans of the central government and the four ministries of Central region, by strengthening collaboration systems with respect to integrating the central government's flood risk management efforts and strengthening its capacity to develop integrated flood risk management plans, enhancing capacity for flood risk analysis, and implementing structural and non-structural flood countermeasures in the target ministries.
Myanmar	2013-2017	Project on Establishment of an End-to-End Early Warning System for Natural Disasters	In order to assist in the eventual development of a natural disaster early warning system in Myanmar, this project aims to establish an improved model of a system for transmitting early warnings swiftly and appropriately to residents at the pilot project site, and also to implement human resources development for central and local government institutions and awareness-raising activities for residents such as evacuation activities. It also develops a plan for expansion into other regions.
Bhutan	2013-2016	Study on GLOFs (Glacial Lake Outburst Floods) in the Bhutan Himalayas	Supports the strengthening of emergency response capacity at the central and regional levels through the development and pilot implementation of an early warning system to respond to flooding including GLOFs (Glacial Lake Outburst Floods), as well as the development of a system for incorporating disaster risk assessment into development plans.
Bangladesh	2013-2016	Project for Capacity Development of Management for Sustainable Water-Related Infrastructure	To reduce flood damage in Bangladesh, this project provides support for investigations and inspections into the causes of damage at existing levees, and support for levee design, construction, and maintenance manuals through demonstrations to verify levee construction.
Bangladesh	2014-2018	Research Project on Disaster Prevention/Mitigation Measures against Floods and Storm Surges (SATREPS)	Proposes prevention and mitigation measures for storm surge and flood damage including the creation of flood risk maps and storm surge risk maps, measures to address river bank erosion and river levee collapse, and measures to prevent toxic substance diffusion at times of flooding, and experimentally conducts such measures.

Country	Cooperation Period	Project Name	Description
Sri Lanka	2014-2017	Technical Cooperation for Landslide Mitigation Project	Supports the enhancement of sediment disaster management capacity in Sri Lanka through conducting surveys and assessments of sediment disaster countermeasures, development of designs to prevent landslide, slope failures and rocks fall, construction supervision and monitoring, and accumulation of knowledge and know-how on sediment disasters mitigation measures.
Sri Lanka	2014-2017	Project for Improving of Meteorological Observations, Weather Forecasting and Dissemination	Conducts maintenance and inspection as well as calibration capacity improvements on meteorological observation equipment, enhances the capacity to send and receive meteorological data, improves weather forecasting capacity, refines warning criteria, improves transmission methods for and contents of weather information, and works towards improving capacity for meteorological observations, forecasting, warnings, and dissemination in Sri Lanka.
Fiji	2014-2018	Project for Reinforcing Meteorological Training Function of FMS	Improves the capacity to assess the human resources development needs of Oceania for the Fiji Meteorological Service (FMS), performs maintenance on human resources development tools (including curriculum and textbooks), and by enhancing the leadership capacity of the FMS through the improvement of its observation and prediction services, works towards the improvement of the human resources development function of the FMS with respect to Oceania, and contributes to the independent future continuation of human resources development work in Oceania by the FMS.
Fiji	2014-2016	Project for the Planning of the Nadi River Flood Control Structures	Nadi, Fiji's third largest city, is important to Fiji as a tourist center, but since no basic flood control plan has been formulated, and no flood countermeasures program has been implemented, it is vulnerable to flooding. There has been immense damage even in recent years and the area continues to be exposed to flood risk. For this reason, this project is working towards the formulation of a comprehensive flood countermeasures master plan for the river basin of the Nadi River, which flows through Nadi, the performance of feasibility studies with respect to priority projects based thereon, and the implementation of technology transfers to project counterparts.
Tuvalu	2011-2017	Project on Pilot Gravel Beach Replenishment against Coastal Disasters on Fongafale Island, Tuvalu	In Tuvalu, measures to address coastal erosion are urgently required since marine pollution has worsened due to storm surges and domestic wastewater. In this project, gravel beach replenishment is proposed as a measure to preserve the coast, following the natural beach formation mechanism of reef islands. Through this pilot study, the project will verify suitability and collate points to note when the pilot is disseminated to other areas.
El Salvador	2012-2014	Technical Assistance Project for the Department of Adaptation to Climate Change and Strategic Risk Management for Strengthening of Public Infrastructure in El Salvador	In El Salvador, where natural disaster risk is high, this project works towards developing and maintaining an advanced system to enhance appropriate public infrastructure, a system to implement damage surveys and emergency restoration work following a natural disaster, and a system to train engineers. All of this is being done for the Climate Change and Strategic Risk Management Bureau that has been newly established within the Ministry of Public Works.
Chile	2011-2015	Research Project on Enhancement of Technology to Develop Tsunami-Resilient Community (SATREPS)	In Chile, the Project works towards the introduction/improvement of a tsunami damage prediction model, proposals for measures to predict and mitigate tsunami damage, the development of a high-precision tsunami warning method, and development of tsunami-resilient programs for residents and communities.
Brazil	2013-2017	Project for Strengthening the National Strategy of Integrated Natural Disaster Risk Management	The objective of this project is to mitigate the risk of sediment disasters. It aims to strengthen overall disaster response capacity by achieving appropriate sediment disaster risk assessment, city development planning based on the assessment, and alert and evacuation, and information communication.

Country	Cooperation Period	Project Name	Description
Ecuador	2013-2016	Project for the Enhancement of Tsunami-induced Earthquake Monitoring Capability	Conducts facility maintenance and core personnel development to ensure swift judgement regarding the parameters of earthquakes that accompany tsunamis in Ecuador, the issuing of tsunami warnings, the improvement of tsunami observation, warning, and cancellation technologies, the adoption of criteria, and the improvement of tsunami warning procedures. As a result, it is strengthening earthquake and tsunami monitoring capacity and working towards the development of a tsunami warning system.
Peru	2010-2014	Project for the Enhancement of Earthquake and Tsunami Disaster Mitigation Technology in Peru (SATREPS)	Aims to develop damage estimates through the development of seismic motion and tsunami prediction simulations for a massive ocean trench earthquake along the coast of Peru. Based on this, it aims to develop and adopt DRR policies and technologies.
Afghanistan	2012-2017	Project for Capacity Enhancement on Hydro-Meteorological Information Management in the Ministry of Energy and Water	This project supports a cooperative relationship between the Ministry of Energy and Water (MEW) and other hydro/ meteorological information management institutions (Ministry of Agriculture, Irrigation and Livestock (MAIL), National Meteorological Service (NMS), etc.), and then to enable the mutual exchange of Afghanistan's hydro/meteorological data and information and its application in the appropriate development of irrigation and agriculture, so that it will be used by the general public.
Iran	2012-2015	Capacity Building for Earthquake Risk Reduction and Disaster Management in Tehran	In Iran, where there is a high risk of earthquakes, this project, which focuses on the area surrounding the capital Tehran, provides technological support across the three areas of road DRR, public awareness, and early warnings, working to enhance the capacity for earthquake DRR response.
Turkey	2011-2014	School-based Disaster Education Project	There is a possibility of a major earthquake along the North Anatolian Fault, and a high risk of damage in the areas close to the Marmara Sea. This project supports the adoption of the ToT (training of teachers) system, and one of its objectives is the dissemination of DRR education in public education. It also supports class planning, teaching material production, and the adoption of school disaster management plans, and works towards the improvement of DRR capacity in communities, starting with schools.
Turkey	2013-2018	Project on Earthquake and Tsunami Disaster Mitigation in the Marmara Region and Disaster Education in Turkey (SATREPS)	In the Marmara Region, with its high earthquake risk, this project conducts research on earthquake observations and on earthquake and tsunami disaster simulations. By maintaining the results of this research in the form of visual resources (such as images and pamphlets), this project works to improve the general public's awareness and knowledge of DRR.
Turkey	2012-2016	Capacity Development for Effective Disaster Risk Management	This project is for staff members of relevant organizations, such as ministries and agencies responsible for DRR, sector government offices, and local governments, and works towards supporting and strengthening the capacity to adopt disaster management plans based on risk assessments, and to contribute to the improvement of DRR capacity in Turkey.
Kenya	2011-2014	Capacity Development for Effective Flood Management in Flood Prone Areas	With the objective of disseminating and developing flood management activities carried out by communities, this project works to enhance water management capacity and community support provided by the Water Resource Management Authority, and to strengthen the communities' capacity for flood management to protect structural and non-structural property at three pilot sites.
Mauritius	2012-2014	Project for Landslide Management	In Mauritius, people are increasingly building homes and living on sloping land, due to recent population increases and the expansion of the cities. Every landslide that occurs causes serious damage. Reflecting the background, this project analyzed the present state and issues related to landslides on the main island of Mauritius, and investigated the effective measures through the implementation and evaluation of demonstration projects.

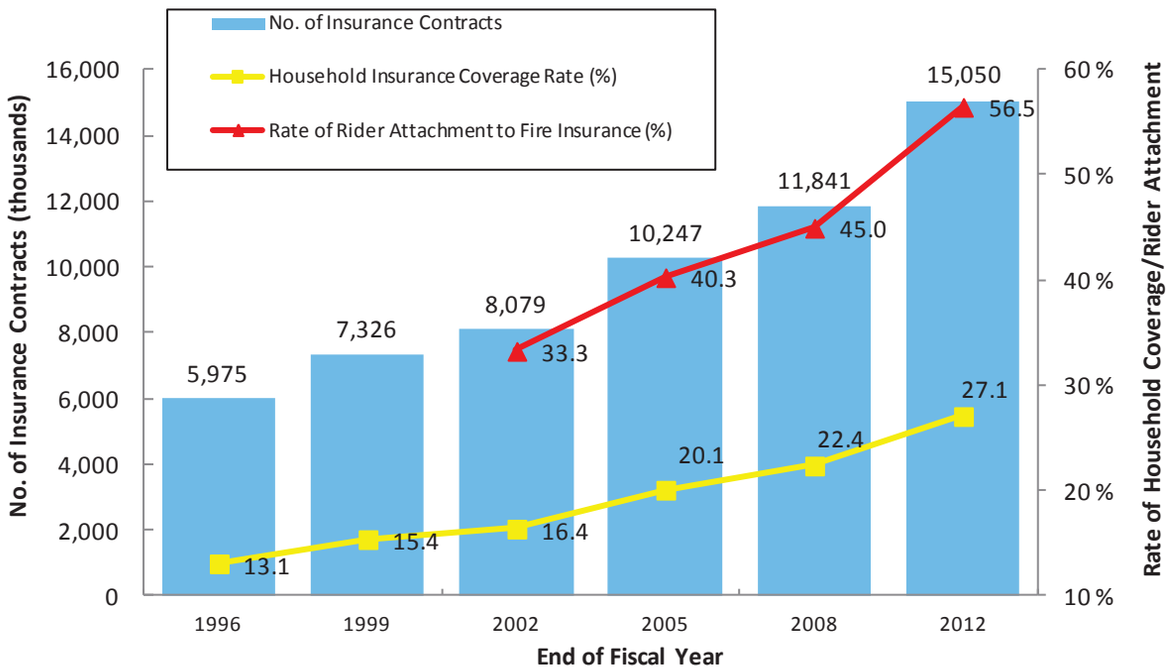
Country	Cooperation Period	Project Name	Description
Mauritius	2012-2015	Project for Capacity Development on Coastal Protection and Rehabilitation	Mauritius is an island country that is very vulnerable to the effects of climate change. There is an urgent need to protect the narrow country from coastal erosion and inundation, and this is a major issue for residents who depend on the tourist industry or live along the coast. While surveying and analyzing the current situation and issues at priority sea coasts, the project considers effective proposals for countermeasures through the implementation and evaluation of experimental studies.
Mozambique	2014-2017	Project for the Capacity Enhancement of Meteorological Observations, Weather Forecasting and Warnings	This project, which targets the staff of the Mozambique Meteorological Office and regional observation stations, aims to improve the capacity for responding to water-related disasters in Mozambique, a country which is vulnerable to natural disasters and is exposed to cyclones and flooding every year. The project works towards the improvement of forecasts and warnings that use quality controlled weather data by aiming to improve meteorological observation capacity and weather forecasting and warning capacity.
South Africa	2010-2015	Observational Studies in South African Mines to Mitigate Seismic Risks (SATREPS)	By observing mine earthquakes, which frequently occur deep underground, this project aims to analyze trigger mechanisms and link these to damage prediction. As a result, it hopes to achieve a deeper understanding of the outbreak of earthquakes and the process immediately prior to their outbreak and to improve disaster risk management systems for mine earthquakes.
Cameroon	2011-2015	Project on Magmatic Fluid Supply into Lakes Nyos and Monoun and the Mitigation of Natural Disasters through Capacity Building	The objective of this project is to clarify the mechanism of the limnic eruptions at Lake Nyos and Lake Monoun, to enhance understanding of the risks, and to develop a monitoring system that will be used for disaster management at the areas around the both lakes.
Armenia	2014-2017	Landslide Disaster Management Project	In Armenia, this project works towards enhancing the capacity to manage and respond to landslide disasters of the Landslide Disaster Management Working Group, by improving the technology and capacity relating to sediment disaster management, developing plans, guidelines, and legislation, and strengthening implementation systems.
Asia	2013-2015	Use of Disaster Management Satellite Information Assistance for Capacity-building Project in the ASEAN Region	To improve the practical use of satellite information in DRR in the ASEAN countries, this project conducts research using satellite information acquisition, image analysis, flood run-off analysis, and flooding analysis.

Note: SATREPS: Science and Technology Research Partnership for Sustainable Development

Source: Japan International Cooperation Agency (JICA)

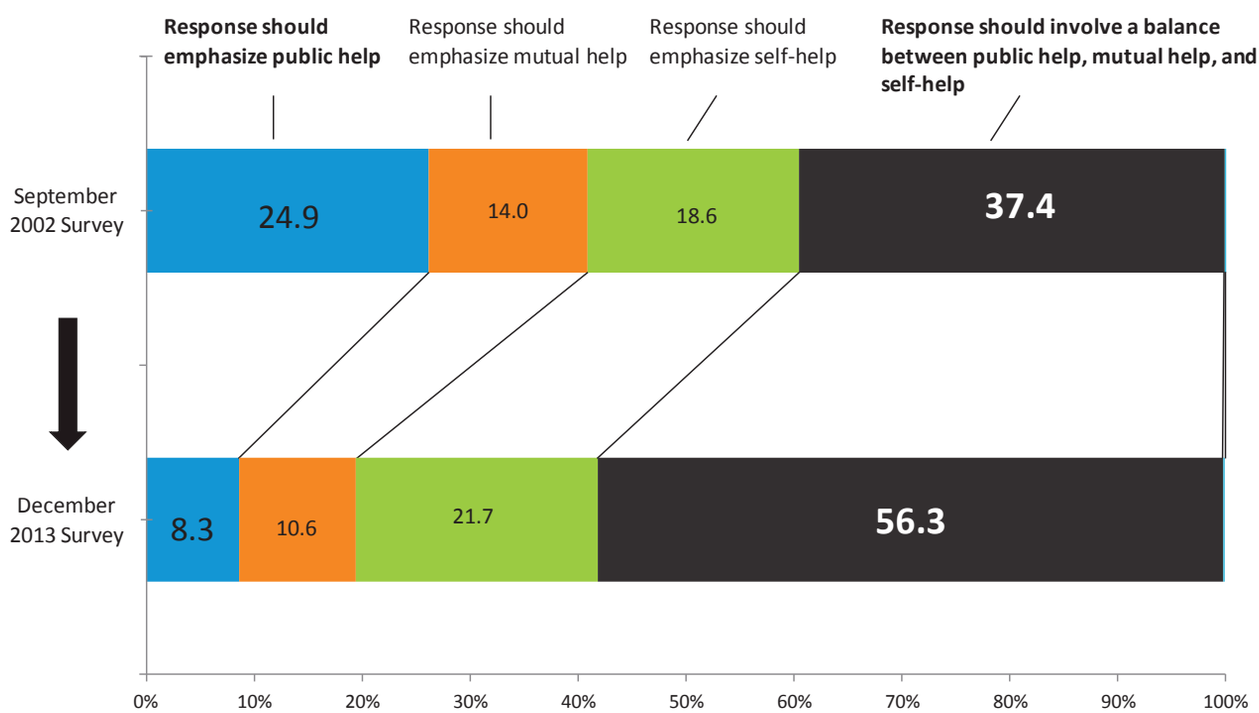
Section 10: Others

Fig. A-68 Trends in the Number of Earthquake Insurance Contracts



Source: Produced by the Cabinet Office based on materials from the General Insurance Rating Organization of Japan

Fig. A-69 Awareness of Self-Help, Mutual Help, and Public Help Measures



Source: Produced by Cabinet Office on basis of "Public Opinion Poll regarding Disaster Risk Reduction" conducted by the Cabinet

Fig. A-70 **Explanations Regarding the Japan Meteorological Agency's Seismic Intensity Ratings**

Notes:

(1) The seismic intensity values published by the Japan Meteorological Agency (JMA) are generally observed values from seismometers situated on the surface of the earth or on the first floor of low-rise buildings. When a particular seismic intensity is observed, these materials indicate what type of phenomenon or damage has occurred. It is impossible to determine the seismic intensity based on the phenomena described for each seismic intensity level.

(2) Seismic motion is strongly influenced by type of ground and topography. A seismic intensity value is the observed value for the place where the seismometer is situated, and seismic intensity can vary even within a municipality depending on where it is measured. Furthermore, even within the same building, the strength of a tremor will depend on the floor or place where it is felt. For example, a tremor is generally stronger on the upper floor of a middle- or high-rise building than at ground level.

(3) Even with tremors of the same seismic intensity, the damage will differ according to the amplitude of the earthquake vibration (the size of the tremor), the cycle (the length of time taken for one repetition of the tremor), and the duration of the tremor, as well as the condition of the building or structure that is affected and the ground conditions.

(4) In this data, of all the damage that occurs when a particular seismic intensity is observed, that which is seen relatively often has been recorded. However, there are also instances where greater or lesser amounts of damage have been caused. Note also that not all of the phenomena indicated for any particular level of seismic intensity will necessarily occur.

(5) This data is primarily collated from earthquakes that have occurred in recent years. Going forward, the details of these tables will be regularly inspected every five years, new examples will be added, and amendments will be made where the data no longer reflects true conditions due to, for example, improvements in the earthquake-proofing of houses and structures.

(6) In these materials, where the extent of damage is not shown in round numbers, the following adverbs and adjectives have been used as a tentative guide.

Term	Definition
Rarely A few/little Majority Almost all	Extremely limited. Hardly ever. Number/extent is extremely small. Just a little bit. Half or more. Less than "almost all." Not all but close to all.
There are (also), there may be	Used to express something that typically starts to appear at this seismic intensity level, where the quantity is not great, but it is hard to quantify the number/extent.
Increases	It is difficult to specify the quantity, but it is more than would be the case for a lower level of intensity.
Increases further	Same meaning as "increases" above. Used in relation to lower levels of intensity, just like "increases" above.

* The JMA sometimes publishes earthquake intensities obtained from questionnaire surveys, but these are expressed as "corresponding to seismic intensity xx" and are distinguished from seismic intensity levels observed by seismometers.

Human Sensation/Reaction, Indoor Conditions, Outdoor Conditions

Seismic intensity level	Human sensation/reaction	Indoor conditions	Outdoor conditions
0	A person will not feel the tremor but it will be recorded by seismometers	—	—
1	If people are indoors keeping quiet, some will feel a slight tremor.	—	—
2	If people are indoors keeping quiet, the majority will feel the tremor. If people are asleep, some will be awakened.	Things hanging from the ceiling such as lamps will sway slightly.	—
3	Most people who are indoors will feel the tremor. Of those who are walking, some will feel the tremor. The majority of people who are sleeping will be awakened.	Dishes in cupboards may rattle.	Electric wires will tremble slightly.
4	Most people will be startled. Most of those walking will feel the tremor. Most who are sleeping will be awakened.	Things hanging from the ceiling such as lamps will sway significantly, dishes in cupboards will rattle. Unstable ornaments may fall over.	Electric wires will tremble significantly. Some people who are driving vehicles will notice the tremor.
5 Lower	The majority of people will be frightened and feel as if they want to hold onto something.	Things hanging from the ceiling such as lamps will sway violently. Dishes in cupboards and books on bookshelves may fall down. The majority of unstable ornaments will fall over. Furniture that is not secured may move and unstable items may fall over.	Rarely, windows may break and glass may fall out. People will notice electric poles swaying. Roads may be damaged.
5 Upper	The majority of people will find the tremors an obstacle to movement, and find it hard to walk unless they hold onto something.	More dishes in cupboards and books on bookshelves will fall. TV sets may fall from their stands. Furniture that is not secured may fall over.	Windows may break and glass may fall out. Unreinforced concrete block walls may collapse. Vending machines that are not properly installed may fall over. Driving a vehicle will become difficult and some cars may come to a stop.
6 Lower	It will become difficult to remain standing.	The majority of unsecured furniture will move, and some will fall over. Some doors will become impossible to open.	Tiles on walls and glass in windows may break and fall.
6 Upper	It will become impossible to remain standing or to move without crawling. People may be tossed around, being unable to move, and may even be thrown through the air.	Almost all unsecured furniture will move and more of it will fall over.	More buildings will have broken tiles and glass. Almost all of the unreinforced concrete block walls will collapse.
7		Almost all unsecured furniture will move and fall over, some even being thrown through the air.	Even more buildings will have broken tiles and glass. Even reinforced concrete block walls may be damaged.

Conditions of Wooden Buildings (Residential)

Seismic intensity level	Wooden Buildings (Residential)	
	High earthquake resistance	Low earthquake resistance
5 Lower	—	Slight crazing or cracks may be seen in walls.
5 Upper	—	Crazing or cracks may be seen in walls.
6 Lower	Slight crazing or cracks may be seen in walls.	Crazing or cracks in walls become more common. Large cracks may form in walls. Tiles may fall and buildings may lean. Some may topple.
6 Upper	Crazing or cracks may be seen in walls.	Large cracks in walls become more common. Buildings that lean or collapse become more common.
7	Crazing or cracks in walls become more common. Rarely, buildings may lean.	Buildings that lean or collapse become even more common.

Notes:

(1) Wooden building (residential) are classified into two types according to their earthquake resistance. Earthquake resistance tends to be better in newer buildings, tending to be lower in structures built prior to 1981 and higher in structures built since 1982. However, there is wide variation in earthquake resistance due to differences in construction methods and the placement of walls. Just because a building is old does not necessarily mean that you can determine its level of earthquake resistance. The earthquake resistance of existing buildings can be ascertained through seismic diagnosis.

(2) The crazing, cracks and damage to the walls in the wooden buildings referred to in this table are deemed to appear in walls made of soil (split bamboo substrate) or mortar (including lath and wire mesh substrate). Where walls have weak foundations, even when the deformation to the building is slight, the mortar readily becomes detached and falls off.

(3) Damage to wooden buildings will differ depending on the cycle and duration of the seismic motion. There are examples of damage to buildings being low in relation to seismic intensity, such as the Iwate-Miyagi Nairiku Earthquake in 2008.

Conditions of Reinforced Concrete Buildings

Seismic intensity level	Reinforced Concrete Buildings	
	High earthquake resistance	Low earthquake resistance
5 Upper	—	Cracks may form in walls, crossbeams, and pillars.
6 Lower	Cracks may form in walls, crossbeams, and pillars.	Cracks become more common in walls, crossbeams, and pillars.
6 Upper	Cracks become more common in walls, crossbeams, and pillars.	Diagonal and X-shaped cracks may be seen in walls, crossbeams, and pillars. Pillars on the ground floor or middle floors may crumble and some buildings may collapse.
7	Cracks become even more common in walls, crossbeams, and pillars. Ground floor and middle floors may be deformed, and rarely, buildings may lean.	Diagonal and X-shaped cracks become more common in walls, crossbeams, and pillars. Pillars on the ground floor or middle floors crumble and more buildings will collapse.

Notes:

(1) Earthquake resistance tends to be better in newer buildings, tending to be lower in structures built prior to 1981 and higher in structures built since 1982. However, there is wide variation in earthquake resistance, due to differences in structural types, the placement of quake-resistant walls, and whether the walls are planar or vertical. Just because a building is old does not necessarily mean that you can determine its level of earthquake resistance. The earthquake resistance of existing buildings can be ascertained through seismic diagnosis.

(2) In reinforced concrete buildings, slight cracks may be observed even where the core structure of the building is not affected.

Ground and Slope Conditions

Seismic intensity level	Ground Conditions	Slope Conditions
5 Lower	Cracks[1] and liquefaction[2] may occur.	Rock falls and slope failures may occur.
5 Upper		
6 Lower	Fissures may form.	Slope failures and landslides may occur.
6 Upper	Large fissures may form.	Landslips become more frequent, large-scale landslides and sector collapses may occur.[3]
7		

Notes:

(1) A crack is the same phenomenon as a fissure, but the expression is used here to refer to a small fissure or opening in the ground.

(2) Where the groundwater level is high, and the ground is loose and sandy, liquefaction may occur. As liquefaction progresses, muddy water may spout out of the ground, subsidence may occur, embankments and quays may be broken, sewage pipes and manhole covers may float to the surface, and damage may include the leaning or destruction of building foundations.

(3) If a large-scale landslide or a sector collapse occurs, depending on the topography of the area, this may also cause natural dams to be formed. Large volumes of sediment may also cause debris flows.

Effect on Utilities and Infrastructure

Suspension of gas supply	When the seismic intensity level reaches 5 Lower or greater, gas meters with safety devices (“intelligent gas meters”) will trip, and the gas supply will be shut off. If tremors become even stronger, the gas supply for entire communities may be shut off in the interest of safety.*
Suspension of water supply, power outages	In communities where tremors are recorded at seismic level 5 Lower or greater, the water supply may be suspended and there may be power outages.
Suspension of rail services, expressway regulation	If the seismic intensity level is 4 or greater, in the interest of safety, the implementation of suspensions, speed restrictions, and traffic regulations on railways and expressways will be enacted at the discretion of the relevant operating company (criteria applied to confirm safety will differ by operating company and geographical area).
Disruption to telephone lines and other means of communication	When an earthquake disaster occurs, there is an increase in communications using the telephone and the internet in the areas where the tremors are strong and in the surrounding areas, as people try to confirm the safety of loved ones, offer condolences, and ask about friends and relatives. This can lead to telephone line congestion. To address this, when a natural disaster such as an earthquake with a seismic level of 6 Lower or greater occurs, communication companies provide services such as the Disaster Emergency Message Dial 171 (which allows people in disaster-stricken areas to record a message about their safety, and allows people outside the area to listen to that message) and the Disaster Emergency Message Board (web171, which allows people in disaster-stricken areas to record information using text, voice, or images, and allows people anywhere in the world to access that information).
Elevators taken out of service	Elevators equipped with earthquake control devices will automatically stop, in the interest of safety, in the event of a tremor of seismic intensity level 5 Lower or greater. It can take time for operations to resume while safety inspections are conducted.

*When there are tremors with a seismic intensity of 6 Upper or greater, gas, water, and electricity supply services may be widely suspended across large regions of the country.

Effect on Large-scale Structures

Shaking of skyscrapers due to long-period earthquake ground motion*	Since skyscrapers have a long natural period, they react less violently to earthquakes than ordinary reinforced concrete buildings, which have a short natural period. However, in response to long-period earthquake ground motion, they shake more slowly over a long period of time. If the tremors are strong, then poorly secured office fixtures may move significantly, and people inside may need to hold onto fixed objects in order to remain in one place.
Sloshing inside oil tanks	Sloshing of liquid inside oil tanks may occur as a result of long-period earthquake motion, oil may overflow the tanks, and fires may occur.
Damage to or collapse of ceilings at facilities that occupy large spaces	At facilities such as gymnasiums and indoor swimming pools, which occupy large spaces, even earthquake movements that do not cause significant damage to the structure itself, such as the pillars and walls of the building, may cause ceilings to shake significantly, become damaged, and collapse.

*Large-scale earthquakes can generate long-period seismic waves, which can travel long distances from the epicenter of the quake. Depending on the natural period of the ground, such long-period seismic waves may become amplified as they travel over plains, and the duration of the tremors may be lengthened.

Source: Japan Meteorological Agency

Fig. A-71 **Emergency Warning Issuance Criteria**

<table>
<tr><th>Type of Event</th><th colspan="2">Criteria</th></tr>
<tr><td>Heavy rain</td><td colspan="2">Heavy rainfall with a level of intensity observed only once every few decades is predicted in association with a typhoon or intense heavy rains or Heavy rainfall is predicted in association with a strong typhoon whose expected level of intensity is observed only once every few decades or an extra-tropical cyclone of comparable intensity.</td></tr>
<tr><td>Storm</td><td>A storm is predicted…</td><td rowspan="3">…in association with a strong typhoon whose expected level of intensity is observed only once every few decades or an extra-tropical cyclone of comparable intensity.</td></tr>
<tr><td>Storm surge</td><td>A storm surge is predicted…</td></tr>
<tr><td>High waves</td><td>High waves are predicted…</td></tr>
<tr><td>Snowstorm</td><td colspan="2">A snowstorm is predicted in association with an extra-tropical cyclone of comparable intensity with a strong typhoon whose expected level of intensity is observed only once every few decades.</td></tr>
<tr><td>Heavy snowfall</td><td colspan="2">Heavy snowfall with accumulations observed only once every few decades is predicted.</td></tr>
</table>

Source: Japan Meteorological Agency

EMERGENCY SUPPLIES CHECKLIST

Let's be prepared for disasters!

Items to be stockpiled at home in case of a disaster

Prepare a supply of drinking water, food and consumables for one week, if possible

- ✓ **Drinking water** (minimum three days' supply, roughly three liters per person per day)
- ✓ **Food (minimum three days'supply)** Rice, Packaged foods, Cookies and crackers, Chocolate bars, Hardtack, etc.
- ✓ Toilet paper, Tissues
- ✓ Matches, Candles
- ✓ Cling film, Garbage bags, Flashlight
- ✓ Plastic water tank

Items to be prepared in a grab-and-go bag as an Emergency Supply Kit

Prepare a flashlight, a portable radio and a charger for electronic devices, preferably ones that can be manually recharged

- ✓ **Drinking water**
- ✓ **Food** Rice, Packaged foods, Cookies and crackers, Chocolate bars, Hardtack, etc.
- ✓ **First aid supplies** Adhesive bandages, Bandages, Antiseptic solution, Medicines, etc.
- ✓ Helmet, Disaster prevention hood
- ✓ Bank passbook, Personal seal, Cash
- ✓ Clothes, Underwear
- ✓ **Kairo** (disposable body warmers)
- ✓ ID Card and card showing contact information
- ✓ Blankets, Towels
- ✓ Wet wipes
- ✓ Portable radio with extra batteries
- ✓ Toiletries
- ✓ Matches, Candles
- ✓ Masks, Work gloves
- ✓ Flashlight
- ✓ Charger for mobile phone
- ✓ Milk, diapers, and other necessary supplies for those with infants