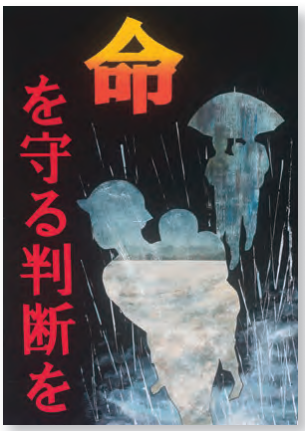
2020

White Paper
Disaster Management
in Japan

Cabinet Office



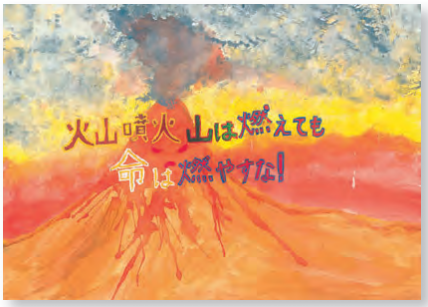


TABLE OF CONTENTS

Special Feature Catastrophic and Frequent Torrential Rain

Part 1 Current Disaster Risk Management Measures in Japan

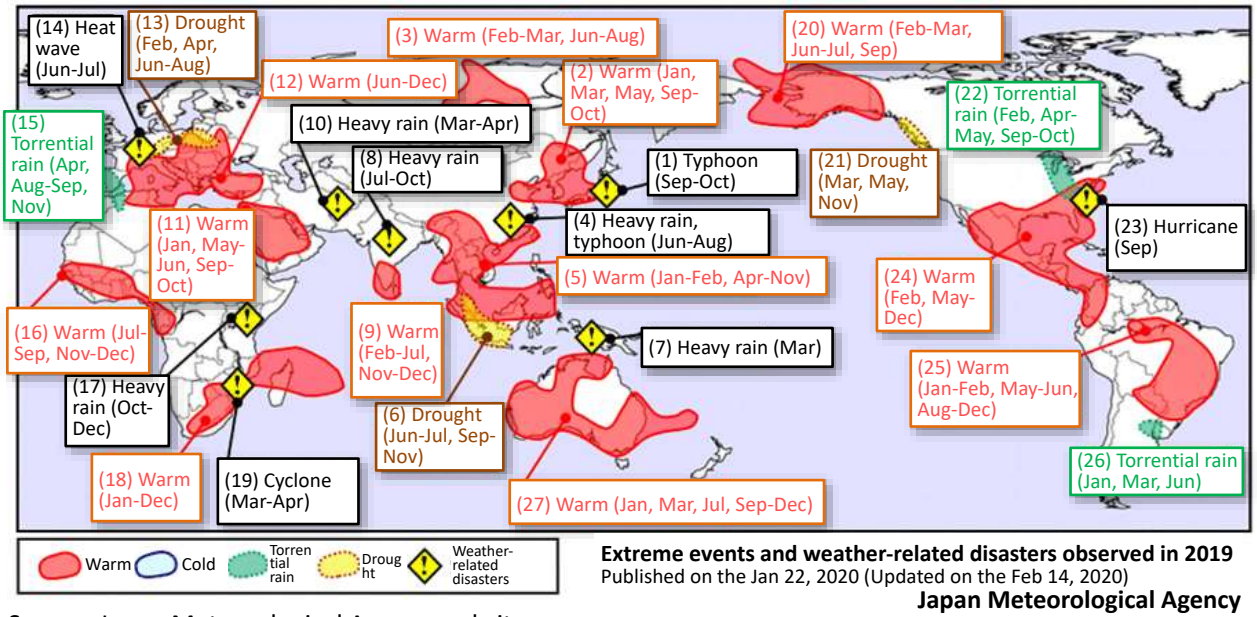
Special Feature
Catastrophic and Frequent Torrential Rain

In recent years, the world has been struck by frequent meteorological disasters. Even in 2019, torrential rain hit worldwide and caused major damage. From July to October 2019 meanwhile, heavy rain centered on India caused a major disaster and claimed 2,300 or more lives. The total precipitation in August and September 2019 for India was the highest since 1983 and ended up as record-breaking heavy rainfall. Even in Japan, starting from the July 2017 Northern Kyushu Torrential Rain and the Heavy Rain Event of July 2018, recent torrential rain caused major damage. Even in 2019, torrential rain, including disasters caused by Typhoons Hagibis in 2019, left major damage.

The yearly average temperature in 2019 was higher than normal over much of the world and extreme high temperatures occurred throughout, including the north-eastern portion of East Asia. Even in Japan, high temperatures continued nationwide and the yearly average was the highest ever recorded since records began in 1898. While as a general rule, extreme weather is a phenomenon which is very different from the phenomena experienced in the past and something rarely experienced, it is pointed out that extreme weather may proliferate worldwide due to climate change such as global warming.

For this purpose, the “Special Feature” of the 2020 White Paper on Disaster Management covers catastrophic and frequent torrential rain. Chapter 1, Section 1 reviews the damage and response measures taken by the government for incidents having caused particularly extensive damage among a series of major disasters that occurred in 2019, including the Heavy Rain Event of August 2019 related to the rain front and Faxai and Hagibis typhoons in 2019. Chapter 1, Section 2 outlines the expansion of targets of the Disaster Relief Act and the support package for affected people as measures based on response to these disasters. Chapter 2 outlines the steps being taken by the government and preparedness measures to be implemented in future on review and measures on typhoons Faxai and Hagibis in 2019 etc. (Chapter2 Section 1) and Evacuation measures for residents (Chapter2 Section 2). Chapter 3 outlines collaborative measures between climate action and disaster risk reduction.

Extreme events and weather-related disasters in the World



Extreme events and weather-related disasters observed in 2019
Published on the Jan 22, 2020 (Updated on the Feb 14, 2020)
Japan Meteorological Agency

Source: Japan Meteorological Agency website
(Reference: https://www.data.jma.go.jp/gmd/cpd/monitor/annual/index.html)

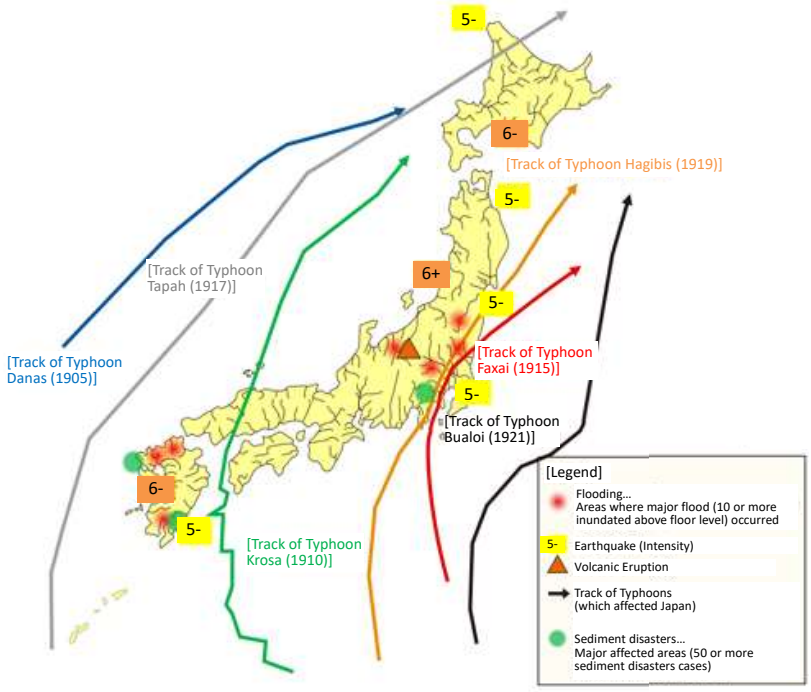
Chapter 1 Disasters in 2019

Section 1 Major disasters occurred in 2019

As Japan is prone to various types of disasters given its natural conditions, floods, sediment disasters, earthquakes and tsunamis occur annually. In the Heisei era, major disasters having occurred include the Great East Japan Earthquake, which remains fresh in the memory, the Kumamoto Earthquake and the Heavy Rain Event of July 2018. On May 1, 2019, the new Reiwa era started. In 2019, consecutive flood and sediment disasters occurred caused by the Earthquake centered offshore of Yamagata Prefecture in June (See Appendix 14-1 (A-32)), the Heavy Rain Event from the end of June, which mainly affected Kagoshima Prefecture, the Heavy Rain Event of August 2019 related to the rain front and Typhoons Danas (1905), Krosa (1910), Faxai (1915) and Tapah (1917). In particular, Typhoons Hagibis (1919) and Bualoi (1921) caused widespread damage.

Among these consecutive typhoons, Typhoons Faxai (1915) and Hagibis (1919) were natural phenomena which caused disasters impossible to ignore and were cited by the Japan Meteorological Agency to hand their experiences and lessons learnt on to the next generation.

Major disasters occurred in 2019



Source: Report of Water-Related Disaster in 2019 (Ministry of Land, Infrastructure, Transport and Tourism, Japan)

Torrential rains which cause flood and sediment disasters have certain attributes, which govern the frequency and intensity of such downpours (See Special Feature Section 1, 1-3, Page 12). These rainfall features are changing in the longer term.

Observations by the Japan Meteorological Agency have shown that the number of days on which heavy rain exceeding 200mm was recorded in our country has increased since chronological statistics were first compiled in 1901. When data for the most recent 30-year period and the 30-year period from the time statistics were first compiled are compared, the figure has increased around 1.6 fold. According to the

observation data of AMeDAS which has about 1,300 observation points across Japan, the frequency of such short-duration heavy rain exceeding 50mm per hour has increased since the time statistics were first compiled in 1976. When data for the most recent decade and the decade from the time statistics were first compiled are compared, the figure has increased around 1.4 fold (based on 1,300 or so nationwide observation points).

In addition to natural fluctuation, global warming is thought to be linked to variation in rainfall. According to calculations by the Japan Meteorological Agency, if greenhouse gas emissions continue at a high level, the number of days recording heavy rain exceeding 200mm and the frequency of short-duration heavy rains exceeding 50mm per hour will both double or more by the end of this century compared with the 20th century as a national average.

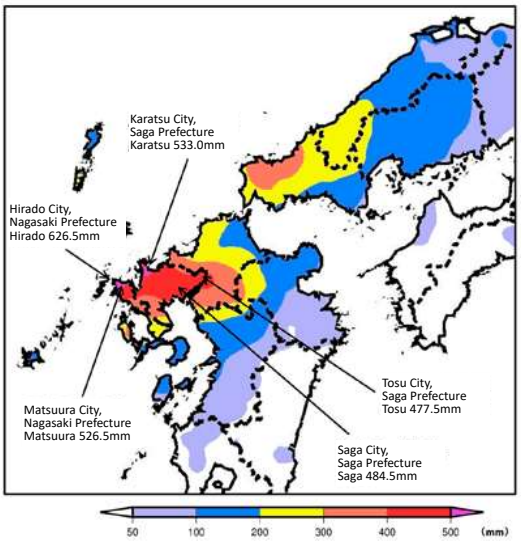
1-1 The Heavy Rain Event of August 2019 related to the rain front

(1) Overview

The rain front having moved from Central China up through southern Kyushu and up to southern Japan from August 26, 2019 then further moved east in Japan from around Tsushima Straits on August 27 and stalled until August 29. Because warm and very moist air kept flowing to this rain front, a series of rain clouds developed from the East China Sea to the northern Kyushu Region and line-shaped precipitation systems were formed and maintained.

This caused heavy rain centered on Northern Kyushu region. For example, the total precipitation from August 26 to August 29 exceeded 600mm in Hirado City, Nagasaki Prefecture.

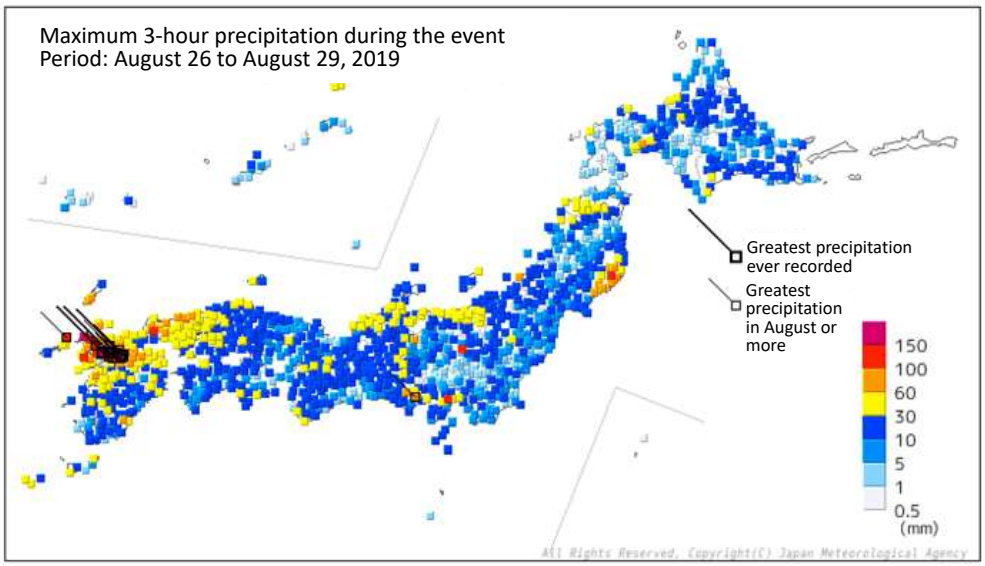
Precipitation distribution during the event (between 00:00 on August 26 and 24:00 on August 29)



Source: Japan Meteorological Agency website
(Reference: https://www.data.jma.go.jp/obd/stats/data/bosai/report/2019/20190826/20190826.html)

Fukuoka and Saga Prefectures experienced record 3- and 6-hour precipitation levels as well as record-breaking heavy rains.

Distribution of the maximum 3-hour precipitation during the event (between 00:00 on August 26 and 24:00 on August 29)



Source: Japan Meteorological Agency website
(Reference: https://www.data.jma.go.jp/obd/stats/data/bosai/report/2019/20190826/20190826.html)

(2) Damage

The Heavy Rain Event of August 2019 related to the rain front caused river flooding, inundation, and sediment and other disasters, which left 4 people dead (1 in Fukuoka Prefecture and 3 in Saga Prefecture) and 2 people seriously or lightly injured. (Information by the Fire and Disaster Management Agency, as of December 10, 2019. Reference: https: //www.fdma.go.jp/disaster/info/items/8gatu27ooame-30.pdf)

Human casualties (as of December 10, 2019)

Prefecture	Fatality	Missing persons	Seriously injured	Lightly injured
Fukuoka	1			1
Saga	3		1	
Total	4	0	1	1

Source: Cabinet Office

Damage to houses included 95 completely destroyed, 936 half-destroyed and partially damaged and 5,656 inundated above and below floor level. (Information by the Fire and Disaster Management Agency, as of December 10, 2019. Reference: https://www.fdma.go.jp/disaster/info/items/8gatu27ooame-30.pdf)

Houses damaged (as of December 10, 2019)

Prefecture	Completely destroyed	Half-destroyed	Partially damaged	Above-floor flooding	Below-floor flooding
Fukuoka	6	24	26	120	349
Saga	87	858	24	760	4,301
Nagasaki			2	20	66
Others	2		2	5	35
Total	95	882	54	905	4,751

Source: Cabinet Office

This heavy rain damaged to lifeline utilities such as power and water outages and created a traffic hazard such as suspension of rail operations which caused big obstacles on residents' livings and the agriculture, forestry and fishing industries. Regarding shelters, evacuation instructions (emergency) and recommendations were issued in many municipalities of northern Kyushu Regions, to which a maximum of approximately 5,400 people evacuated (Information by the Fire and Disaster Management Agency, as of August 28, 2019.)

Moreover, this heavy rain caused quenching oils from the iron factory to spill (Saga Prefecture, Oomachi Cho), whereupon they were scattered widely into the Rokkaku River basin which damaged houses. In addition, innumerable floating objects hindering the safe navigation of sailing ships were found in the Ariake Sea.

Damage of the Heavy Rain Event of August 2019 related to the rain front

Inundation in Saga Prefecture (Oomachi Cho)
(spillage of quenching oils)
(Source: Ministry of Land, Infrastructure, Transport and Tourism)

Inundation in Saga Prefecture (Tekeo City)
(Source: Cabinet Office)

Damage to houses in Saga Prefecture (Takeo City)
(Source: Cabinet Office)

Damage to the agricultural industry in Saga Prefecture (Oomachi Cho) (spillage of quenching oils)
(Source: Cabinet Office)

(3) Response of Government Ministries and Agencies

On August 28, 2019, the government established the Emergency Response Office in the Prime Minister's Office on the Heavy Rain Event of August 2019 related to the rain front. Immediately after the disaster, under the direction of Mr. Abe, Prime Minister, through Cabinet Meetings, the government took emergency disaster management measures in collaboration with affected local governments such as supporting their emergency disaster management measures. On August 31, 2019, a governmental investigation team led by Mr. Yamamoto, then Minister of State for Disaster Management, was deployed to Saga Prefecture and on September 24, Mr. Takeda, Minister of State for Disaster Management, visited some of the affected areas, Takeo City and Oomachi Cho, Saga Prefecture.

In the affected areas, the SDF, etc. conducted life support activities and responded to the oil spill from the iron factory (by setting up of oil fence and setting up and collecting oil absorption mats, etc.). The Ministry of Land, Infrastructure, Transport and Tourism responded to inundation along the Rokkaku River (by pumping with a pumping car) and oil spill in the Ariake Sea (the agitation, etc. by an Ocean Environment Maintenance Ship, etc.) and collected floating objects.

On September 6 and 20, it was announced that this disaster could be designated as a Disaster of Extreme Severity as a series of major disasters caused by rain storms and heavy seasonal rain from August 13-September 24, 2019, including Typhoons Krosa (1910), Liwayway (1913), Faxai (1915) and Tapah (1917). On October 11, the Cabinet issued a Cabinet Order to collectively designate said set of disasters as a Disaster of Extreme Severity. (See Appendix 14-2 “The Heavy Rain Event of August 2019 related to the rain front” (A-32 to 33).)

Mr. Yamamoto, then Minister of State
for Disaster Management visiting the affected areas

Mr. Takeda, the Minister of State
for Disaster Management visiting the affected areas

1-2 Disaster caused by Typhoon Faxai (1915)

(1) Overview

Typhoon Faxai (1915) moved northern from Ogasawara inshore to an area around the Izu Island Chain from September 7 to 8. Before 3 on September 9, it passed Miura Peninsula and proceeded to Tokyo Bay and before 5 on September 3 it made landfall at Chiba City with very strong typhoon intensity. The same morning, it crossed over Ibaraki offshore while moving northeastward over the East Sea. During the approach and passage of the typhoon, very intense winds and rainfalls hit the Izu Island Chain and southern Kanto Regions.

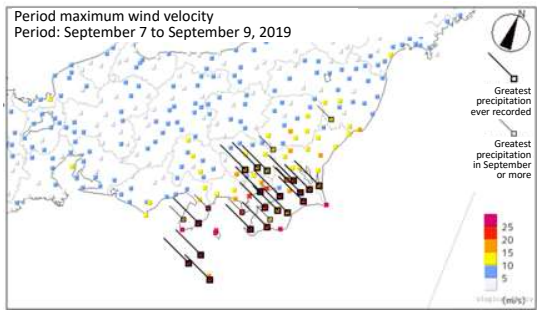
The winds were particularly intense in certain areas. For example, at six points of the Izu Island Chain and Kanto Region South, the wind velocity observed peaked at 30 or more meters a second, while at three points of the Izu Island Chain and Kanto Region South, the momentary wind velocity observed peaked at 50 or more meters a second. Moreover, 19 AMeDAS stations registered record-breaking maximum wind velocities centered in Kanto Regions, including Chiba City (maximum wind velocity: 35.9 m/s; maximum momentary wind velocity: 57.5 m/s) (registered record-breaking).

Top five AMeDAS stations registering the highest maximum momentary wind velocity
(from 0:00 on September 7 to 24:00 on September 9)

Prefecture	Municipality	AMeDAS station	Wind velocity	Observation time
Tokyo	Kozushima Island Village	Kozushima	58.1	21:03 on 8th
Chiba	Chuo Ward, Chiba City	Chiba	57.5	04:28 on 9th
Tokyo	Niijima Island Village	Niijima	52.0	23:38 on 8th
Chiba	Kisarazu City	Kisarazu	49.0	02:48 on 9th
Chiba	Tateyama City	Tateyama	48.8	02:31 on 9th

Source: Japan Meteorological Agency

Period maximum wind velocity
(from 0:00 on September 7 to 24:00 on September 9)



(2) Damage

The heavy rain and windstorms caused by Typhoon Faxai left 3 people dead (2 in Chiba Prefecture and 1 in Tokyo), 13 people seriously injured and 137 lightly injured.
(Information by the Fire and Disaster Management Agency, as of December 23, 2019.
Reference: https://www.fdma.go.jp/disaster/info/items/taihuu15gou40.pdf)

Human casualties (as of December 23, 2019)

Prefecture	Fatality	Missing persons	Seriously injured	Lightly injured
Chiba	2		8	74
Tokyo	1			6
Others			5	57
Total	3	0	13	137

Source: Cabinet Office

Damage to houses included 391 completely destroyed, 76,483 half-destroyed and partially damaged and 230 inundated above and below floor level. (Information by the Fire and Disaster Management Agency, as of December 23, 2019. Reference: https://www.fdma.go.jp/disaster/info/items/taihuu15gou40.pdf)

Houses damaged (as of December 23, 2019)

Prefecture	Completely destroyed	Half-destroyed	Partially damaged	Above-floor flooding	Below-floor flooding
Chiba	363	3,929	62,986	34	57
Tokyo	12	68	1,425	13	11
Others	16	207	7,868	74	41
Total	391	4,204	72,279	121	109

Source: Cabinet Office

Damage to lifeline utilities by this record-breaking typhoon included the iron towers carrying electric lines and utility poles collapsing and power distribution equipment breaking down because of fallen trees and flying objects which led to power outages affecting a maximum of approximately 934,900 households centered on the Tokyo Metropolitan Area. Regarding power, recovery efforts were prolonged because assessing on-site damage, retrieving fallen trees and fixing the major damage caused all took considerable time. Due to the influence of prolonged power outages, as well as communication failures, many municipalities saw damage to lifelines such as water outages and traffic hazards such as suspension of railway operations, which seriously disrupted residents' lives. Additionally, unexpected high waves caused the bank protection to collapse and some companies located behind were flooded.

Damage to lifeline utilities

	Maximum number of households affected	Recovery
Power	Approx. 934,900	Recovered on September 27 (excluding the areas where recovery was difficult, etc.)
Water	139,744	Recovered on September 25

Source: Cabinet Office

Due to this disaster, the Disaster Relief Act was invoked, with consequences for 42 municipalities in 2 prefectures. Regarding shelters, evacuation instructions (emergency) and recommendations were issued in many municipalities in Chiba Prefecture, which saw up to 2,200 or so people evacuated (Information by the Fire and Disaster Management Agency, as of September 9, 2019.)

[Column]

Scheduled Suspension of Railway Operation

Typhoon Faxai made landfall at dawn on September 9 (Mon.) around Chiba City. As it was windy around commuting time, many railway companies initiated a scheduled suspension from September 8. While the function of Narita Airport located at Narita City, Chiba Prefecture was unaffected and runways were used normally, traffic access between cities and the airport was cut because of the scheduled suspension of railway operations and road closures. About 13,000 people were stuck at night on September 9.

Regarding the scheduled suspension of railway operation, after Typhoons Jebi (1821) and Trami (1824), the Ministry of Land, Infrastructure, Transport and Tourism held an Investigative Committee on the scheduled suspension of railway operation and released an interim report showing that such scheduled suspension was necessary with passengers' safety in mind. In July 2019, the report on the implementation of scheduled suspension of railway operation was released, stating that concrete information should be provided on a timely basis so that passengers can select appropriate actions. Based on the scheduled suspension implemented during Typhoon Faxai, on October 11, 2019 before Typhoon Hagibis made landfall, the Ministry of Land, Infrastructure, Transport and Tourism updated this report. It included that railway companies who have access lines to airports should collaborate with airports and provide information appropriately, when operation restarts, railway companies should provide detailed information not to confuse passengers, the Ministry shall strive to ensure social understanding of telecommuting, staggered commuting and others. The Ministry informed railway companies to implement the measures of this report during scheduled suspension during Typhoon Hagibis. Therefore, during Typhoon Hagibis, many railway companies implemented scheduled suspensions and Narita Airport limited the number of airplanes landing to reduce the number of people having to sleep at the airport learning from lessons learnt during Typhoon Faxai.

Moreover, Narita Airport revised its BCP (Business Continuity Plan) during disasters to add that a Disaster Management Headquarters set up with railway companies etc., should be established at an early stage. Even other airports intend to include identical contents into their BCPs.

[Column (2)]

Response to damage at Yokohama Port

Typhoon Faxai caused damage centered on Yokohama Port such as the collapse of bank protection, the inundation at hinterland, the crash of an anchored ship to a bridge due to windstorm and the scattering of containers. In recent years, there has been consecutive damage by unexpected storm surges, high waves and intense winds. In September 2019, after the Intergovernmental Panel on Climate Change (IPCC) released a Special Report on the Ocean and Cryosphere in a Changing Climate, the Ministry of Land, Infrastructure, Transport and Tourism established an Investigative Committee on measures for unexpected storm surges, high wave and intense winds attacking ports etc. in October 2019. This committee reviewed structural and non-structural comprehensive measures to protect and mitigate disasters, such as implementation of performance verification against waves of main facilities and establishment of port BCP taking preventive measures considering vulnerable points into account, and published a final report in May 2020.

Damage to bank protection at Kanazawa District, Yokohama City

Investigative Committee on measures for unexpected storm surges, high waves and intense winds attacking ports etc.

Damage of Typhoon Faxai

Damage to houses in Chiba Prefecture (Futtsu City) (Source: Cabinet Office)

Damage caused by fallen trees in Chiba Prefecture (Katori City) (Source: Cabinet Office)

Damage to houses in Chiba Prefecture (Kyonan Town) (Source: Cabinet Office)

Damage to houses in Tokyo (Oshima Town) (Source: Cabinet Office)

(3) Response of Government Ministries and Agencies

On September 6, 2019 before the typhoon made landfall, the government held a series of Inter-Agency Disaster Alert Meetings to prepare for the oncoming emergency. On September 8, the Japan Meteorological Agency gave a press conference and called for swift lifesaving actions. From September 9, the government deployed liaison officers to Chiba Prefectural Government and municipalities, established a collaborative system and held the first Inter-Agency Disaster Alert Meeting on September 10 with Mr. Yamamoto, then Minister of State for Disaster Management, in attendance (a total of 16 meetings were held until October 11). In September, Mr. Takeda, Minister of State for Disaster Management, visited Chiba Prefecture and Tokyo (Chiba Prefectural Government, Katori City, Tako Machi on September 12, Tokyo Oshima and Niijima on September 15 and Chiba Prefecture, Tateyama City, Kyonan Machi, Kimitsu City on September 16) and Ms. Imai, Parliamentary Vice-Minister of Cabinet Office, visited Chiba Prefecture (Chiba Prefectural Government, Kimitsu City, Futtsu

City on September 19 and Tateyama City and Sodegaura City on September 27).

For many evacuees forced to flee due to power and water outages, on September 17, the Cabinet approved the use of contingency reserves (approx. 1.32 billion yen) and procured and delivered essential goods to support affected people (push-mode support). Moreover, the government worked as one to provide support. For example, the SDR supported water supplies and bathing, the Japan Coast Guard supported bathing, water supply and power supply via patrol vessels and craft and the Japan Tourism Agency requested collaboration on bathing support and food distribution from hotels in Chiba Prefecture.

On September 20, 2019, it was announced that this disaster could be designated as a Disaster of Extreme Severity as a series of major disasters caused by rain storms and heavy seasonal rain from August 13-September 24, 2019, including Typhoons Krosa (1910), Lingling (1913), Faxai (1915) and Tapah (1917). On October 11, the Cabinet issued a Cabinet Order to collectively designate said set of disasters as a Disaster of Extreme Severity (See Appendix 14-3 “Typhoon Faxai (1915)” (A-33 to 35)). In addition, since this typhoon damaged the roofs of many houses due to storms and caused indoor inundation by rainfall associated with the strong wind immediately after a typhoon, the Fire and Disaster Management Agency and the SDF conducted support to seal damaged roofs with blue tarps (See “Special Feature” Section 1, Page 18) and expanded the targets of emergency repair of houses by the Disaster Relief Act (See “Special Feature” Section 2, Page 23).

Meanwhile, under the staff allocation system to support local governments in affected areas which started to operate from March 2018, government staff were deployed to the affected municipalities. To support the disaster management of the nine affected municipalities, a General Advisor Team comprising around 310 employees from nine prefectures was deployed and supported to direct the National On-Site Disaster Management Office, etc. Supporting counterparts were also allocated to the nine affected municipalities and a total of around 3,500 employees from 16 prefectures were deployed to help the issuance of Disaster Affected Certificates, the management of shelters and other administrative tasks.

Mr. Takeda, Minister of State
for Disaster Management visiting the affected areas

Ms. Imai, Parliamentary Vice-Minister
of Cabinet Office visiting the affected areas

1-3 Disasters by Typhoon Hagibis (1919)

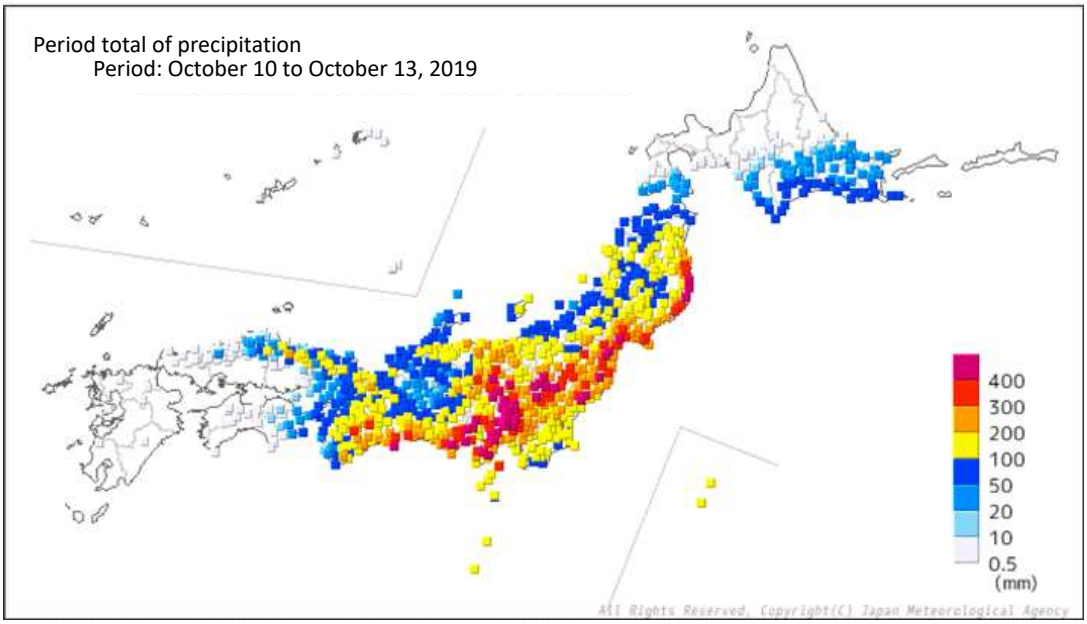
(1) Overview

Typhoon Hagibis (1919) formed as a tropical storm around the Minamitori Islands on October 6, 2019, then moved around the sea east of the Mariana Islands. After it was upgraded to typhoon intensity, it moved northward over the sea, south of Japan and made landfall on the Izu Peninsula before 19:00 October 12 with very strong typhoon intensity. The typhoon crossed the Kanto Region and then transformed into an extratropical cyclone east of Japan at noon on October 13.

During the approach and passage of the typhoon, the rain cloud itself developed into a typhoon and surrounding moist air caused record-breaking downpours across a wide area, particularly in Shizuoka and Niigata Prefectures, Kanto-Koshin and Tohoku regions. The total precipitation from October 10 to 13, 2019

reached 1,000mm in Hakone Town, Kanagawa Prefecture and exceeded 500mm at 17 points centered on East Japan. In addition, the largest 3-, 6-, 12- and 24-hour precipitations in recorded history were observed at many observation points in Shizuoka and Niigata Prefectures and Kanto-Koshin and Tohoku regions.

Precipitation distribution during the event
(between 00:00 on October 10 and 24:00 on October 13)



Period maximum precipitation for 24 hours (Octover 10 0:00-October 13 0:00)

Ranking	Prefecture	Municipality	AMeDAS station	Period maximum precipitation	
				mm	(by) Year/Month/Day
1	Kanagawa	Hakone Town, Ashigarashimo District	Hakone *1	942.5	2019/10/12 21:00
2	Shizuoka	Izu City	Yugashima *1	717.5	2019/10/12 18:50
3	Saitama	Chichibu City	Urashima *1	647.5	2019/10/12 22:00
4	Tokyo	Hinohara Village, Nishitama District	Ozawa *1	627.0	2019/10/12 21:20
5	Shizuoka	Aoi Ward, Shizuoka City	Umegashima *2	613.5	2019/10/12 20:00
6	Kanagawa	Midori Ward, Sagamihara City	Sagami Lake *1	604.5	2019/10/12 21:20
7	Saitama	Tokigawa Town, Hiki District	Tokigawa *1	587.0	2019/10/12 22:10
8	Tokyo	Okutama Town, Nishitama District	Ogouchi *1	580.0	2019/10/12 21:20
9	Saitama	Chichibu City	Mitsumine *1	561.5	2019/10/12 21:40
10	Miyagi	Marumori Town, Igu District	Hippo *1	558.0	2019/10/13 0:00

*1 : Greatest precipitation ever recorded *2 : Greatest precipitation in October

Source: Compiled by Cabinet Office from information of the Japan Meteorological Agency website

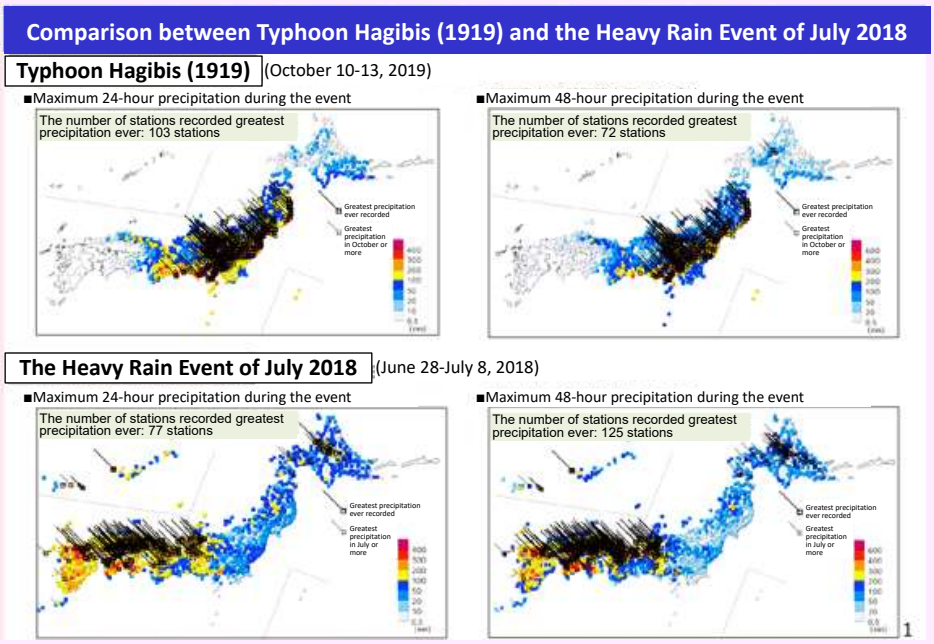
The JMA issued an emergency heavy rain warning for 13 prefectures (Shizuoka, Kanagawa, Tokyo, Saitama, Gunma, Yamanashi, Nagano, Ibaraki, Tochigi, Niigata, Fukushima, Miyagi, Iwate Prefectures) from 15:30 on October 12, calling for maximum alert (all were called off by 8:40 on October 13). As for winds, at Seaside Edogawa, Tokyo, the maximum momentary wind velocity was 43.8 meters, with record-breaking totals recorded at 7 points in the Kanto region, where the maximum momentary wind velocity exceeded 40 meters.

[Column]

Features of Rainfalls of Typhoon Hagibis (Comparison with the Heavy Rain Event of July 2018)

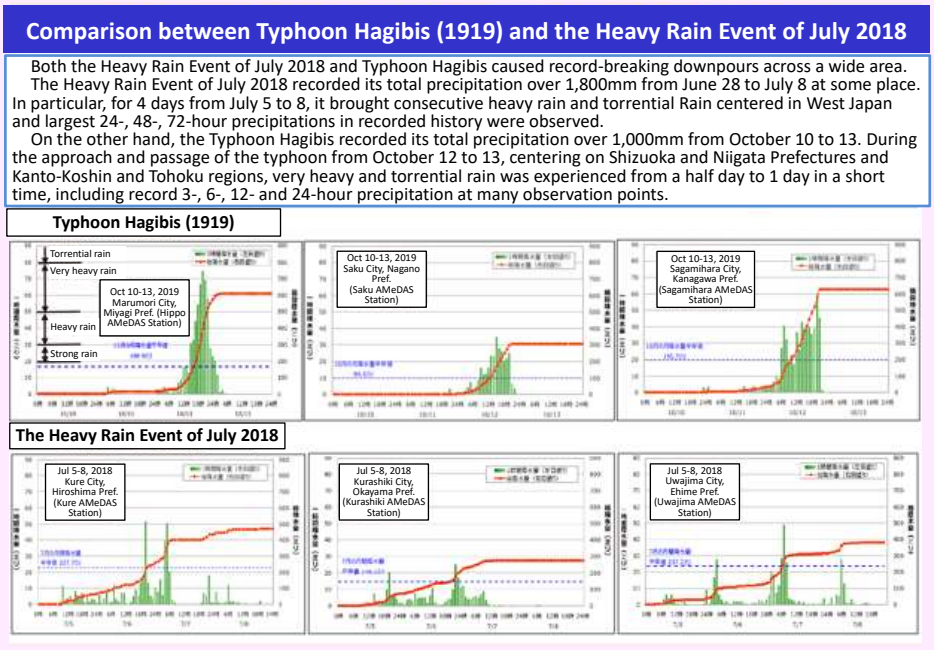
Typhoon Hagibis caused total precipitation in some areas exceeding 1,000mm from October 10 to 13. In particular, during the approach and passage of the typhoon from October 12 to 13, centering on Shizuoka and Niigata Prefectures and Kanto-Koshin and Tohoku regions, very heavy and torrential rain was experienced in a short time, including record 12- and 24-hour precipitation at many observation points. Conversely, the Heavy Rain Event of July 2018 (Western Japan Torrential Rains) saw total precipitation in some areas exceed 1,800mm from June 28 to July 8. For the 4 days from July 5 to 8 in particular, centering on West Japan, we experienced heavy and torrential rain consecutively and the largest 48- and 72-hour precipitations in recorded history were observed at many observation points.

Maximum precipitation distribution during the event



While the Heavy Rain Event of July 2018 saw record-breaking heavy rain for longer, Typhoon Hagibis saw record-breaking heavy rain from half a day to one day.

1-hour precipitation and alternation of total precipitation from moment to moment



Source: Materials from the 1st Working Group on evacuation of disasters caused by Typhoon Hagibis (1919)
(Reference: http://www.bousai.go.jp/fusuigai/typhoonworking/index.html)

(2) Damage

Typhoon Hagibis (1919) caused consecutive river inundation over a wide area, floods and sediment disasters which left 91 people dead (35 in Fukushima Prefecture, 19 in Miyagi Prefecture, 9 in Kanagawa Prefecture, 5 in Nagano Prefecture, 4 each in Tochigi, Gunma and Saitama Prefectures, 3 in Iwate and Shizuoka Prefectures, 2 in Ibaraki Prefecture and 1 in Chiba Prefecture, Tokyo and Hyogo Prefectures.), 3 people missing, 42 people seriously injured and 334 people lightly injured (Information by the Fire and Disaster Management Agency, as of April 10, 2020. Reference: https: //www.fdma.go.jp/disaster/info/items/3d299a3cc95529be73f32e6e793b4969d04a0da5.pdf). Damage to houses included 3,273 completely destroyed, 63,743 half-destroyed and partially damaged and 29,556 inundated. (Information by the Fire and Disaster Management Agency, as of April 10, 2020. Reference: https: //www.fdma.go.jp/disaster/info/items/3d299a3cc95529be73f32e6e793b4969d04a0da5.pdf)

Damage to people and houses (As of April 10, 2020)

Typhoon Hagibis (1919) (Damage)

- ○ As of April 10, typhoon Hagibis (1919) caused various damage centered on the Tohoku and Kanto Regions which left 94 people dead or missing, 42 people seriously injured, while damage to houses included 3,273 completely destroyed, 28,306 half-destroyed and 7,666 inundated.
- ○ It caused damage to lifeline utilities such as power and water outages, infrastructure such as roads and railways and affected the economic activities of the agriculture, forestry and fishing industries.
- ○ At 14 points in seven government-administered rivers and at 128 points in prefectural government-administered rivers breaches occurred.

○ Damage to people and houses (As of April 10, 2020)

Prefecture	Human casualties					Houses damaged					Damage to non-residential houses	
	Fatalities	Out of that, disaster-related dead people	Missing Persons	seriously injured	lightly injured	Completely destroyed	Half-destroyed	Partially damaged	Above-floor flooding	Below-floor flooding	Public buildings	Others
	People	People	People	People	People	House/ Building	House/ Building	House/ Building	House/ Building	House/ Building	House/ Building	House/ Building
Iwate	3			4	3	41	790	788	144	953		1,363
Miyagi	19		2	8	35	302	2,997	2,860	1,614	12,151	17	61
Fukushima	35	5		1	56	1,489	12,560	6,977	1,161	443	42	8,812
Ibaraki	2		1		20	146	1,599	1,461	13	350		944
Tochigi	4			4	19	83	5,223	8,666	2	133	14	1,098
Gunma	4			1	8	22	296	572	22	112	3	76
Saitama	4	1		1	32	134	541	699	2,369	3,387		105
Chiba	1			3	23	32	270	5,665	25	70		11
Tokyo	1				10	36	661	1,034	318	532	25	32
Kanagawa	9			3	35	54	826	2,499	877	579	21	192
Nagano	5			6	39	920	2,505	3,479	5	1,407	24	937
Shizuoka	3	1		2	5	8	12	495	967	1,312	36	98
Others	1			9	49	6	26	242	149	461	5	40
Total	91	7	3	42	334	3,273	28,306	35,437	7,666	21,890	187	13,769

Source: Cabinet Office Note: Excludes damage of the heavy rain from October 25.

This heavy rain caused damage to lifeline utilities such as power and water outages centered on the Kanto-koshin and Tohoku regions, affecting up to 520,000 or so households and water outages affecting a maximum of around 168,000 households. As well as traffic hazards such as suspension of rail operations, many areas were isolated because of collapsed roads, landslides and bridges washed out, which were major headaches for residents and affected the economic activities of the agriculture, forestry and fishing industries.

Damage to lifeline utilities

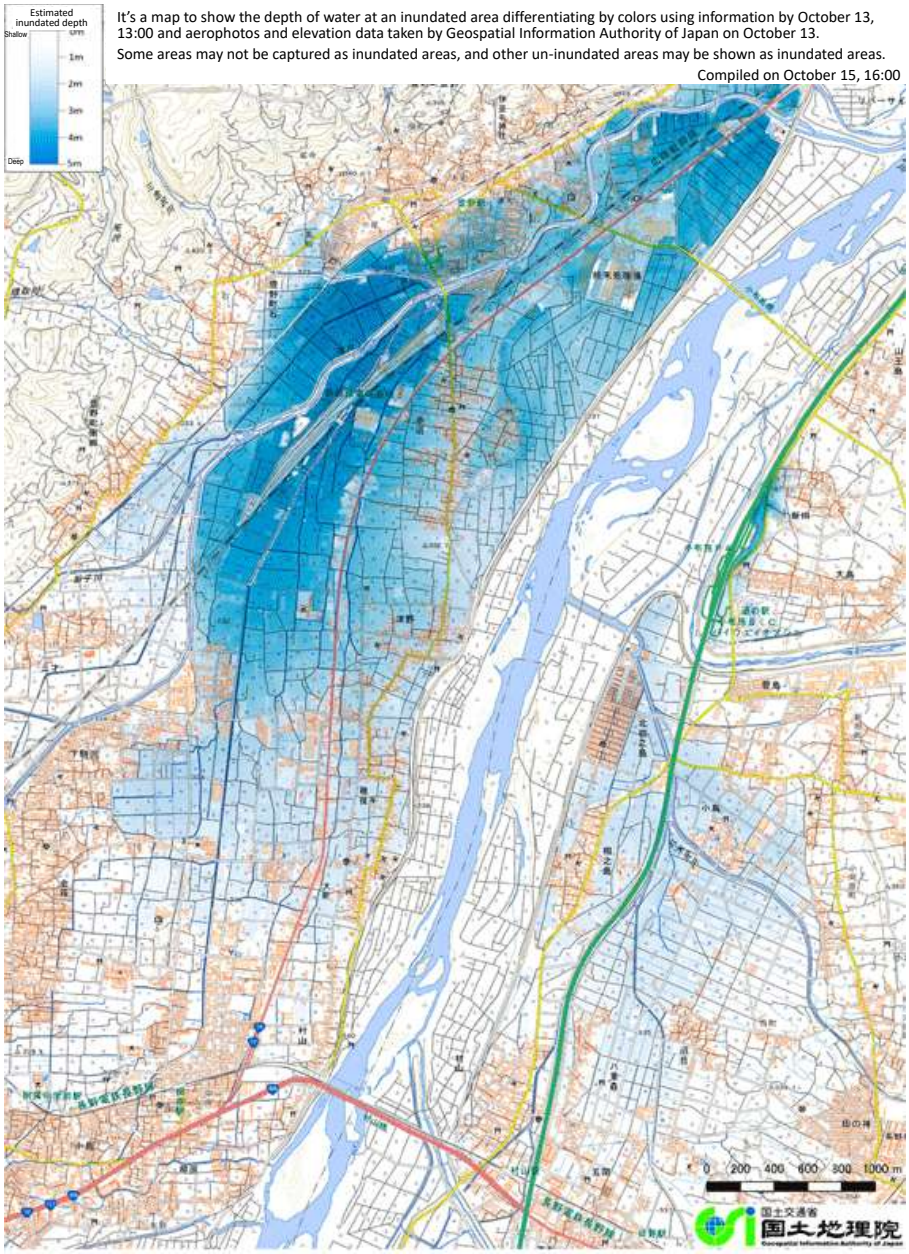
	Maximum number of households affected	Recovery
Power	**Approx. 521,540**	**Recovered on November 7**
Water	**Approx. 167,986**	**Recovered on November 15**

Source: Cabinet Office Note: Excludes damage of the heavy rain from October 25.

This typhoon caused a breach along many rivers. At 14 points in seven government-administered rivers of 6 riverine systems and at 128 points in 67 prefectural government-administered rivers of 20 riverine systems, breaches occurred, with inundation and muddy streams over a wide area. In Nagano City, Nagano Prefecture, severe damage occurred when levees along Chikuma River of Shinano Riverine Systems were breached. Widespread damage included the bridge abutment of the left bank of Chikuma River Bridge for Ueda Railways Besho Line over Chikuma River collapsing, sediment disaster and flooding along the Uchi River of Abukuma riverine systems and sediments buried in the river in bulk in branch rivers such as the Gofukutani River. Moreover, disaster waste and debris accumulated in bulk and was highly problematic to residents' lives.

Inundation forecasting chart by heavy rain caused Typhoon Hagibis
Chikuma River (Around Hoyasu, Nagano City, Nagano Prefecture)

[Draft] <News>Elevation Tinted Hillshade on forecasting inundation by heavy rain caused Typhoon Hagibis (Chikuma River 3)



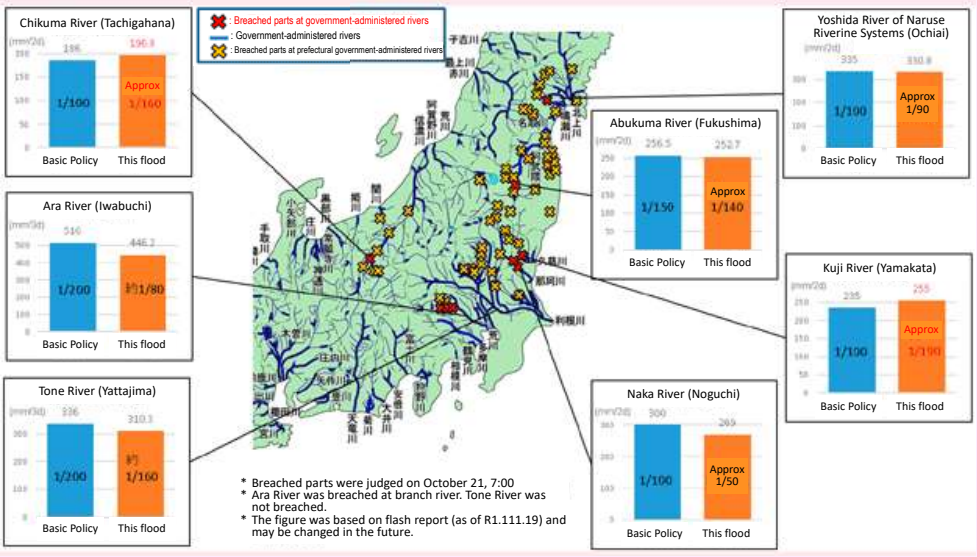
Source: Material from Geospatial Information Authority of Japan

[Column]

The breach of levees and sediment disasters by Typhoon Hagibis

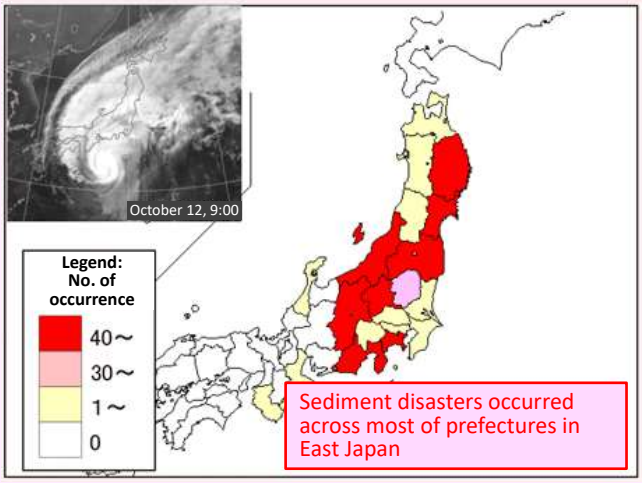
During the approach and passage of the Typhoon Hagibis for a half day to about one day from October 12 to October 13, the total precipitation in each area exceeded 40% of the normal annual level. Looking at each river, at Chikuma River of Shinano Riverine Systems and Kuji River, the rainfall exceeded the planned amount and at Abukuma and Yoshida River of Naruse riverine systems and Tone River, the rainfall was almost the same as planned, which is why the levees were breached along many large rivers in many regions.

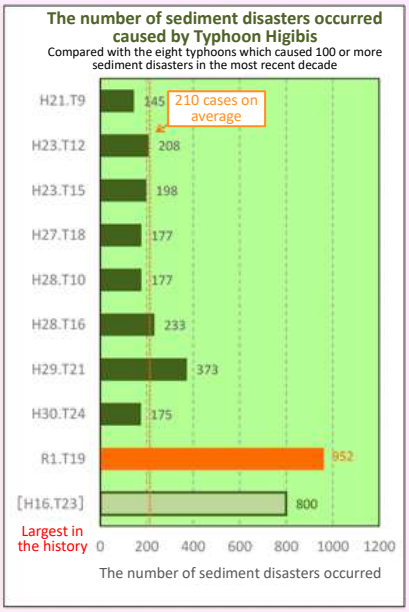
The status of breach of levees, etc. caused by Typhoon Hagibis



Source: Materials from the 1st Working Group on evacuation of disasters caused by Typhoon Hagibis (1919)
(Reference: http://www.bousai.go.jp/fusuigai/typhoonworking/index.html)

A total of 952 sediment disasters were caused by Typhoon Hagibis in 2019 across 20 prefectures and centered on East Japan (Source: Ministry of Land, Infrastructure, Transport and Tourism) which was a record-breaking number of sediment disasters caused by a single typhoon since statistics began in 1982. Compared with the eight typhoons which caused 100 or more sediment disasters in the most recent decade, the number far exceeded their average (210) and the disasters occurred over large areas; 40 or more sediment disasters in eight prefectures.





Source: Ministry of Land, Infrastructure, Transport and Tourism

The impact of this typhoon meant evacuation instructions (emergency) and recommendations were issued in many municipalities, leading to a maximum of over 237,000 people evacuating. The Disaster Relief Act was invoked with for 390 municipalities in 14 prefectures, which reflects the very extensive damage over a relatively wide area.

Damage of Typhoon Hagibis

Inundation in Fukushima Prefecture (Koriyama City)
(Source: Cabinet Office)

Sediment disaster in Nagano Prefecture (Nagano City)
(Source: Cabinet Office)

Sediment disaster in Miyagi Prefecture (Marumori Town)
(Source: Cabinet Office)

Inundation in Ibaraki Prefecture (Hitachioomiya City)
(Source: Cabinet Office)

Oblique photograph from an Airplane
(Fukushima Prefecture, Motomiya City)
(Source: Geospatial Information Authority of Japan)

A Photograph from UAV
(Nagano Prefecture, Nagano City)
(Source: Geospatial Information Authority of Japan)

(3) Response of Government Ministries and Agencies

On October 8, 2019, before the typhoon approached and on October 11, before the typhoon made landfall, the government held a series of Inter-Agency Disaster Alert Meetings to prepare for emergencies. Mr. Takeda, Minister of State for Disaster Management also called for early evacuation and efforts to secure safety. On October 11, at a Cabinet Meeting, Mr. Abe, Prime Minister said that careful precautions would have to be taken, including collecting information and taking all possible measures to ensure people's safety and security.

On October 13, 2019, immediately after the typhoon passed, the Major Disaster Management Headquarters of Typhoon Hagibis (1919) was established and met a total of 18 times (Reference: http://www.bousai.go.jp/updates/r1typhoon19/r1typhoon19/taisakukaigi.html). A governmental investigation team led by Mr. Takeda, Minister of State for Disaster Management, was deployed (to Fukushima Prefecture on October 14). Mr. Abe, Prime Minister and Mr. Takeda, Minister of State for Disaster Management, visited some of the affected areas (Fukushima and Miyagi Prefectures on October 17 and Nagano Prefecture on October 20), Mr. Takeda, then

Minister of State for Disaster, also visited some of the affected areas (Nagano Prefecture on October 13, Ibaraki, Tochigi and Fukushima Prefectures on October 21, Kanagawa Prefecture on October 24, Chiba Prefecture on October 26, Iwate Prefecture on October 28 and Shizuoka Prefecture on November 9) and Ms. Imai, Parliamentary Vice-Minister of Cabinet Office, visited some of the affected areas (Chiba Prefecture on October 13, Chiba Prefecture on October 14, Nagano Prefecture on October 20, Ibaraki, Tochigi and Fukushima Prefectures on October 21 and Chiba Prefecture on October 26).

Individual government ministries and agencies also carried out on-site investigations, coordinated directly with chiefs and executives of local municipalities to accelerate decision-making and provided support across ministries and agencies. Immediately after the disaster, the police, the Fire and Disaster Management Agency, the SDF, the Ministry of Land, Infrastructure, Transport and Tourism (MLIT) and the Japan Coast Guard dispatched rescue units from across Japan to the affected areas to conduct rescue and search operations as well as working to prevent secondary damage and support lives (About 4,400 from the Police Emergency Force, about 3,000 from the Fire and Disaster Management Agency, about 79,000 from the SDF, about 31,000 from the Technical Emergency Control Force (TEC-FORCE) and 751 patrol vessels and craft and 197 aircraft from the Japan Coast Guard were dispatched.)

On October 14, a team to Support the Daily Lives of Affected People was established, comprising Vice-Ministers from individual government ministries and agencies. Its remit included determining the extent of the damage, the overall coordination of response measures, life support activities based on the challenges and needs of affected areas and other measures promptly and vigorously, whereupon on November 7, a package for the restoration of Lives and Livelihoods of the Affected was developed (Reference: Special Feature, Chapter 1, Section 2, Support Package for the Affected). On October 18, Typhoon Hagibis was designated a specified disaster and an integrated government team took emergency disaster control measures.

On October 18 and 21 and November 19, 2019, it was announced that this disaster could be designated as a Disaster of Extreme Severity as part of a series of major disasters caused by rain storms and heavy seasonal rain from October 11-26, 2019, including Typhoons Hagibis (1919), Neoguri (1920) and Bualoi (1921). On October 29, the Cabinet issued a Cabinet Order to collectively designate said set of disasters as a Disaster of Extreme Severity and on November 29, a Cabinet Order to amend it partially. (See Appendix 14-4 “Typhoon Hagibis (1919)” (A-35 to 39).)

Meanwhile, under the staff allocation system to support local governments in affected areas, government staff were deployed to the affected cities and towns. To support the disaster management of the ten affected cities and towns, a General Advisor Team with a total of about 570 employees from ten prefectures was deployed and supported to direct the National On-Site Disaster Management Office, etc. Supporting counterparts were also allocated to the affected 27 cities and towns and a total of around 9,300 employees from 34 prefectures were deployed to help the issuance of Disaster Affected Certificates, the management of shelters and other administrative tasks.

Mr. Abe, Prime Minister, Mr. Takeda, Minister of State for Disaster Management, Ms. Imai, Parliamentary Vice-Minister of Cabinet Office visiting the affected areas

1-4 Support Activities by Volunteers and NPOs

(1) Support Activities by Volunteers for Major Disasters occurred in 2019

In recent years, in addition to the response of government Ministries and Agencies after disasters, various groups like NPOs or individual volunteers go to affected areas and conduct support activities which the government cannot reach or detailed support activities for affected people to meet local needs. While various needs emerge in affected areas and for affected people, expectations of activities by NPOs and volunteers have increased. During the Heavy Rain Event of August 2019 related to the rain front, Typhoon Faxai (1915) in September 2019 and Typhoon Hagibis (1919) in October 2019, many volunteers from all over the country came to disaster volunteer centers (disaster VCs) established by the Social Welfare Councils in affected areas.

During the Heavy Rain Event of August 2019 related to the rain front, a total of approximately 11,000 volunteers (as of November 7, 2019) mainly worked through VCs in Saga Prefecture. A NPO set up a satellite base in an area affected by serious oil damage because plenty of oil leaked from a steel company in Imari City in Saga Prefecture and accepted volunteers.

During Typhoon Faxai (1915), VCs in Chiba Prefecture accepted volunteers and a total of approximately 23,000 volunteers (as of October 30, 2019) mainly worked. In affected areas, the storm winds of this typhoon damaged roofs of many houses, which needed to be sealed with blue tarps, but not enough companies were capable of setting it up. Subsequently, an NPO with techniques of sealing with blue tarps and others supported these efforts in line with local needs.

During Typhoon Hagibis (1919), VCs in 110 municipalities of 14 prefectures accepted volunteers and a total of approximately 197,000 volunteers (as of January 26, 2020) worked. Immediately after the disaster, they mainly worked to remove mud from houses and tidy up rooms and furniture. During the recovery period, the focus of volunteer activities shifted to community support coordinated by life support coordinators (e.g. dealing with various issues including, for example, monitoring the elderly and disabled, holding social events and opening a children's playground). As of April 1, 2020, the disaster VC in Marumori-cho, Miyagi Prefecture, Sano City, Tochigi Prefecture and Higashimatsuyama, Saitama Prefecture are still accepting volunteers.

As well as supports through VCs, specialist NPOs and other organizations carried out wide-ranging support activities, including technical support for affected housing, such as removal of sediment and debris, shelter management, support for affected people living in each house, support for temporary housing and support for rebuilding livelihoods.

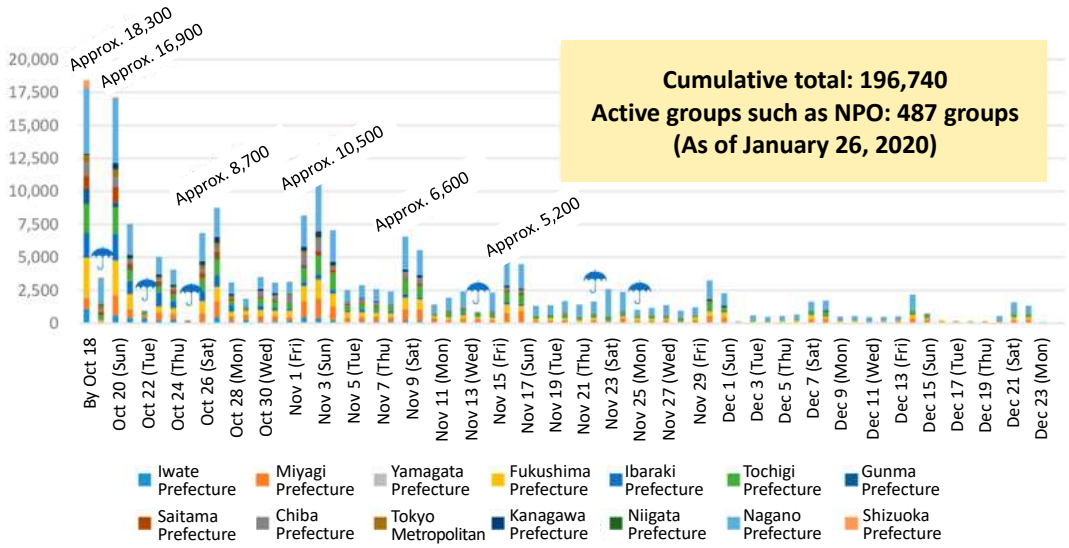
The activity status of volunteers and Information Sharing Meeting

	The Heavy Rain Event of August 2019 associated with the rain front	Typhoon Faxi	Typhoon Hagibis
The number of disaster volunteer centers *Note1	6	27	110
The number of volunteer (cumulative total) *Note 2	11,387 (As of November 7)	23,361 (As of October 30)	196,740 (As of January 26)
The number of volunteer activities groups such as NPO *Note 3	121	48	487

Note 1: Included the number of regular volunteer center which accepted disaster volunteers.
Note 2: The number of volunteers who are accepted through disaster volunteer center
Note 3: The number of participant groups in information sharing meetings joined by the Government, NPOs and Volunteers

Source: Cabinet Office

The shift of number of volunteer activities



Source: Cabinet Office

Volunteer activities following Typhoon Hagibis

(Volunteer activities in affected areas)

(2) Progress of Collaboration among the Government, NPOs and Volunteers

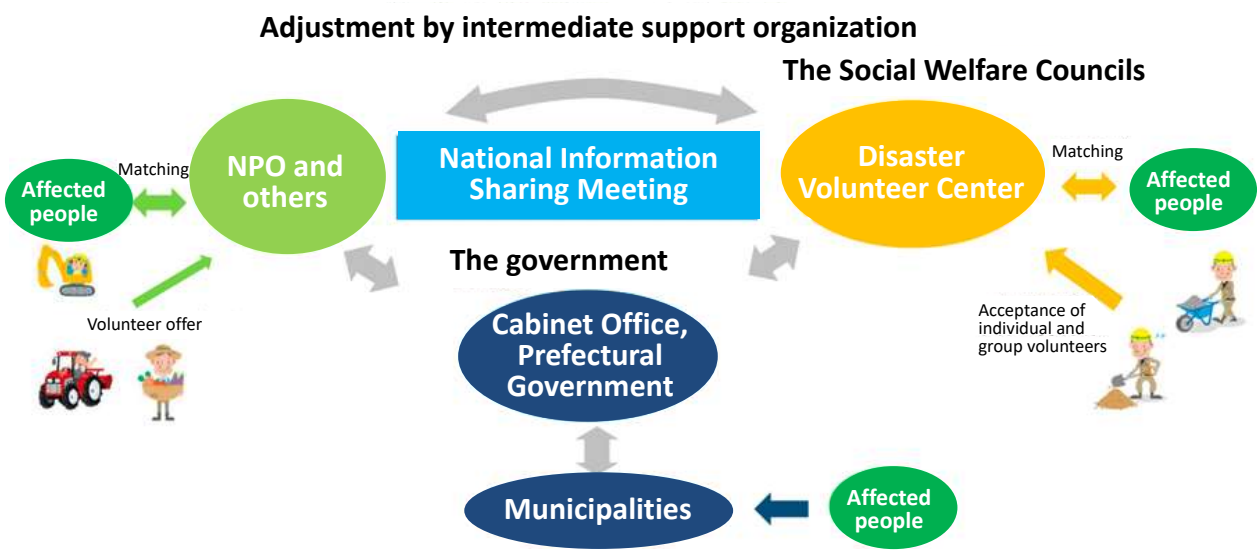
After the Kumamoto Earthquake in 2016, information-sharing meetings are usually held among local governments, NPOs and volunteers to coordinate support activities among supporters with the support of the Japan Voluntary Organizations Active in Disaster (JVOAD) and local NPOs that provided intermediary support in the affected areas. During 2019 disasters, this meeting aimed to ensure seamless and smooth support activities and share information on the status of volunteer resources, support for home evacuees and support for shelters, while coordinating their support activities.

During the Heavy Rain Event of August 2019 related to the rain front, an NPO in Saga Prefecture – the Saga Disaster Assistance Platform - held regular information-sharing meetings to coordinate support activities in the area.

During Typhoon Faxai (1915), given that the roofs of many houses were damaged by storm winds in Chiba Prefecture, measures to prevent leaking of rain such as sealing damaged roofs with blue tarps were taken. An NPO with experience of handling similar tasks during the Kumamoto Earthquake in 2016 lectured on the construction technique to minimize deterioration to local fire personnel with no experience of providing collaborative support to affected people.

During Typhoon Hagibis (1919), after October 14, 2019, information-sharing meetings were held on a regular basis among local governments, social welfare corporations and NPOs in each affected areas (Miyagi, Fukushima, Ibaraki, Tochigi, Saitama, Tokyo, Nagano and Shizuoka Prefectures) to coordinate support activities among the government, volunteers and NPOs.

Tripartite collaboration among the Government, NPOs and Volunteers



Information Sharing Meetings in affected prefectures

Prefecture	Meeting name	Organizer	The number of meeting
Miyagi	Disaster VC Support Liaison Meeting	Prefectural Social Welfare Councils	30 or more
Fukushima	Information Sharing Meeting	Fukushima Collaborative Recovery Center	3
Ibaraki	Disaster Support Ibraki Networking Meeting	Ibraki NPO Center, Commons	9
Tochigi	Ganbarou Tochigi! Information Sharing Meeting	Tochigi Prefecture	5
Saitama	Sainokuni Meeting	Sainokuni Meeting	4
Chiba	Information Sharing Meeting	Chiba Prefecture	2
Tokyo	Information Sharing Meeting	Tokyo Disaster Volunteer Center	6
Nagano	Information Sharing Meeting	Nagano Prefecture	23
Shizuoka	Typhoon Hagibis Shizuoka Prefecture Information Sharing Meeting	Shizuoka Prefecture Disaster Volunteer Headquarters, Information Center	1
Saga	SPF Information Sharing Meeting	Saga Disaster Assistance Platform	15

Source: Cabinet Office

National Information Sharing Meeting

(The meeting in Tokyo Metropolitan)

(The meeting in Chiba Prefecture)

Given the fact that Typhoon Hagibis in 2019 affected wide areas across Japan, National Information-Sharing Meetings were held on October 29 and December 3; coordinated with prefectural information-sharing meetings (organized by the Cabinet Office, JVOAD and Shien-P) to discuss challenges common to prefectures (for example, role sharing among administration, NPOs and volunteers) and messages that needed to be communicated to the public nationwide. In addition, concerned Ministries and Agencies from the Ministry of the Environment and the Ministry of Health, Labour and Welfare participated and discussed support activities such as housing demolition by public funds and removal of disaster waste. Based on the discussion during the meetings, messages were issued on November 8, 2019 concerning the recruitment of volunteers and safety measures based on the responses during Typhoon Hagibis.

Mr. Taira, a Vice-Minister speaking at the National Information-Sharing Meeting

National Information Sharing Meeting

Leaflet on the call for volunteers published on November 8

[Column]
Collaboration among Stakeholders on the Removal of Disaster Waste
(Efforts by NPOs and others in One NAGANO Operation)

Responses to disaster waste are common issues in many affected areas, since accumulated disaster waste in affected areas can hinder residents' lifestyles and delay prompt recovery.

During Typhoon Hagibis, in Nagano City where the dike of the Chikuma River broke, a huge volume of disaster waste and mud flowed into various places such as houses, farms, roads and open spaces and hindered recovery activities. Accordingly, to restore day to day life in affected areas as soon as possible, citizens, volunteers, national, prefectural and local governments and the SDF collaborated and conducted the OneNAGAO operation to remove the bulk of the disaster waste and mud from the affected areas.

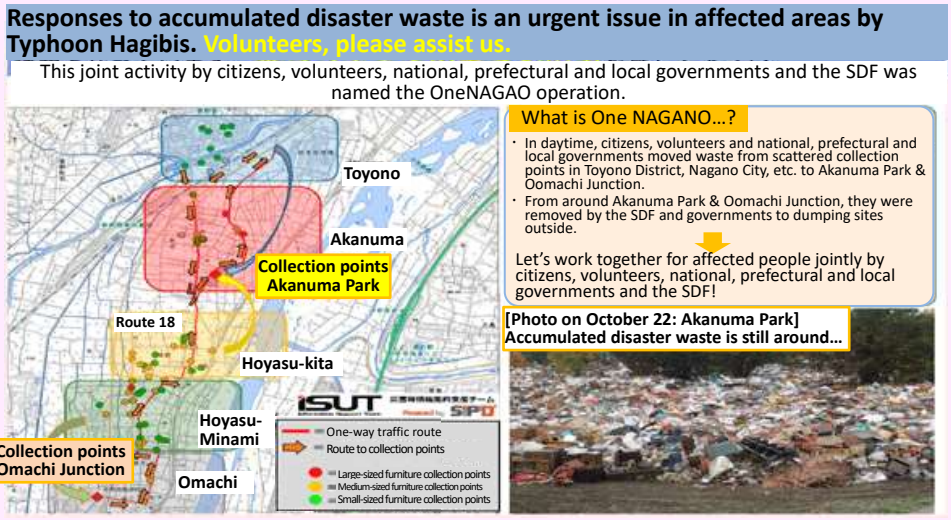
The ISUT (Information Support Team), which started full-scale nationwide operation from 2019 by Cabinet Office, received information on the accumulated disaster waste status in each area from volunteers, then visualized it on a map. Based on this map, stakeholders met daily, whereby in daytime, citizens and volunteers moved scattered waste and sediments to collection spaces from where, overnight, they were removed by the SDF and governments to dumping sites outside. Given narrow roads in the area, the police officers controlled traffic to prevent trucks from causing a traffic jam. That's how various stakeholders supported the One NAGANO operation.

Nagano Prefecture has promoted tripartite collaboration, even in ordinary times. The Nagano Prefecture Disaster Management Plan, which was revised in March 2017, stipulated that Prefectures (Crisis Control Department and Health and Welfare Department) and municipalities should collaborate with main disaster volunteer groups and volunteer groups and local NPOs that provided intermediary support and set up coordination meetings to deepen the level of collaboration among each volunteer group and try to implement drill and training sessionsfor the disasters and stipulated timetables of activities when coordinating volunteers and NPOs of the wide-area receiving support plan.

Based on such a plan, from 4 years ago, drills and training sessions were conducted and the Nagano Support Network for Disaster was established. Usual face-to-face sharing information enabled OneNAGANO operation during the actual disaster.

At the Nagano Prefecture Emergency Response Headquarters, departments of disaster volunteers were set up, also including Prefectural Social Welfare Councils and NPOs, which meant they could all work together as a team from the day of disaster and underpinned the operation.

Based on the efforts in OneNAGANO, the government arranges regular efforts for collaborative measures among the SDF, Ministry of Defense and the Ministry of the Environment to remove disaster waste and publicizes efforts by stakeholders to promote disaster waste control.



Source: Cabinet Office

Section 2　Measures based on disasters in 2019

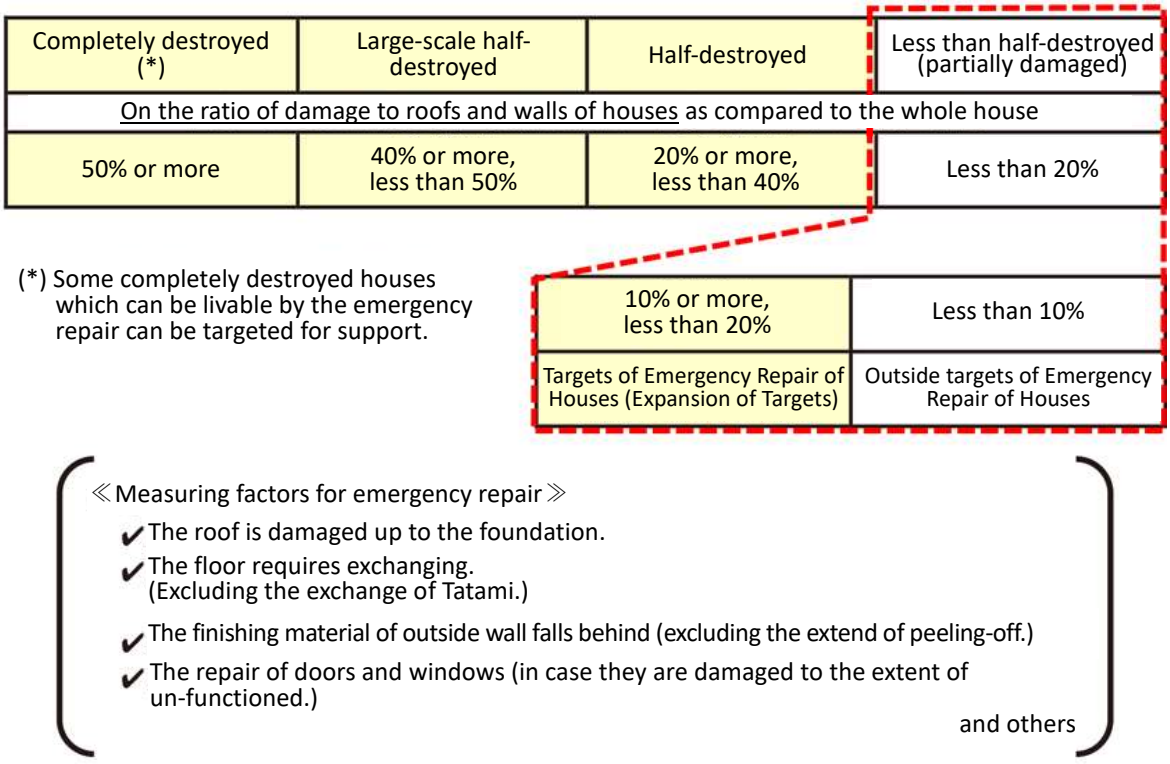
2-1 Expansion of Targets of Emergency Repair of Houses by the Disaster Relief Act

Typhoon Faxai (1915), in addition to long-term power outage, damaged roofs of many houses with a storm wind and caused indoor inundation by rainfall associated with strong winds immediately after a typhoon which hindered the daily lives of those affected. On October 7, 2019, Mr. Abe, Prime Minister addressed, during party representatives' questions at the full House of Representatives, the fact that among partially damaged houses, those which were damaged sufficiently to hinder residents' daily livings, such as roofs, would be supported as part of a permanent system. The target scope of the emergency repair system under the Disaster Relief Act was expanded to ensure living stability for affected people.

The extent of damage to the houses is stated on the Disaster Affected Certificate. Based on the ratio of damage to roofs and walls of houses as compared to the whole house (damage ratio), they are classed into four categories, namely completely destroyed, large-scale half-destroyed, half-destroyed and partially damaged. This time, the system expanded the scope for emergency repair of houses under the Disaster Relief Act for those houses with a damage ratio of 10% or more and less than 20% among those partially damaged houses. The base amount peaked at 300,000yen for partially damaged houses while the maximum amount for half-destroyed was 595,000 yen based on example repair fees for half-destroyed and partially damaged houses. As for Typhoon Faxai (1915) cases, targeted households were judged on the application process of emergency repairs.

This system was enforced from August 28, 2019 (support starts from the Heavy Rain Event of August 2019 related to the rain front) and damage coverage under the Disaster Relief Act was invoked starting from a series of disasters from Typhoon Faxai to Typhoon Hagibis (including the heavy rain from October 24 to 26).

Expansion of Targets of Emergency Repair of Houses by the Disaster Relief Act



Source: Cabinet Office

[Column]

Measures to Accelerate and Streamline Damage Certification Survey

Disaster Affected Certificates which are issued during disasters are essential basic materials to restore lives and homes of those affected. To issue them promptly, it is necessary to implement Damage Certification Survey promptly.

The Cabinet Office stipulates Guidelines for Operating Housing Damage Certification Criteria relating to Disasters in order for municipalities to implement Damage Certification Surveys promptly and appropriately which enables objective and fair assessment.

Additionally, in March 2018, to accelerate and streamline damage certification surveys, the guidelines were revised and simple judgement methods etc. such as photo-finish based on the experience and knowledge based on past major disasters were newly introduced.

In 2019, across Japan, consecutive wind and flooding including Typhoons Faxai and Hagibis, damaged innumerable houses. The Cabinet Office summarized the points of concern for the damage certification survey for each disaster and informed affected local authorities immediately after disasters (Reference http: //www.bousai.go.jp/oyakudachi/suigai.html). Cabinet Office officers were deployed to hold workshops for the affected local authorities to keep everyone informed of the contents.

Since the targets of the emergency repair system by the Disaster Relief Act were expanded and those houses nearly half-destroyed or half-burned among those which were partially damaged would be supported based on the damage of Typhoon Faxai, the Study Group on Housing Damage Certification Criteria relating to Disasters chaired by Sakamoto Isao, Tokyo University Emeritus Professor reviewed the flow of survey and revised Guidelines for Operating Housing Damage Certification Criteria relating to Disasters in March 2020.

Moreover, the format of Disaster Affected Certificates was integrated into one for all local authorities after a request was made to integrate the same from local authorities that were deployed supporting staff during latest disasters, because significant differences in the format of Disaster Affected Certificates had hindered the prompt issuance of the same.

The government continues to collaborate with each local authority and strive hard to improve the lives of those affected.

Disaster Affected Certificate

If a disaster occurs within the boundaries of a municipality and affected people by that disaster submits an application, the mayor of that municipality must order a survey of the damage to the house or other form of damage specified by the mayor in question without delay and issue a Disaster Affected Certificate (document certifying the extent of the damage resulting from the disaster in question) (Article 90-2 of the Basic Act on Disaster Management).
The Disaster Affected Certificate is widely used as material for determining the applicability of various disaster affected people support measures*.

* Various support measures for affected people

Grant:	Support grants for reconstructing livelihoods of the affected, relief money, etc.
Loan:	Loan of Japan Housing Finance Agency, Disaster Assistance Funds, etc.
Exclusion, extension:	Tax, Insurance fee, Utility fee, etc.
In-kind support:	Emergency temporary housing, emergency repair of houses by the Disaster Relief Act

<Process toward the application of support measures>

* Integrated format of Disaster Affected Certificates

Source: Cabinet Office

2-2 Support Package for Affected People

(1) Recovery support for Typhoon Faxai, Typhoon Hagibis and others

A series of major torrential rains and storm winds, including Faxai and Hagibis typhoons in 2019, left enormous damage in a widespread area centered on the Tohoku and Kanto-Koshinetsu Regions to lifelines like power and water and local industries such as agriculture during a harvesting period (See "Special Feature" Chapter 1, Section 1). Many citizens in affected areas were forced to remain as evacuees and spend days with anxiety. Carefully tended crops were inundated with muddy water, which also caused major damage to shops, factories and machinery. Many of those affected were working in agricultural, forestry and fishing industries and those in small- and medium-sized companies may have lost hope in the crisis at the prospect of having to restart their businesses.

Under these circumstances, the government works together to accelerate recovery measures. At the 2nd Major Disaster Management Headquarters held on October 14, Mr. Abe, Prime Minister gave instructions to set up a team to support the daily lives of those affected by Typhoon Hagibis carefully, promptly and vigorously. At the 10th Major Disaster Management Headquarters held on October 20, Mr. Abe, Prime Minister outlined a summary package to restore Lives and Livelihoods of the Affected, mainly by a life support team for the affected. On November 7, a package to restore Lives and Livelihoods of those Affected during Typhoons Faxai and Hagibis was developed, as part of measures to respond urgently to restore lives and livelihoods of affected parties. (Reference: http: //www.bousai.go.jp/kohou/oshirase/pdf/r1typhoon19_shien_package.pdf)

This package, based on the needs of the affected and the features of each area, summarizes measures in four areas: (1) rebuilding lives, (2) rebuilding livelihoods, (3) emergency recovery from disasters and (4) rescue operation, to ensure the security of those affected and take consecutive financial actions for affected local authorities in striving for recovery. Measures such as rebuilding houses, support to small and middle companies and agriculture, forestry and fishing industries and smooth treatment of disaster recovery and waste were summarized. The Cabinet approved the use of contingency reserves (approx. 131.6 billion yen) on November 8 so that affected local authorities could take measures without worrying about how to fund them. As well as using contingency reserves for 2019, on January 30, 2020, the FY2019 supplementary budget (No. 1), including expenses for recovery and reconstruction from disasters and ensuring safety (2.3086 trillion yen) was approved. With this budget, the necessary measures to restore infrastructure, lives and livelihoods were taken.

Besides, on October 29, the Cabinet approved that Typhoon Hagibis (1919) be designated as a specified disaster, which is the second case after the Kumamoto Earthquake based on the Act on Reconstruction from Large-Scale Disasters. Based on this, the disaster recovery project is proceeding smoothly by direct-controlled rights representative at 15 rivers of 3 riverine systems and six local authorities with affected roads made a request.

Overview of the FY2019 supplementary budget (No. 1)

I Recovery and reconstruction from disasters and ensuring safety — 2.3086 trillion yen

1. Acceleration of recovery and reconstruction from natural disasters — 690.7 billion yen
- ○ Disaster recovery project such as infrastructure [485.9 billion yen]
- ○ Removal of Disaster Waste [45.6 billion yen]
- ○ Group subsidy for small and medium-sized companies [19 billion yen]
- ○ Reconstruction of agriculture greenhouse and machineries [17.5 billion yen]

2. Powerful Promotion of Disaster Prevention and Mitigation and National Resilience — 855.7 billion yen
- ○ Flood control measures following Faxi and Hagibis typhoons, such as excavation of river channel and the raise of levees [243.7 billion yen]
- ○ Inundation measures of internal water by developing rainwater harvesting facilities [67.3 billion yen]
- ○ Resolution of missing link of the road [89.8 billion yen]
- ○ Promotion of no utility pole policy [20.5 billion yen]
- ○ Prevention from damage of high wave and other disasters [29.5 billion yen]
- ○ Development of waste disposal facilities [48.3 billion yen]
- ○ Development of citizens base such as SS with privately owned electrical power facility [17 billion yen]

(Reference) Fiscal investment and loan (FY2019 additional supplementary budget)
Acceleration of no utility pole policy, maintenance of electric distribution network
[Development Bank of Japan: in a total, 500 billion yen]

(Note) Besides, 1.1520 trillion yen was assured as the whole budget related with National Resilience including 3. Seismic reinforcement and enforcement of disaster prevention function for school facilities

3. Ensuring safety and security of citizens — 762.1 billion yen
- ○ Ensuring stable operational system of the SDF [378.3 billion yen]
- ○ Building strategic maritime security system [402 billion yen]
- ○ Seismic reinforcement and enforcement of disaster prevention function for school facilities [96.4 billion yen]
- ○ Seismic reinforcement and aging measures of correction facilities [14.8 billion yen]
- ○ Enforcement of measures for livestock disease such as CSF and ASF [13.3 billion yen]

(Abstract) compiled by the Cabinet Office using publicized materials by the Ministry of Finance

Support Package for the Life and Livelihood Restoration

November 7, 2019
Team to Support the Affected People of the Typhoon Hagibis

1. Basic Principles

- Following a series of major torrential rains and windstorms, including Faxai and Hagibis typhoons in 2019, taking the needs of affected areas and characteristics of each area into consideration, the government will formulate urgent measures to support the restoration of affected people's lives and livelihoods and swiftly implement them using contingency reserves and other financial resources. The government will continue to allocate budgets, so that those affected can live with a sense of ease and the affected governments can promote restoration and reconstruction projects without worrying about funds.
- With affected municipalities, from viewpoint of the affected, the government will make the most efforts on urgent recovery of affected areas and restoration of citizens' lives and livelihoods.

2. Main Urgent Measures

(1) Rehabilitation of livelihoods

◆Disposal of waste, debris, and sediment
- Target for the removal from living areas within the year –
- Support to the removal of waste and sediment from residents and towns by municipalities
- Coordination and support on wide-area disposal of disaster waste
- Early reconstruction support by dissolution support of half-destroyed houses by Typhoon Hagibis

◆House reconstruction, etc. based on needs of affected people
- Ensuring the urgent temporary housings and collecting and providing information on available rooms
- Expansion of Targets of Emergency Repair of Houses
- Provision of grants for reconstructing livelihoods of the affected (at maximum, 3 million yen)

◆Resolution of power and water outage

◆Ensuring transportations for citizens
- Support for replacement bus for area railways and recovery of affected railways (grants rate. 1/2, etc.)

The Sanriku Railway, the erosion of ballast

◆Consecutive support for affected people
- Mental care, commuting support, exclusion of tuition fees for the affected children, etc.
- Observation and counseling on daily lives for preventing from isolation of the elderly etc.
- Implementation of countermeasures for false invoice such as free consultation dials for consumers
- Financial support against special measures such as exclusion of insurance fees, etc.
- Enforcement of Collaboration among the Government, NPOs and Volunteers and promotion of physical support to affected areas

◆Special financial support, etc. for affected people
- Expand the target of life and welfare fund loans, etc. to affected people

(2) Reconstruction of Livelihoods

◆Support for SMEs - Establishment of a tailored support system –
- Group grants to areas in particular where there caused enormous damage (3/4 *1), Support to the copayment by no interest loan
- In addition to the above, provide generous support to prefectures invoked by the Disaster Relief Act by Collaborative subsidy for municipalities (at maximum 3/4) (*2)
- Reconstruction support by grants for sustainability support for small-sized company to individuals (2/3 *1)
- Support by grants for shopping districts based on damage

*1 For affected areas on the process of recovery from East Japan Earthquake, provide fixed support under certain conditions
*2 Considering that there are enormous and wide damages at prefectures outside target of group grants, for some prefectures, the support rate of national government has reduced under certain conditions (national government: prefecture government, 1:1→2:1)

Cases of equipment which was damaged by sediment Manufacturer (Miyagi Prefecture)

◆Support to those affected were working in agricultural, forestry and fishing industries -for restarting their work as soon as possible-
- To handle inundation damage to fruits farms in a wider area, comprehensive measures are taken such as exchanging to saving fruits (530,000 yen/10a, etc.), control of nurseries (220,000yen/10a), measures for early bearing orchard (220,000yen/10a), ensuring support for replacement farms (520,000yen/10a) and others.
- Support to rice farmers, such as support of inundation damage to rice and support of removal of rice straw.
- Early recovery support for agriculture machinery, etc.
- Technical support by Ministry of Agriculture, Forestry and Fisheries of Japan, support advice team (MAFF – SAT)

The case of inundated apples (Nagano Prefecture)

◆Measures to motivate tourism demand
- Support to discounts of travel and hotel fee at affected areas where booking cancelation occurs because of disasters (5,000 yen per person per night)
- -Delivery of appropriate information of affected areas through SNS and media, etc.

◆Special employment measures for affected areas
- Relaxation of conditions of Employment Adjustment Subsidy, the raise of subsidy ratio (Small and medium-sized companies 2/3→4/5, large companies 1/2→2/3),etc.
- Basic allowance (unemployment allowance) of employment insurance will be provided even if the companies are closed, etc. because of disasters.

(3) Urgent Recovery from the Disaster

◆Recovery of Rivers, roads, etc. and prevention from secondary disaster
- Early measures for areas of sediment disasters where secondary disasters may occur
- The disaster recovery project for municipality-controlled rivers and roads which require high technologies are implemented by direct-controlled rights representative of national government
- -Maintenance and recovery of affected rivers, etc.

Unnojuku Bridge, Toumi City, Nagano Prefecture

◆Acceleration of disaster recovery projects
- Prompt implementation of disaster assessment and disaster recovery projects
- Instruction and advice by the Technical Emergency Control Force (TEC-FORCE)

(4) Disaster Relief, etc.

◆Emergency assistance such as temporary shelters
- Supply of food, drinking water, supplies that contribute to cold weather measures
- Provision of emergency temporary shelters, Urgent repairs of houses
- Provision of Disaster Condolence Grant

Bathing support

◆SDF activities

Source: Cabinet Office website
(Reference: http://www.bousai.go.jp/kohou/oshirase/pdf/r1typhoon19_shien_package.pdf)

[Column]

Management of Disaster Recovery Construction for Earlier Recovery

While recent frequent disasters by earthquakes and torrential rains may exert enormous damage on public facilities, there are concerns over the difficulty in implementing disaster recovery projects or the time taken, due to fewer technical staff in municipalities and the lack of experience of disaster responses.

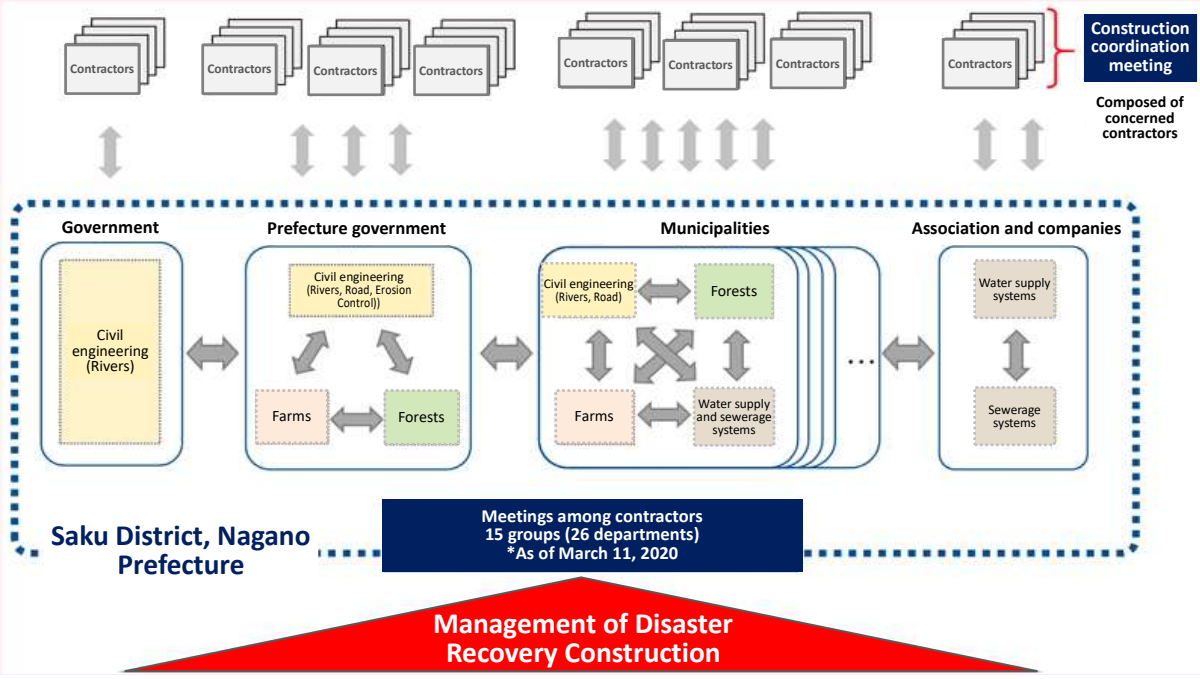
Following Typhoon Hagibis (1919), various types of recovery construction were required over wide areas in Nagano Prefecture. Within the Saku area in particular, over 600 various recovery projects were rolled out promptly and smoothly such as roads, rivers, bridges, water supply and sewerage systems, farm and forest roads and others ordered by 15 different groups, including the government, Nagano Prefecture, Saku City and others. Accordingly, four parties comprising Nagano Prefecture, Saku City, Nagano Prefecture Construction Technology Centre and Urban Renaissance Agency (UR) concluded an agreement, concluded contracts taking account of the respective roles of each party involved and tried to coordinate among contractees and with various types of recovery construction projects to complete these constructions, for which mutual coordination was required effectively and promptly (hereinafter referred as Management of Disaster Recovery Construction).

Management of Disaster Recovery Construction aims to arrange and solve problems at meetings among contractors and contractees while implementing construction and to do so overall smoothly and promptly.

The experts' suggestions* released in March 2018, stated that supporting systems to municipalities by private companies shall be developed to support the whole process, such as decisions of operational policy on disaster recovery, formation of disaster assessment applications and order, supervision and Management of Disaster Recovery Construction. The usage of the above Management of Disaster Recovery Construction can be expected to accelerate recovery from enormous disasters going forward.

*Suggestions on Municipalities Support Measures relating Disaster Management (Experts Panel on Municipalities Support Measures relating Disaster Management: The Ministry of Land, Infrastructure, Transport and Tourism, Water and Disaster Management Bureau, Disaster Prevention and Relief Division)

Implementation system of Management of Disaster Recovery Construction



(Tentative name) Disaster recovery support team (comprising Nagano Prefecture, Urban Renaissance Agency (CMR*) and Nagano Prefecture Construction Technology Centre) was set up to support cross-sectional coordination for various types of recovery construction projects occurring multiply

* CMR (Construction manager) is the person who concludes the contract with contractees and conduct part of or full of various management tasks ensuring technological neutrality.

Source: Urban Renaissance Agency

Chapter 2 Review and Measures on Typhoons Faxai and Hagibis in 2019

Typhoon Faxai (1915) caused prolonged power outages and communication failures and various challenges emerged during the recovery process and disaster response by national and local governments. Typhoon Hagibis (1919) caused major and widespread damage. Particularly because many elderly people were affected at home and many others were affected while driving, the importance of ensuring viable evacuation and providing disaster information was reaffirmed. Chapter 2 outlines the review and report at the verification team on the Series of Disasters, including Typhoons Faxai and Hagibis in 2019, the measures for residents' evacuation activities and the review and report at the Working Group on the Review of Evacuation from Disasters Caused by Typhoon Hagibis (1919).

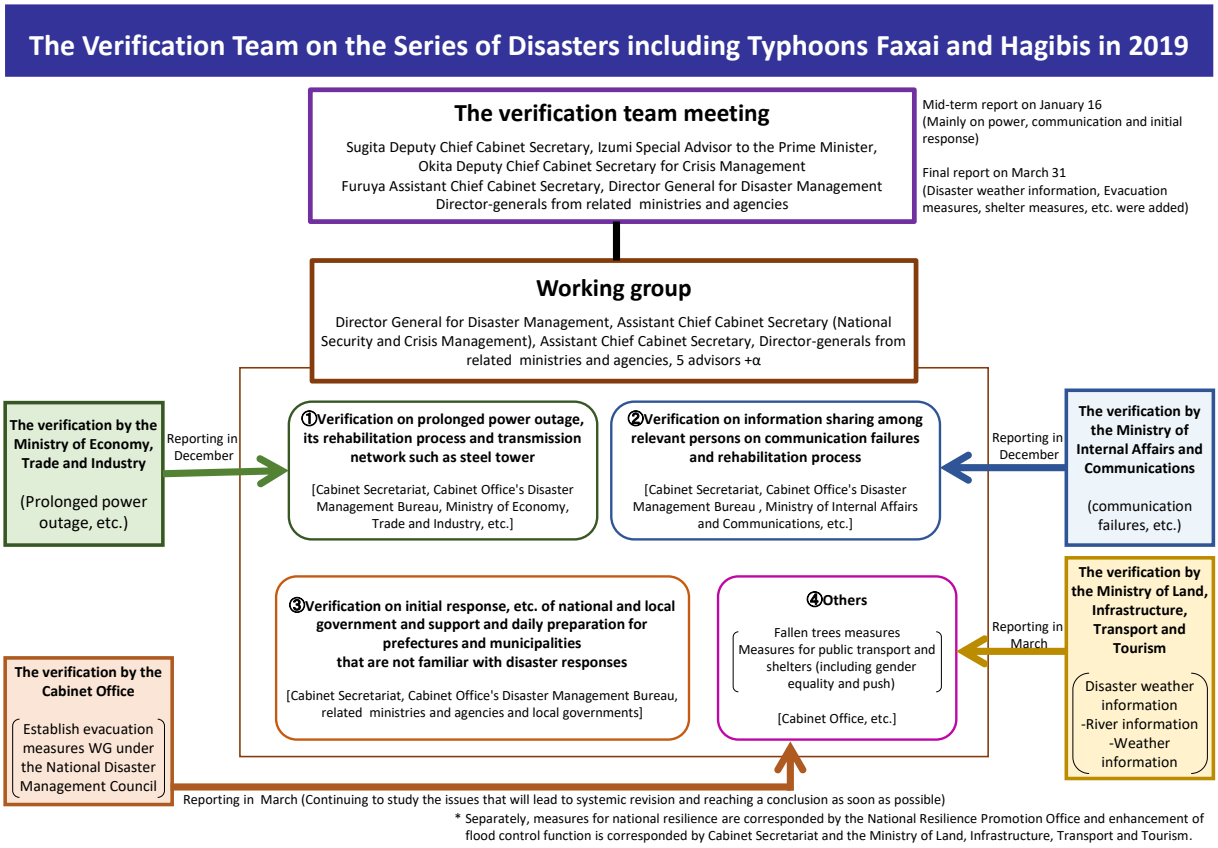
Section 1 The Review on Typhoons Faxai and Hagibis in 2019

1-1 Review of the verification team on the Series of Disasters, including Typhoons Faxai and Hagibis in 2019

Regarding Typhoon Faxai, the government had prepared for the oncoming emergency before disasters having occurred, collected information and worked together to take measures such as deploying the SDF and providing push-mode support, while facing various challenges such as prolonged power outages and the recovery process. Based on lessons learnt from disasters having occurred, to improve disaster-prevention and mitigation measures and review efforts to handle incidents such as prolonged power outages and communication failures more effectively, the government established a verification team on Typhoon Faxai (1915) chaired by Deputy Chief Cabinet Secretary for Affairs on October 2, 2019.

Conversely, immediately after this review started, Typhoon Hagibis (1919) caused major and widespread damage. For this, to review the evacuation measures highlighted as challenges and facilitate the provision of river and weather information, the review system was re-organized as the Verification Team on the Series of Disasters, including Typhoons Faxai and Hagibis in 2019. This verification team was tasked with collecting and summarizing the lessons learnt from responses to a series of disasters and reflecting them in future disaster responses.

Under this verification team, working groups to review each issue chaired by the Director General for Disaster Management were established and based on the verification outcome on each issue handled by working groups of the Ministry of Economy, Trade and Industry, the Ministry of Internal Affairs and Communications, the Cabinet Office and the Ministry of Land, Infrastructure, Transport and Tourism and other ministries, the whole government summarized the verification. By March 2020, three working groups in total were held to decide on points to review and review challenges and future measures to take in collaboration with advisers and related ministries and agencies.



Source: Cabinet Office

1-2 Report of the verification team on the Series of Disasters, including Typhoons Faxai and Hagibis in 2019

(1) Overview of the report

Based on discussions at working group level, the mid-term report of the Verification Team on the Series of Disasters, including Typhoons Faxai and Hagibis in 2019 (related to Typhoon Faxai) on challenges mainly on power, communication and initial response, etc. was published on January 16, 2020 and challenges and future measures were summarized (Reference: http://www.bousai.go.jp/pdf/r1t_15_19.pdf). As future measures, suggestions on system enforcement to assess damage in the form of power outages and communication failures, improve methods of providing information on rehabilitation work and the rehabilitation process and the initial response for municipalities unfamiliar with disasters were summarized. And after adding a review on the challenges of evacuation measures, shelter measures, disaster weather information, etc. the final report of the Verification Team on the Series of Disasters, including Typhoons Faxai and Hagibis in 2019 was published on March 31, 2020. Working groups under the National Disaster Management Council Disaster Management Implementation Committee to review the enhancement of evacuation measures will be explained fully in Section 2.

The government continue working on ceaseless reviews of disaster risk management and taking necessary measures.

Final Report of the "Verification Team on the Series of Disasters including Typhoons Faxai and Hagibis in 2019"

Issues Mainly Related to Typhoon Faxai

[Long-Term Electrical Blackout]

	Issues	Countermeasures
Damage Assessment	・Shortage of patrol officers commensurate with the scale of the damage ・Delayed understanding of the situation due to patrols and simultaneous investigation of failure parts ・Drone operator shortage ・No electrical blackout caused by damage to low voltage and lead lines (so-called "hidden electrical blackouts") can be identified in TEPCO's current system ・Shortage in staff capable of responding to inquiries about electrical blackouts during the initial reaction	・Develop a system for assessing damage within 24 hours in principle and within 48 hours in case of a large-scale disaster (e.g. systematic deployment of patrol officers) By end of June 2020 ・Standard assignment of dedicated drone teams, training and securing of operating personnel, development of operational policies, etc. By end of June 2020 ・Use the smart meter data to thoroughly check electrical blackouts in general households, etc. By end of June 2020 ・Implement measures to reduce the number of incoming calls by using SNS and chat systems, etc. Measures have been taken
Rehabilitation work Rehabilitation process information provision	・Restoration work takes time, which leads to delays in power distribution ・Insufficient collaboration between TEPCO and related organizations (telecom companies, Self-Defense Forces, other power companies, etc.) ・Delayed announcement of restoration projections and multiple changes ・Inefficient dispatch operation of the power supply vehicles during the initial phase due to the lack of engineers capable of operating the vehicles	・Early implementation of "temporary restoration" to prioritize early provisional rehabilitation from electrical blackout over full restoration during large-scale disasters By end of June 2020 ・Institutionalization of a disaster collaboration plan among power companies and related organizations Amendment to legislation (submitted in the 2020 Ordinary Diet Session) ・Establishment of a liaison system for electric power and telecommunication companies and implementation of training, etc. Measures have been taken ・Streamlining method of gathering and reporting on damage information for more accurate recovery forecasts By end of June 2020 ・Preparation of a TEPCO liaison response guide and info-sharing tools By end of June 2020 ・Standard deployment of a dedicated team for power vehicles By end of June 2020
Structural measures for power transmission and distribution networks	・Insufficient development of technology standards for pylons and measures against falling trees toppling poles and distribution lines consistent with regional conditions	・Review of technology standards for pylons based on regional conditions By end of June 2020 ・Review the wheeling charge system to ensure the required investments in transmission and distribution facilities are made, including the planned replacement of pylons and the elimination of poles Amendment to legislation(Submitted in the 2020 Ordinary Diet Session) ・Established "Forest Improvement around Critical Infrastructure Facilities" to promote forest development after concluding agreements on promoting pre-logging with electric power companies partnering local governments and forests near infrastructure facilities 2019 Supplementary Budget and 2020 Initial Budget
Introduction of emergency power supply	・Emergency power sources at critical facilities requiring continuous power supply such as hospitals and government buildings are not sufficiently secured ・Prolonged electrical blackout in mountainous and other inaccessible areas	・Promotion of the development of emergency power sources for important social facilities such as medical and welfare facilities, water and sewage facilities, government buildings and evacuation shelters 2019 Supplementary Budget and 2020 Initial Budget ・Development of a system to promote the installation of decentralized power sources to improve community resilience in the event of a disaster Amendment to legislation (Submitted in the 2020 Ordinary Diet Session) and the 2020 initial budget

[Related to Communication Failure]

Determine the Status of Communication Failure and Information Provision	・The status of mobile phone communication failure is published on an area map, but the quantitative impact is unknown and because it is published online, users cannot view it in areas where communication failures have occurred ・Insufficient sharing of information on the damaged points of communication blackspots and outages caused by fallen trees, etc. with the agencies concerned ・Difficulty in determining the bigger picture of communication failures among fixed-line users	・Provision of information on mobile phone communication via quantitative indicators such as the number of affected users Started in July 2020 ・Provide user-friendly information to mobile phone users (including in areas of communication failure areas) Started in July 2020 ・Clarification of the roles of the Ministry of Internal Affairs and Communications (MIC) liaison and carrier liaison on info-sharing with related organizations Measures have been taken ・Improvement of methods for identifying obstacles, such as calling on users to check the status of landline communication Started in July 2020
Rehabilitation work Rehabilitation process information provision	・Non-disclosure of estimated rehabilitation of mobile and landline phone services ・Insufficient sharing of information and coordination of response with related organizations regarding recovery ・Emergency communication measures among prefectures and municipalities are not fully used	・Examine the timing and specific details of the announcement of the expected mobile phone rehabilitation and start scope. (also consider fixed phones as well.) Started in July 2020 ・Enhance the liaison operations of the MIC via manualization and training, etc., to strengthen collaboration with related organizations for earlier rehabilitation Measures have been taken ・Implement "push-mode" prior unications equipment to local governments for disaster management equipment to local governments for disaster management Measures have been taken
Longer emergency power supply	・Prolonged electrical blackout prevents important communication facilities from sustaining emergency power supplies	・Prolonged emergency power supplies for mobile phone base stations, etc. Review of Technologies Standard (By the End of June 2020) ・Additional deployment of mobile power supply vehicles to the MIC (Regional Bureau of Telecommunications) 2019 Supplementary Budget ・Use mooring drones with a base station mounted Review of Technologies Standard (By the End of June 2020)

Final Report of the "Verification Team on the Series of Disasters including Typhoons Faxai and Hagibis in 2019"

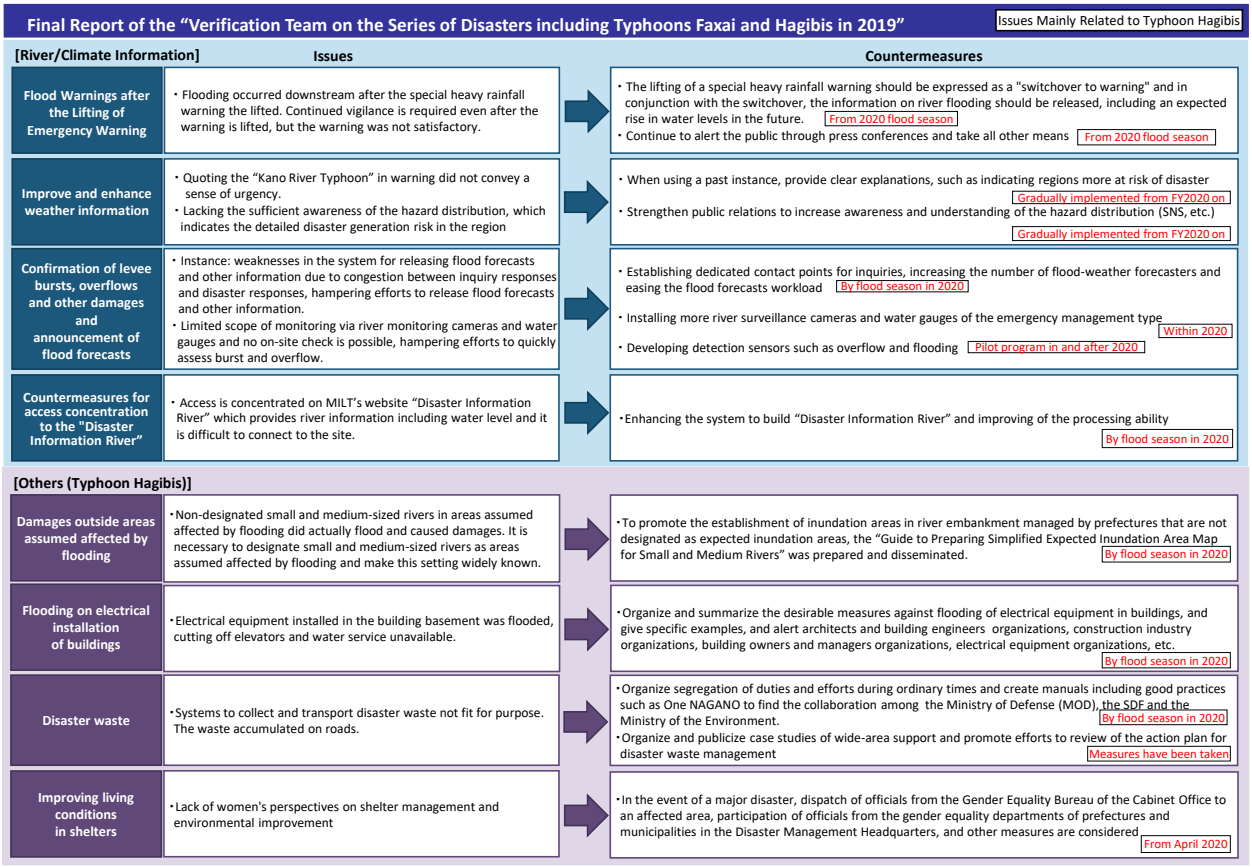
Issues Mainly Related to Typhoon Faxai

[Related to Initial Response, etc.]

	Issues	Countermeasures
More support for local governments that are not familiar with disasters	・Reorganization of the timing, destination and positioning of the dispatch of staff from the national government to the affected local governments ・Coordination of the national and local governments, businesses, and other stakeholders in on-site disaster responses sites ・Leadership of local government leaders and crisis management/disaster management officers in the event of a major disaster ・Establishment of a system for rapid disaster response	・Dispatch of a "Cabinet Office Research Team" to quickly determine the damage status and support affected local governments when a large-scale disaster is expected Review the Basic Plan for Disaster Risk Reduction, etc. ・A National On-site Disaster Management Office was established and liaison, coordination and local work coordination meetings were held according to the level of the on-site disaster response, to ensure the relevant ministries and agencies would collaborate for a speedy disaster response Review the Basic Plan for Disaster Risk Reduction, etc. ・Enhance training for municipal crisis-management/disaster management managers to give them the knowledge and skills required in the first response and throughout the entire disaster response 2020 Initial budget ・Promote efforts to establish an aid acceptance system in prefectures, which are region-wide administrative bodies to receive various types of support promptly and accurately and establish a mutual support system for municipalities Review the Basic Plan for Disaster Risk Reduction, etc.
Shortage of disaster response staff in local governments, etc.	・Lack of technology staff capable of responding to disasters in local governments, lack of staff with expertise in disaster response management, etc.	・Further use and enhanced deployment of support officials to assist affected municipality system Review the Basic Plan for Disaster Risk Reduction, etc. ・Support for boosting the technology staff strength in prefectures, etc. Local government finance in FY2020 ・Enhanced the national support system, including increased staffing of the Tech Force Capacity in 2020 ・Promptly secure a support system for the UR's survey of damaged houses Implementation in and after April 2020 ・Promote disaster recovery work management via the UR and streamline construction via coordination among contractors and contractees Started in April 2020 ・Conclude disaster agreements with private sector businesses, architects and building engineers and other industry groups Review the Basic Plan for Disaster Risk Reduction, etc. ・Secure and train construction workers to streamline construction Completed the 2020 Amendment to legislation
Preparedness during ordinary times	・A collaboration system to rapidly rehabilitate the community in the event of a large-scale disaster	・Promote mutual cooperation in prefectures, as region-wide administrative bodies, from normal times with various lifeline related organizations, such as the "Disaster-Prevention Liaison Committee" during normal times. Review the Basic Plan for Disaster Risk Reduction, etc.
Promote stockpiling and information sharing, information sharing and enhance material support	・How to share information on the status of stockpiled supplies and goods transportation status among government agencies ・Lack of awareness of goods details of the national government's push-mode support supplies	・Promotion of stockpiling by the national government, prefectures and municipalities and registration and information sharing of stockpiled supplies within the "goods system." Review 2019 supplementary budgets (stockpiling), and start in April 2020 (registration and information sharing) ・Menu configuration and familiarization of standard items in the national push-mode support Review the Basic Plan for Disaster Risk Reduction, etc.

[Others (Typhoon Faxai)]

Public Transportations	・With regard to the planned operational suspension, numerous passengers were concentrated at the station when operations resumed, causing confusion, such as restrictions on entry at the station. ・Airport access was disrupted, while the runway could be operated normally, increasing airport traffic and resulting in insufficient information for airport users	・For the planned operational suspension, strengthen preparedness, including deploying the required personnel and equipment to resume operations and inform users clearly and calmly MLIT's development has finished and operators are responsible ・Establish a comprehensive disaster management headquarters at Narita International Airport, etc., as soon as possible, which can oversee coordination Revise the BCP if Narita Airport
Blue sheet	・A shortage of local operators, capable of setting up blue sheets ・During Typhoon Faxai, the following measures were taken, but it took time to install: -Blue sheets on the damaged houses -Support for the establishment of firefighters, the construction industry, NPOs, SDF, etc.] -Matching with operators by Chiba Prefecture -Training sessions are held to introduce construction methods, etc.	・Promote the introduction of installation companies by local governments. Summarize concepts on segregations of duties of those who assist in installation such as firefighters, NPOs with installation skills, skilled volunteers and the SDF Measures have been taken ・Apply examples of countermeasures including matching support between victims and installation companies to other prefectures throughout Japan (Chiba Prefecture offered matching support during Typhoon Faxai) Measures have been taken ・A guide to installation methods, supervised by a NPO with installation skills, is widely available Measures have been taken ・Provide information on NPOs capable of offering training sessions on installation skills and facilitating implementation during a disaster Measures have been taken



Source: The 3rd "Verification Team on the Series of Disasters including Typhoons Faxai and Hagibis in 2019"
(Reference: http://www.bousai.go.jp/kaigirep/r1typhoon/index.html)

Section 2 Evacuation measures for residents

2-1 Review of Government's Evacuation Measures after Typhoon Hagibis

The Heavy Rain Event of July 2018 caused record-breaking rainfall and triggered emergency heavy rain warnings for 11 prefectures, leading to river flooding and sediment disasters in many areas, especially Okayama, Hiroshima, and Ehime Prefectures. More than 200 people were affected in a major disaster, which claimed over 100 lives following the torrential rains of August 1983.

To review efforts to enhance evacuation measures based on this major heavy rain disaster, the Working Group on the Review of Evacuation from Flood and Sediment Disasters caused by the Heavy Rain Event of July 2018 set up under the Disaster Management Committee of the National Disaster Management Council suggested the need to establish a disaster-aware society by enhancing residents' own measures – namely each member of society retaining the mindset of protecting his/her own life and evacuate on his/her own judgement and the government providing full support.

Accordingly, national and local governments decided to improve disaster awareness across society as a whole, based on the premise that government-directed evacuation measures were limited by supporting and enhancing residents' own measures to foster the mindset of protecting their own lives and promote education on regional disaster risks and required evacuation actions.

During Typhoon Hagibis, the JMA issued an emergency heavy rain warning for 13 prefectures and 309

municipalities. Various damage occurred concurrently over a wide area, such as 142 cases of levees bursting at government- and prefecture-administered rivers. Besides, the heavy rain from a low-pressure system, etc. from October 24-26 caused river flooding and sediment disasters centered in Chiba and Fukushima Prefectures which left 104 people dead (of which seven due to disasters) and 3 people missing.

The damage caused by this heavy rain happened because people did not evacuate, they did so late or they were affected while moving out of their homes during heavy rain or inundation and many elderly people were affected. A lack of sufficient mindset of protecting their own lives emerged. Moreover, challenges on the evacuation information and government calls for evacuation and the difficulty of evacuation timing and region-wide evacuation such as shelters also emerged.

This working group discussed urgent measures to be taken by the 2020 flood season and fundamental measures to be discussed after 2020 and obtain outcomes sooner. By flood season, it was decided that an awareness campaign such as improving disaster understanding to promote evacuation activities, fostering the mindset of protecting his/her own life for each citizen and major agendas requiring systematic review such as evacuation information and evacuation for those requiring support during evacuation would be continuously discussed and reviewed.

Disaster Management Committee of the National Disaster Management Council The Working Group on Evacuation from Disasters Caused by Typhoon Hagibis in 2019

○Purpose

A working group was established under the Disaster Management Implementation Committee in order to strengthen evacuation measures against increasingly severe and frequent heavy rains, learning from the lessons of Typhoon Hagibis (1919) in 2019, which caused extensive and devastating damage in the Tohoku and Kanto-Koshinetsu regions.

○Discussion Points

- Promoting understanding of disaster risks and actions to be taken
- Ensuring the effectiveness of evacuation of the elderly, etc.
- Providing clear disaster prevention information (evacuation recommendations and instructions), etc.

* Examining it in cooperation with the measures taken by related ministries and agencies.

○Schedule

Setting up a working group within _____
Compiling within FY_____

* Continuing to study the issues that will lead to systemic revision and reaching a conclusion as soon as possible

Damage at Marumori Town, Miyagi Prefecture

Damage at Nagano City, Nagano Prefecture

○Member

Committee Member	Affiliation
◎Jun Tanaka	Director of the Center for Integrated Disaster Information Research / Professor, Graduate School of Interdisciplinary Information Studies, Tokyo University
Junko Iijima	Professor, School of Law, Tohoku University
Hiromi Ishikawa	Executive Board Member of the Japan Medical Association
Motoyuki Ushiyama	Professor, Shizuoka University Center for Integrated Research and Education of Natural Hazards
Toshitaka Katada	Project Professor, Tokyo University Graduate School of Interdisciplinary Information Studies
Mayumi Sakamoto	Associate Professor, Graduate School of Disaster Resilience and Governance, University of Hyogo
Nana Suzue	Broadcaster, Nippon Television
Yoshihiko Shimizu	Faculty of Science and Technology, Gunma University
Yasuhiro Shuin	Professor, Faculty of Agriculture, Utsunomiya University
Yuki Shuto	Director and General Manager of the Research Institute for Social Safety
Shigeo Tachiki	Professor, Faculty of Sociology, Doshisha University
Hitoshi Tanaka	Professor, Graduate School of Engineering Department of Civil and Environmental Engineering, Tohoku University
Keiko Tamura	Professor, Risk Management Office, Headquarters for Risk Management, Niigata University
Kazuhisa Tsuboki	Professor, Institute for Space-Earth Environmental Research Center for Integrated Data Science, Nagoya University
Muneharu Nakagai	Mayor of Toyooka City, Hyogo Prefecture
Eiichi Yamazaki	Professor, Kansai University Faculty of Safety Science Department of Safety Management
Noboru Yamazaki	Professor, Kokushikan University Research Institute of Disaster Management and Emergency
Junichi Yoshitani	Professor, Faculty of Engineering Water Environment and Civil Engineering, Shinshu University

◎: Chief

* Officers from related ministries and agencies also joined in the group as members

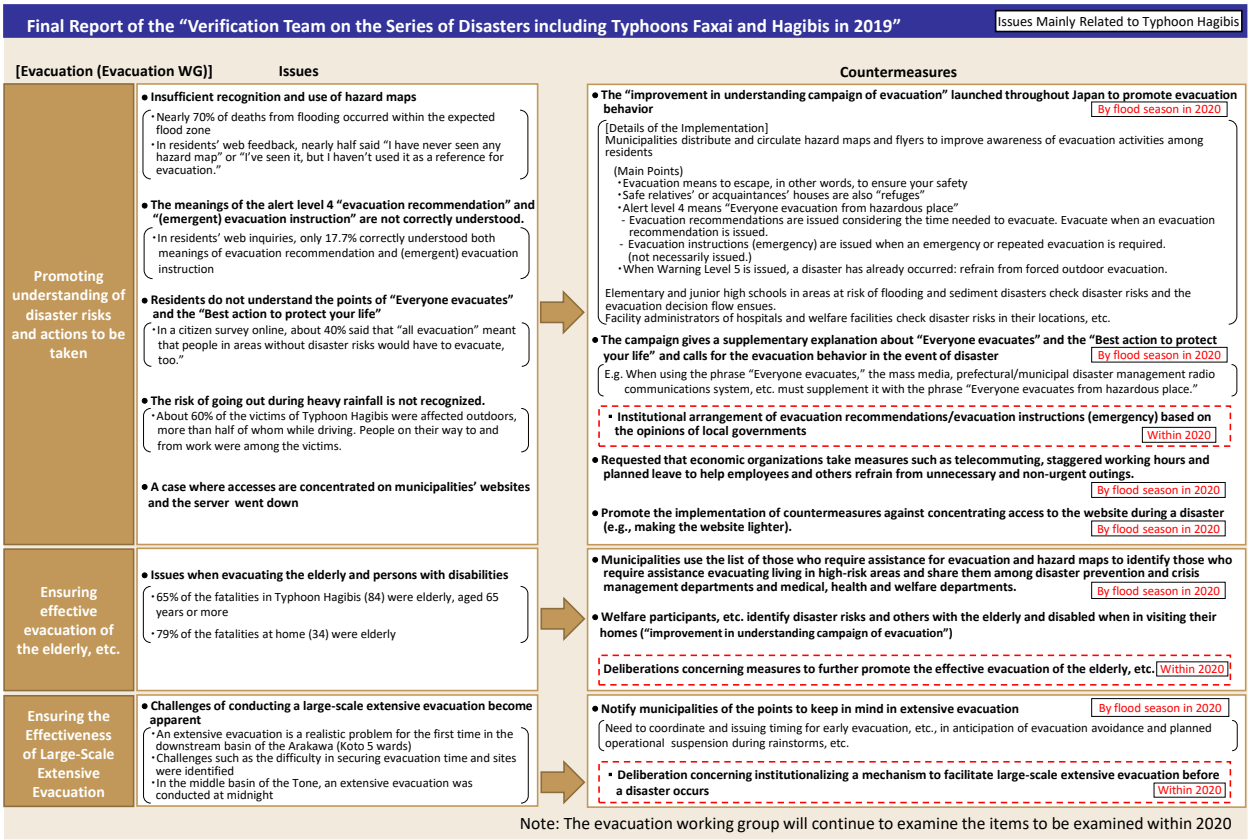
Source: Materials from the 1st Working Group on evacuation from disasters caused by Typhoon Hagibis (1919)
(Reference: http://www.bousai.go.jp/fusuigai/typhoonworking/index.html)

2-2 Report (Proposal) by the Working Group on the Review of Evacuation from Disasters Caused by Typhoon Hagibis, etc.

Following the discussion by said working group, the Cabinet Office published the Report by the Working Group on the Review of Evacuation from Disasters Caused by Typhoon Hagibis, etc., in March 31, 2020. (Reference: http://www.bousai.go.jp/fusuigai/typhoonworking/index.html). Learning from the challenges from Typhoon Hagibis, etc., the following measures to enhance evacuation preparation were decided. Of these, measures to be implemented promptly would be taken by 2020 flood season (promoting improved awareness of evacuation etc.) and fundamental issues would be continuously reviewed even after 2020 (review of systematic issues, etc.)

- Promoting understanding of disaster risks and actions to be taken (measures during normal time)
- Providing clear disaster prevention information (measures during disasters)
- Ensuring the elderly can be effectively evacuated, etc.
- Ensuring the effectiveness of large-scale extensive evacuation

In the following summary, the second point "Providing clear disaster prevention information (measures during disaster)" was integrated into the first point "Promoting understanding of disaster risks and actions to be taken (measures during normal time)". To review evacuation measures, a web questionnaire for web monitors residing in areas affected by Typhoon Hagibis, a questionnaire for crisis management and welfare departments of entire municipalities, questionnaires to groups of persons with disabilities, opinions from local leaders, field research and a status analysis of human damage, etc. were conducted and referred to.



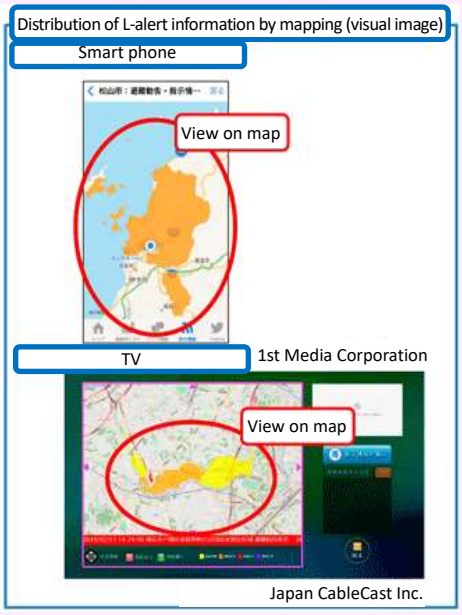
Source: Summary of Proposal (Report) on Evacuation from Flood and Sediment Disasters After the Typhoon Hagibis
(Reference: http://www.bousai.go.jp/fusuigai/typhoonworking/index.html)

[Column]
Measures to provide clear evacuation information by mapping of evacuation recommendations and utilizing AI

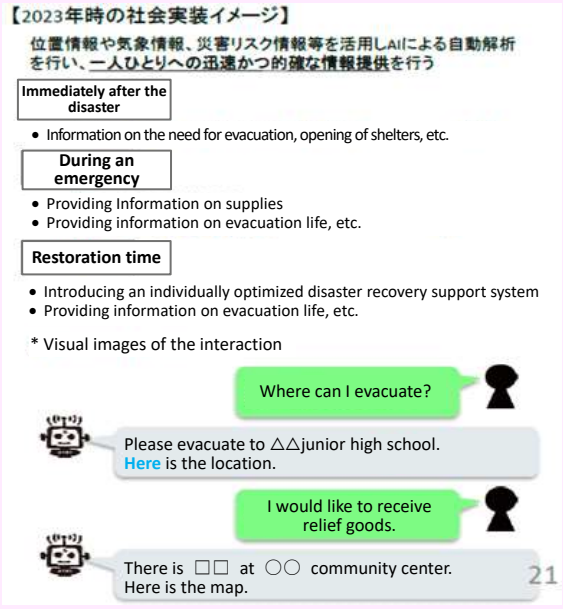
It was pointed out that evacuation information during disasters was not easily understood in terms of its issuance and call for evacuation. For example, there was a need to review whether evacuation recommendations and instruction (emergencies) were easily understandable and whether evacuation was excessively promoted by the words of “Everyone evacuates” and “Take the best action you can to protect your life”.

To provide information during disasters more effectively, the government is taking measures to easily determine the issuance of evacuation information by mapping information such as evacuation recommendations and distributing through L-alert. Originally, L-alert was used to distribute text information, while the government studied and verified how the L-alert information was mapped. The government will strive to promote the introduction and mapping of L-alert information among each of the prefectures.

In addition, before disasters occur, if the residents can determine the location of shelters or evacuation sites and the number of people they can accommodate, this will help them choose where to evacuate in real time. Doing so would mean developing a technology capable of distributing the most appropriate information to each citizen at the required time concerning the opening status of shelters, status of relief goods, etc. Therefore, regarding the evacuation direction measures using AI, etc., measures are to be taken in collaboration with a Cross-ministerial Strategic Innovation Promotion Program (SIP). Research & Development into Chatbot for disaster management is conducted, allowing information to be provided depending on each condition, responding to inquiries by AI and striving to develop a system and implement the society to support appropriate evacuation depending on the disaster risk of the current location or the opening status of evacuation sites.



Source: Ministry of Internal Affairs and Communications (MIC)



Source: Materials from the 2nd Working Group on evacuation of disasters caused by Typhoon Hagibis (1919) (Reference: http://www.bousai.go.jp/fusuigai/typhoonworking/index.html)

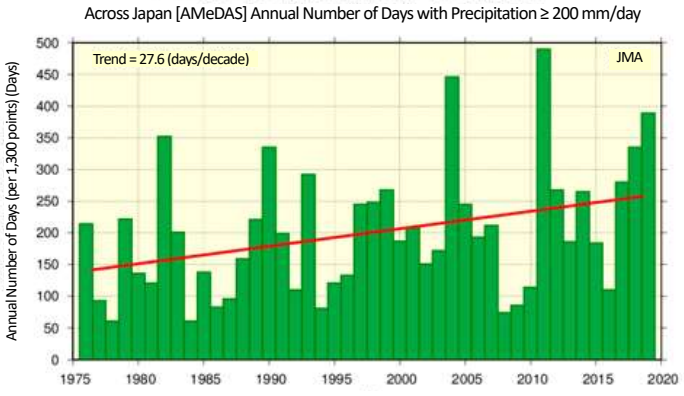
Chapter 3 Strategy for Enhancing the Synergy between Climate Action and Disaster Risk Reduction

1-1 The Status of Steps to be taken for Strategy for Enhancing the Synergy between Climate Action and Disaster Risk Reduction

Recentry, the country has been struck by frequent floods, inundations and sediment disasters of extreme severity involving heavy rain and typhoons, including Typhoon Faxai and Hagibis in 2019, Torrential Rain of September 2015 in the Kanto and Tohoku Regions, consecutive typhoons of August 2016 in Hokkaido and Tohoku regions, the Heavy Rain Event of July 2017 in Northern Kyushu and the Heavy Rain Event of July 2018.

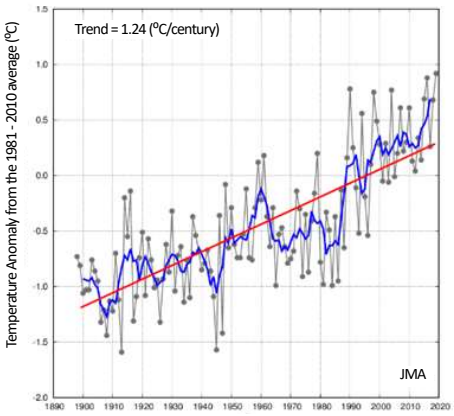
Observations by the Japan Meteorological Agency have shown that the number of days of heavy rain exceeding 200mm has increased about 1.7 times compared to recent 30-year period (1990-2019) and the 30-year period from the time when statistics were first compiled (1901-1930). Both the frequency and intensity of heavy rain has increased. This climate change is thought to be linked to global warming and the increased frequency and intensity are considered attributable to increased airborne water vapor associated with rising temperatures. The global average temperature is increasing and rose 0.85 °C between 1880 and 2012 based on the IPCC Fifth Assessment Report. Based on observations by the Japan Meteorological Agency, the average temperature of our country has risen 1.24 °C per century from 1898 to 2019.

Annual Number of Days with Precipitation ≥200 mm/day



Source: Japan Meteorological Agency (website)

Annual Average Temperature in Japan



Source: Japan Meteorological Agency (website)

The Paris Agreement set a long-term global objective that the rise in global average temperatures from the pre-industrial era should remain far below 2 °C. For example, if the average temperature were to rise by 2 °C in Japan, rainfall would increase 1.1 times and the frequency of flooding, including rainfall and volume within the scope of the current river planning, would roughly double according to the Ministry of Land, Infrastructure, Transport and Tourism calculations (the Review Committee on flood control plan for climate action, the Ministry of Land, Infrastructure, Transport and Tourism *Paradigm and Suggestion on flood control plan for climate action* (2019 October)). Worldwide, concerns are also growing regarding damage caused by flooding, storm surges due to rising sea levels, heat waves, cold waves and drought associated with climate change.

In the future, risks of climate disasters nationally and globally may increase due to the influence of climate

change. Accordingly, each member of society must recognize how climate change may impact on his/her daily life and raise disaster awareness, e.g. through self-help and mutual support in readiness for disasters. In DRR measures centered on public support, a system must be established, taking into account that disasters caused by climate change are becoming increasingly frequent and severe.

Under the initiative of Mr. Takeda, Minister of State for Disaster Management and Mr. Koizumi, Minister of the Environment, the Disaster Management Bureau of the Cabinet Office and the Ministry of the Environment have convened successive dialogues with experts since February 2020 to discuss policies on the synergy between climate action and DRR. Through this process, both intended to clarify the direction of efforts on enhancing drastic DRR and climate actions, and show what kind of DRR measures adaptive to climate change should be put in place, while ensuring people have a heightened sense of crisis on climate change and DRR.

Collaborative implementation between climate change and disaster management measures has been focused on, even in international politics. Meanwhile, greenhouse gas emission controls (mitigation measures) are progressing as part of efforts to adapt to climate change, given that disasters caused by climate change are becoming increasingly frequent and severe. Accordingly, there has been a greater focus on adaptation measures for climate change. The United Nations also underlined the importance of implementing adaptation measures for climate change and disaster management measures collaboratively rather than in a vertical hierarchy, given the common objective and approach taken to the measures. This collaborative implementation between the Disaster Management Bureau of the Cabinet Office and the Ministry of the Environment is in line with such international trend. Ms. Mizutori, Special Representative of the Secretary-General for Disaster Risk Reduction and the Head of the United Nations Office for Disaster Risk Reduction, participated in the review committee.

This climate change and disaster management measures overlap with some of the Sustainable Development Goals (SDGs) regarding the objectives. Namely, unless the risks of disasters and climate change are reduced, achieving Sustainable Development Goals will be difficult. For example, people affected by disasters come into the poor category (SDG1 (No Poverty)), prevention of water-related disasters (SDG6 (Clean Water and Sanitation), disasters bringing economic losses (SDG 8 (Decent Work and Economic Growth)), disaster and climate change affecting infrastructure, industry and cities (SDG9 (Industry, Innovation and Infrastructure), (SDG11 (Sustainable Cities and Communities), SDG13 (Climate Action). The simultaneous achievements of climate change (The Paris Agreement), disaster prevention and mitigation measures (Sendai Framework for Disaster Risk Reduction) and SDGs (Agenda 2030) are seen as important internationally.

Review Committee (as of 24 March 2020)

Mr. Takeda, Minister of State for Disaster Management exchanging views

Online conference with the United Nations Office for Disaster Risk Reduction (in Geneva)

1-2 Directions of Reviewing Strategy for Enhancing the Synergy between Climate Action and Disaster Risk Reduction

- Introducing disaster management perspectives taking climate change into consideration with various measures and strategies

Climate change and disaster management measures are cross-cutting challenges and need to be addressed on all fronts. For instance, disaster management measures considering climate change in the community can strengthen community ties and vitalize the regions while measures by companies help improve business continuity and credit of the companies and make employment and the regional economy more stable. Accordingly, there is a need to enhance disaster prevention and mitigation capacity holistically and build a sustainable and resilient society.

- Promoting awareness of self-help and mutual support plus collaboration of stakeholders

It is important for all citizens and companies to understand the increased risk of disaster caused by climate change, raise disaster management awareness and take concrete actions in readiness for such disasters, such as reliable evacuation activities. To promote this, measures to enhance awareness of self-help and mutual support must be taken. Here, collaboration of various stakeholders such as citizens, companies, associations and the government can improve comprehensive capabilities to prevent and mitigate disasters.

- Arranging systems to prevent and mitigate disasters in response to increasing disaster risks

Systems to prevent and mitigate disasters via various structural and non-structural methods must be arranged. These include, for example, improving disaster-related facilities in response to increasing disaster risks due to climate change, discouraging residence in places at high risks of disasters, or – when living in such areas – aiming to ensure all residents are fully aware of the disaster risks and design to live safely.

- Creating new business and market opportunities

There are international trends of increasing awareness of disaster risk caused by climate change and prioritization of adaptation measures. Our structural and non-structural measures for disaster management taking climate change into consideration can also be accepted and utilized overseas as measures to contribute to several SDGs. From this perspective, it is important to seize this opportunity to improve our technologies and insights, leverage them globally and create an environment where climate change × DRR measures are addressed more positively.

- Accelerating measures for climate change

A fundamental measure to reduce the disaster risks caused by climate change is to control global warming and further measures toward a decarbonized society must be promoted. Moreover, some global warming is unavoidable, even with no additional greenhouse gas emissions. Accordingly, it is important to upgrade climate change risk information taking social vulnerabilities and others into consideration and utilize this information to address mainstreaming climate change in various fields. It should be acknowledged that these can also help measures used to prevent and mitigate disasters.

When reviewing Climate Action and DRR perspective, the above directions will be summarized and stated. Based on this, related ministries and agencies including the Cabinet Office's Disaster Management Bureau, Cabinet Secretariat, National Resilience Promotion Office, Cabinet Secretariat and the Ministry of the Environment will review and take measures to be able to respond to disaster risks at a new stage due to climate change.

Part I Current Disaster Risk Management Measures in Japan

Japan is prone to various natural disasters due to its natural conditions. Even looking at a year of FY2019, Japan was struck by various disasters, including Typhoon Faxai in September 2019 and Typhoon Hagibis in October 2019. Part I looks at Japan's recent disaster risk management policies with a special focus on measures intensely promoted in FY2019.

Chapter 1 Current Disaster Risk Management Measures

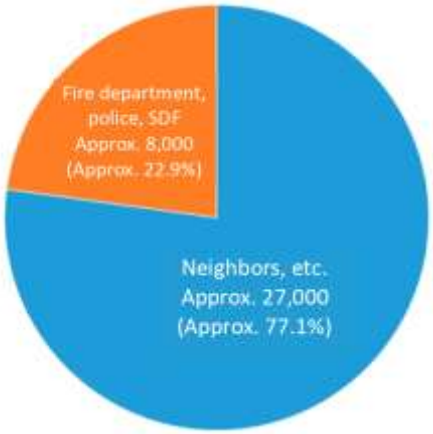
Section 1: Reducing Disaster Risk in Advance through Self-help and Mutual Support and Promotion of Disaster Risk Reduction Activities in Cooperation with Various Stakeholders

1-1 Raising Awareness of Disaster Risk Reduction among the Public

As Japan is a disaster-prone country, the government has constantly promoted initiatives that constitute "public support," including the development of embankments and other hard infrastructure, as well as non- structural measures such as preparation of hazard maps before disaster occurs. In the event of a disaster, public support extends to emergency rescue operations, support for human resources by dispatching supporting officials to affected areas, push-mode support (i.e. emergency delivery of necessities and relief supplies to shelters and evacuees, initiated without waiting for a request from affected prefectures), and financial support through the designation of a Disaster of Extreme Severity and pursuant to the Act on Support for Reconstructing Livelihoods of affected people.

However, there are concerns about the limits of public support in the event of a major disaster such as the Nankai Trough Earthquake, which is anticipated to occur in due course. A study showed that, in fact, when the Great Hanshin-Awaji Earthquake occurred, about 80% of people were rescued through self-help (including help from their families) or mutual support (such as assistance of their neighbors), while only about 20% were rescued by public support services such as rescue teams (Fig. 1-1-1). Amid the increasingly difficult environment surrounding local government, such as the widening of municipal areas due to municipal mergers and the decrease in the number of civil servants in local governments, our ageing society sees an increase in the number of elderly people who need special care in the event of a disaster. To this end, it is vital that every one of us takes concrete actions for disaster prevention and mitigation, which means that each community member takes specific disaster mitigation actions with a recognition that it is no one but themselves who can protect their life and that local residents help each other.

Fig. 1-1-1 **Types of Rescuers and Number of People Rescued at the Time of the Great Hanshin-Awaji Earthquake**



Source: *Prediction of Loss of Human Lives Due to Catastrophic Earthquake Disaster* (Yoshiaki Kawada; 1997; Natural Disaster Sciences Vol. 16, No.1
(Featured in the 2016 White Paper on Disaster Management, "Future Disaster Management")

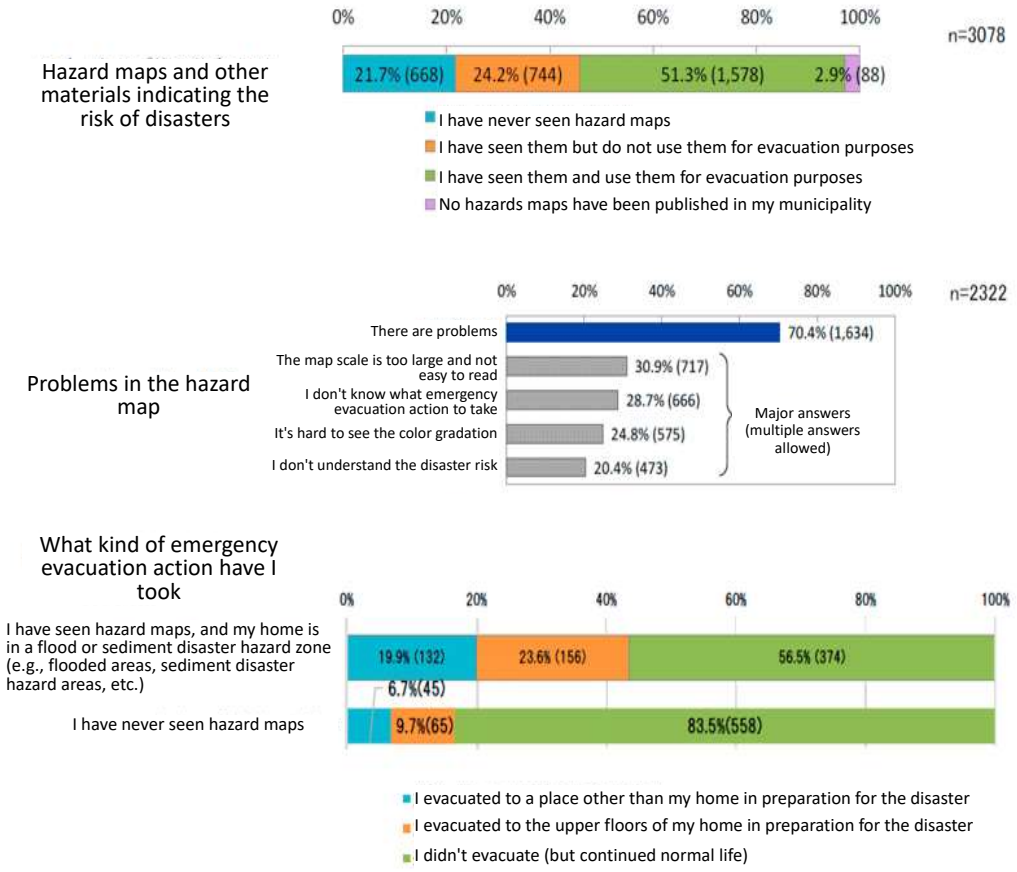
Specific activities to prevent and mitigate disasters may include preparedness by understanding the disaster risk in communities, confirming evacuation routes, stockpiling food, and other measures. To protect themselves from frequent flood disasters, it is important to evacuate areas as soon as possible, taking into account information such as evacuation advisories issued by the local governments, as well as an appropriate understanding of local disaster risks using hazard maps and other tools.

According to the results of a questionnaire survey (Figure 1-1-2) conducted by web monitors in municipalities that experienced loss of human life due to the Typhoon Hagibis in 2019, etc., roughly half (51.3%) of respondents answered that they had seen hazard maps and other materials illustrating disaster risks and used them for evacuation purposes, while half (45.9%) answered that they had never seen such maps or had done so but did not use them for evacuation purposes.

More than 40% (43.5%) of respondents who had seen hazard maps and with homes in a flood or sediment disaster hazard zone (e.g. flooded areas, sediment disaster hazard areas, etc.), took some kind of evacuation action. Conversely, more than 10% (16.4%) of the respondents who had never seen hazard maps took some kind of action to evacuate. A significant contrast emerged in their evacuation actions. (Figure 1-1-2)

Accordingly, it is important to understand the disaster risks and actions to be taken before a disaster so that people can respond appropriately in the event of a disaster. However, the same survey showed that about 30% of respondents answered that they could understand the disaster risk but not the action to be taken just by looking at the hazard maps, etc.; about 20% answered that they could not understand the disaster risk; about 30% answered that it was difficult to understand the scale and coloration on the map; and about 70% of respondents answered that there were some problems with the hazard maps, etc.

Fig. 1-1-2 **Awareness of hazard maps among municipal residents affected by Typhoon Hagibis (1919) in 2019, etc. and the types of emergency evacuation actions they took**

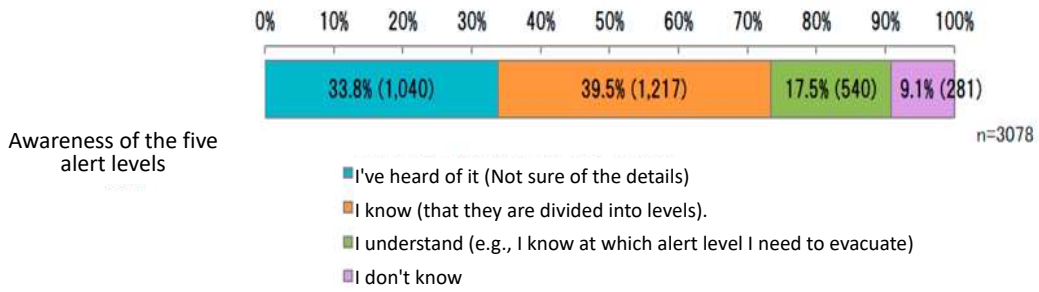


Source: Working Group on Evacuation from Disasters Caused by the Typhoon Hagibis (1919) in 2019, etc. Formulated by the Cabinet Office from a survey "Questionnaire Results for Residents" conducted on January 11-13, 2020

In deciding whether and when people need to evacuate, it is important to accurately understand the information issued by the local governments. The five alert levels, which have been in operation since the flood season of 2019, provide disaster-prevention information very clearly so that residents can better understand, unconsciously, what actions they should take. This is based on the lessons learned from the Heavy Rain Event of July 2018. People at alert level 3 or below who need more time to evacuate should start evacuating and all people at level 4 in hazardous places should evacuate. At level 5, a disaster has already occurred and it may be dangerous to move outdoors, for example to a designated emergency evacuation site, etc. Accordingly, people must strive to save their own lives, for example by taking refuge in a safer upper floor or a room not facing the mountain.

When the awareness of this alert level information was surveyed, 17.5% of the respondents answered that they understood it. About 90% (90.9%) of the respondents knew about the alert levels, but did not necessarily understand how they should respond, such as evacuation behavior. Accordingly, the meanings of the alert levels must be further promoted. (Figure 1-1-3)

Fig. 1-1-3 Awareness of the five alert levels in the areas affected by Typhoon Hagibis (1919) in 2019



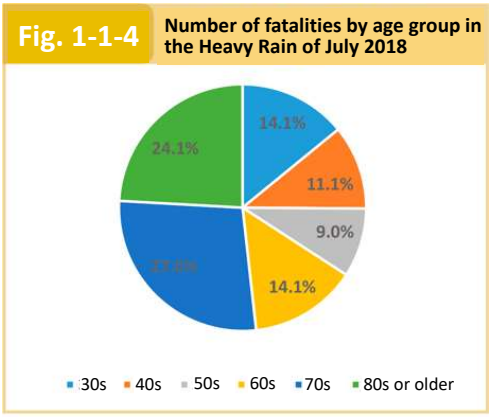
Source: Working Group on Evacuation from Disasters Caused by the Hagibis Typhoon in 2019, etc. Formulated by the Cabinet Office from a survey "Questionnaire Results for Residents"

To protect against natural disasters such as wind and flooding, people need to understand the hazard maps, information issued by the local governments and safe evacuation routes, then evacuate to a safe place at the right time. This will mean acquiring the necessary knowledge, participating in evacuation drills, and acting in the event of an emergency, which is known as "reducing the disaster risk in advance".

Another major issue involves how to support the evacuation of people who need time to evacuate or who are unable to do so alone, such as the elderly, persons with disabilities and young children.

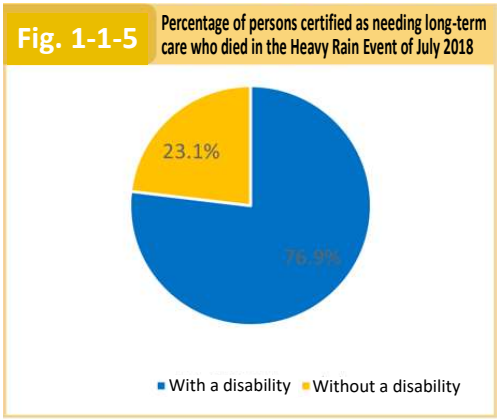
In the Heavy Rain Event of July 2018, 199 people died in Okayama, Hiroshima, and Ehime prefectures, around 70% (131) of whom were in their 60s or older. Also, according to Okayama Prefecture, people with disabilities accounted for three-quarters of all fatalities caused by this disaster in the prefecture. In the Typhoon Hagibis in 2019, about 80% (67 people) of the fatalities were in their 60s or older. (Figures 1-1-4 and 1-1-5)

Fig. 1-1-4 Number of fatalities by age group in the Heavy Rain of July 2018



Source: Formulated by the Cabinet Office based on materials from the 3rd Working Group on the Review of Evacuation from Flood and Sediment Disasters Caused by the Heavy Rain Event of July 2018

Fig. 1-1-5 Percentage of persons certified as needing long-term care who died in the Heavy Rain Event of July 2018



Source: Okayama Prefecture "the Heavy Rain Event of July 2018" Disaster Verification Committee (Disaster Assessment Report for the Heavy Rain of July 2018)

Naganuma District, Nagano City, Nagano Prefecture, was severely damaged by the levee collapse of the Chikuma River during Typhoon Hagibis in 2019. As part of the efforts to create a Community Disaster Management Plan, residents deepened their awareness of disaster risks in the area and created the "Naganuma District Evacuation Rule Book", which defines their own evacuation rules. They also took measures in advance to call for the evacuation of persons requiring special care, such as having welfare commissioners give a roll call based on a list of names. These measures allowed many people to evacuate and reaffirmed the importance of

mutual aid in protecting themselves from disasters.

Based on these survey data and lessons learned from disasters, the Cabinet Office and related ministries and agencies will support the public and local communities by continuously providing opportunities for awareness-raising and training to promote disaster mitigation through safe evacuation and other activities. It ensures that each and every citizen is equipped with "knowledge" of disaster risks and actions to be taken and empowered to "act" on that knowledge and that communities are established to "support" mutually. At the same time, the government will promote effective Community Disaster Management Plans and individual evacuation plans to ensure diverse stakeholders, such as welfare workers and school officials, can help.

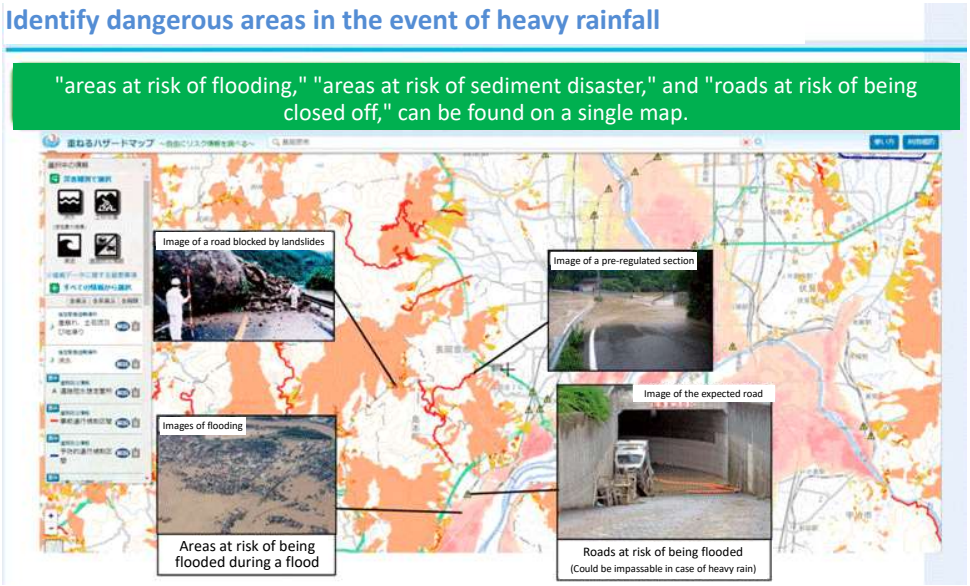
This section focuses on "Reducing Disaster Risk in Advance" through "self-help" and "mutual support" and introduces various measures to promote cooperation among diverse stakeholders.

Column: Hazard Map Portal Site

The Ministry of Land, Infrastructure, Transport and Tourism and the Geospatial Information Authority of Japan (GSI) provides information on disaster risk to residents in an easy-to-understand manner. Since April 2007, a hazard map portal has been in operation to allow residents to easily search the hazards maps prepared by municipalities nationwide for each type of disaster.

One of the contents, the 'overlaying hazard map', overlays various disaster risk information on a map to provide useful information for disaster prevention.

For example, to identify dangerous areas in the event of heavy rainfall, the map shows "areas at risk of flooding," "areas at risk of sediment disaster," and "roads at risk of being closed off," etc., all of which can be useful in planning evacuation routes.



Introduction to the Use of the "Overlaying Hazard Map"

The report by the Working Group on the Review of Evacuation from Flood and Sediment Disasters Caused by Typhoon Hagibis in 2019, Disaster Management Committee of the National Disaster Management Council, suggested that while detailed geomorphological classification information is extremely useful for indicating disaster risk, it should also be developed for small- and medium-sized rivers and elsewhere, as many areas are undeveloped. This geomorphological classification information will also be posted on the hazard map

portal site to make the site more useful for learning about local disaster risks.

Source: Hazard map portal site: https://disaportal.gsi.go.jp/

Column: Definitions of Disaster-Related Deaths

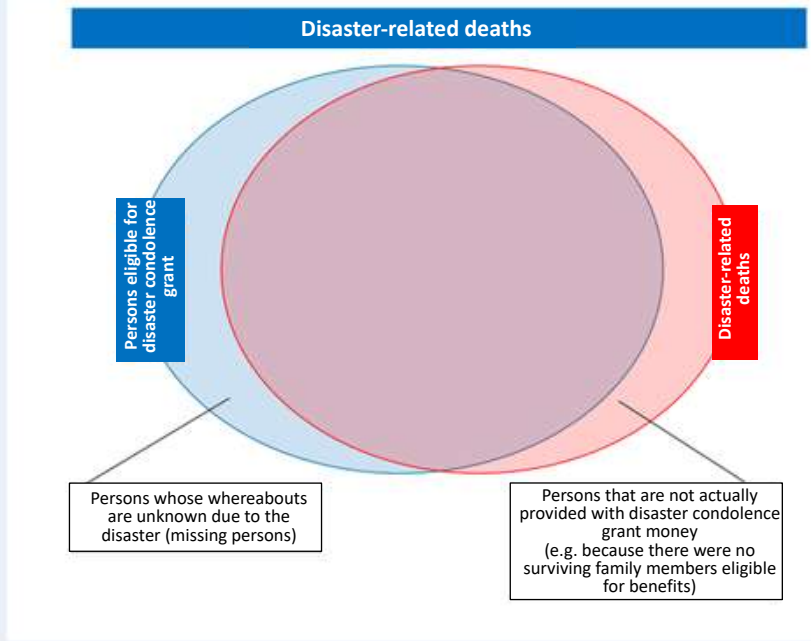
The so-called "disaster-related deaths", in which people die not as a direct or physical result of collapsing buildings and tsunamis, but as a result of injuries aggravated by disasters or illnesses caused by the physical burden of evacuation, etc., have been widely publicized in the media after major disasters (i.e. the 1995 Great Hanshin-Awaji Earthquake, the 2011 Great East Japan Earthquake, the 2016 Kumamoto Earthquake, etc.), but there was no clear definition of "disaster-related deaths" by the government.

The Fire and Disaster Management Agency has defined the term "death" as "death caused by the disaster, the body of which is found, or a person whose body cannot be found, but who is certain to have died". The Agency has also defined disaster-related deaths as "those having died due to the aggravation of injury caused by disaster or the illness caused by the physical burden of living in an evacuation shelter, etc. and those deemed to have died due to the disaster in accordance with the Act on Provision of Disaster Condolence Grant (No. 82 of 1973)". The Reconstruction Agency has defined "disaster-related deaths" in the Great East Japan Earthquake as "those who died due to the aggravation of injuries caused by the Great East Japan Earthquake and who are eligible for the provision of disaster condolence grants under the Act on Provision of Disaster Condolence Grand" and has obtained information on the number of such deaths.

The government has been working to improve the living environment in evacuation shelters to reduce the number of so-called disaster-related deaths, which are caused by living in evacuation shelters and other factors in the event of a disaster. Recognizing that the first step in reducing disaster-related deaths is to ascertain the number of such deaths, the government established a definition of disaster-related deaths in April 2019 and shared it with the related ministries and agencies, as well as disseminating it to local governments.

In the future, it plans to collect, analyze, organize, and publish past cases and judicial precedents, etc. of disaster-related deaths from the Great East Japan Earthquake, the 2016 Kumamoto Earthquake, and other disasters.

Disaster-related deaths: Those died due to the aggravation of the injury caused by the disaster or illness caused by the physical burden of living in an evacuation shelter, etc. and those deemed to have died due to the disaster in accordance with the Act on Provision of Disaster Condolence Grant (No. 82 of 1973). (This includes those for which no disaster condolence money is actually paid but excludes those whose whereabouts are unknown due to the disaster in question (missing persons)).



Source: Cabinet Office bulletin

1-2 National Council for Promoting Disaster Risk Reduction and the National Conference on Promoting Disaster Risk Reduction

The Sendai Framework for Disaster Risk Reduction (hereinafter referred to as DRR) 2015-2030 (SFDRR), adopted at the Third UN World Conference on DRR in Sendai in March 2015, prescribed that all stakeholders (including companies, academia, volunteers, community groups and media) should be encouraged to take DRR initiatives. In response, the National Council for Promoting DRR (NCPDRR) comprising leaders of 39 groups working on disaster risk management, was set up in September 2015 under the leadership of Mr. Abe, Prime Minister, who chairs the National Disaster Management Council.

The NCPDRR and other organizations have promoted activities to enhance community preparedness for large-scale disasters, built on a combination of public support by the government, self-help by each member of the public, and mutual support among communities, companies, schools, and volunteers.

(1) The 4th National Conference on Promoting Disaster Risk Reduction (2019 National Conference on Promoting Disaster Risk Reduction)

With the NCPDRR and the Council for Promoting DRR, which comprises industry organizations related to disaster reduction, the Cabinet Office held the National Conference on Promoting Risk Reduction 2019 on 19 (Sat) and 20 (Sun) October 2019 at the Sasashima-Live Area in Nagoya City, Japan, under the theme of "Preparing for Major Disasters - Learn, Connect, Strengthen - Make Disaster Preparedness More Everyday." The mission of the meeting was to present DRR activities conducted by the government, academia, private companies, NPOs and other civic organizations nationwide, to promote efforts through self-help and mutual support and cooperation with diverse stakeholders and increase awareness of the importance of DRR.

In the opening session (opening remarks and high-level dialogue), Mr. Takeda, Minister of State for Disaster Management, made an opening declaration. He stressed the importance of public support as well as self-help and mutual support in the face of major disasters, for which cooperation between various entities such as

private companies and academic societies was necessary. Following this, Mr. Omura, Governor of Aichi Prefecture and Mr. Kawamura, Mayor of Nagoya City, gave welcome speeches, stating the significance of holding a national convention to promote disaster prevention in Nagoya City to mark the 60th anniversary of the Isewan typhoon and the importance of passing on the lessons learned. In the organizer's speech, Mr. Otsuka, the chairman of the National Council for Promoting DRR (President of the Japanese Red Cross Society), spoke about the necessity of disaster prevention and disaster mitigation efforts by a wide range of generations. In the high-level dialogue that followed, Mr. Okuno, Director of the Nagoya Urban Center (Chairman of the National Land Council) and Dr. Fukuwa, Director of the Disaster Mitigation Research Center at Nagoya University, discussed the importance of working with industry, government and academia to improve disaster-prevention capabilities on "Strengthening National and Regional Preparedness for the Nankai Trough Earthquake and Earthquakes Directly Beneath the Capital".

During the event, a total of 28 sessions were held over two days. In thematic sessions organized by the Cabinet Office and other organizations, concrete measures against the Nankai Trough Earthquake and future self-help and mutual support were discussed. In the high-level session "Preparedness for the Nankai Trough Earthquake", the participants reaffirmed the need for integrated hardware and software measures to mitigate disaster and strengthened national resilience and discussed the need to protect the economy and industry, as well as local communities and residents, by working with industry, academia and government. In conclusion, Mr. Taira, State Minister of the Cabinet Office, emphasized the importance of integrating disaster prevention, information technology and science and technology to implement effective disaster mitigation policies by exploiting new technologies. This conference aimed to support areas affected by Typhoon Hagibis in 2019, soon after the disaster and called for sharing of information on disaster response and the participation of volunteers, etc. in the support of the affected areas by working with disaster volunteers and NPOs. Discussions were also held on how the government, the Disaster Volunteer Center (Social Welfare Councils) and the private sector (NPOs, companies, etc.) could collaborate to provide seamless support for recovery and reconstruction efforts. Various disaster mitigation activities were also presented through 96 exhibitions and 44 workshops to promote household stockpiling and DRR activities for children. Many events were held in the 11 outdoor exhibits, including the display of seismic and firefighting vehicles and a water discharge experience.

In the closing session, Mr. Akimoto, Vice-Chairman of the National Council for Promoting DRR (President of the Japan Firefighters Association), stated his gratitude for the participant who shared the importance of self-help and mutual support, cooperation among diverse stakeholders in disaster management. Dr. Fukuwa, Director of the Center, discussed the conference theme, "Cooperation," and noted that the conference had been a great success in demonstrating cooperation across regions and generations. To conclude, Ms. Imai, Parliamentary Vice-Minister of the Cabinet Office, thanked the participants and expressed his hope for next year's conference. This conference was attended by about 15,000 visitors and reaffirmed the importance of raising awareness of DRR across the region and building an "awareness of DRR" society to prepare for all kinds of natural disasters by combining "public support" initiatives, "self-help", in which each citizen works on their own and "mutual support", in which communities, companies, schools, volunteers, etc. help each other.

Mr. Takeda, Minister of State for Disaster Management, giving opening remarks

Organizer’s speech from Mr. Otsuka, the Chairman of the Board

The High-Level Discussions

Nagoya City "Thinking about Stockpiling at Home with Parents and Children" Workshop

Welcome speech from Mr. Akimoto, Vice-Chairman

General review by Dr. Fukuwa, Director of the Center

(2) The 5th National Council for Promoting Disaster Risk Reduction

The 5th National Council for Promoting DRR was held at the Great Hall of the Prime Minister's Office on December 12, 2019. At the beginning of the meeting, Mr. Abe, Prime Minister, expressed his gratitude to the various organizations for their disaster-prevention efforts and said, "As disasters become more frequent and intense, it is important for national and local governments to do their utmost for disaster-prevention measures. He also noted the importance of building a "disaster-prepared society" by combining "self-help", in which each citizen has to protect their own life and "mutual aid", in which local communities, businesses, schools and volunteers help each other, to raise awareness of disaster prevention community-wide and prepare for all kinds of natural disasters.

Subsequently, the Cabinet Office reported on the aforementioned National Conference on Promoting Risk Reduction 2019 and other activities, while the Social Welfare Councils and the Japan Commercial Broadcasters Association introduced efforts to raise awareness of DRR through self-help and mutual support.

The 5th National Council for Promoting DRR (Mr. Abe, Prime Minister)

1-3 Initiatives for Disaster Drills

In the event of a natural disaster, national government institutions, local governments, designated public corporations, and other institutions involved in disaster risk management must work as a unity in cooperation with local residents to respond appropriately to that disaster. Accordingly, it is vital to implement DRR initiatives before disaster occurs, such as drills involving collaboration between relevant organizations. For this reason, institutions involved in disaster risk management implement disaster risk management drill based on the Basic Act on Disaster Management, Basic Plan for DRR, and other regulations to check and confirm the emergency measures to be taken when a natural disaster occurs and to enhance residents' awareness of disasters.

In FY2019, the following drills were conducted in accordance with the 2019 Comprehensive Disaster Risk Management Drill Framework, which prescribed the basic policy on conducting disaster risk management drills and details of the government's comprehensive disaster risk management drills.

(1) Comprehensive Disaster Risk Management Drills on "Disaster Preparedness Day"

On September 1, 2019, which is Disaster Preparedness Day in Japan, a drill was conducted based on the scenario of operating government disaster headquarters. First, Mr. Abe, Prime Minister, and the Cabinet Office gathered at the Prime Minister's Office and conducted an operational drill of an Extreme Disaster Management Headquarters (a Disaster Response Headquarters set up in the event of an especially unusual and catastrophic major disaster, such as the Great East Japan Earthquake). This included videoconferences with Governor Morita of Chiba Prefecture to ascertain the extent of the damage and the support requested, as well as reports by members of the Cabinet Office about the damage and the response to the disaster. Participants worked with local governments and other bodies to confirm response guidelines that assigned the highest priority to saving human lives, dispatch a governmental investigation team, and establish an On-site Disaster Management Headquarters. Throughout this process, they sought to ensure that the systems required for implementing emergency measures in the immediate aftermath of an earthquake were in place, along with checking the procedures. In addition, part of the meeting was opened up to the media. Afterwards, Mr. Abe, Prime Minister, held a press conference and made a televised appeal to the public via NHK to request their cooperation, self-help, and mutual support in the event of a disaster and informed them of the government's initial response measures.

The same day, a joint disaster drill involving nine cities and prefectures was also held in Funabashi, Chiba Prefecture, as the main venue. Mr. Abe, Prime Minister, flew from the Prime Minister's Office to the drill site

by helicopter and observed a firefighting drill on the Funabashi-East Wharf, as well as a search and rescue drill for people having fallen into the sea and other maritime drills. The Prime Minister then participated in a training session on the operation of the Disaster Volunteer Center as a volunteer, where he observed a series of procedures from registration of volunteers to the completion of their duties. Finally, the participants observed a hands-on training session for local residents and a rescue drill in which a number of related organizations such as the fire department, police, Self-Defense Forces and NPOs participated.

Video conference to determine damage in drills to operate the government headquarters

Mr. Abe, Prime Minister, joining in a training on the operation of the Disaster Volunteer Center
(Prime Minister's Official Residence website)

(2) Government Tabletop Exercises

The government conducted a tabletop exercise for a Tokyo Inland Earthquake in August 2019 and another exercise for a Nankai Trough Earthquake in February 2020 to improve the knowledge and proficiency of officials from relevant ministries and agencies and enhance collaboration with relevant organizations. Using simulations that replicated near real life disaster situations, participants tackled practical exercises based on specific plans for emergency response activities. The drills were followed by a review of the effectiveness of emergency measures prescribed in plans and manuals.

Drills on the assumption of a Tokyo Inland Earthquake by the extreme disaster management headquarters

Drills on the assumption of a Nankai Trough Earthquake by the extreme disaster management headquarters

The government held regional drills for running on-site extreme disaster management headquarters in the event of the Nankai Trough Earthquake in collaboration with prefectures anticipated to be exposed to hazard, specifically in the Shikoku region (Kagawa Prefecture) in October 2019, Chubu region (Aichi Prefecture) in November 2019, Kyushu region (Kumamoto Prefecture) in December 2019, and Kinki region (Osaka Prefecture) in January 2020. It also held a drill for the operation of the on-site extreme disaster management headquarters in Tokyo in August 2019 based on a Tokyo Inland Earthquake scenario.

Welcome speech from Mr. Taira, Vice-Minister of the Cabinet Office, the head of the extreme disaster management headquarters of Chubu

Ms. Imai, Parliamentary Vice-Minister of Cabinet Office, directing as the head of the extreme disaster management headquarters of Kyushu

1-4 Tsunami Preparedness Initiatives

On November 5, which is the Tsunami Preparedness Day in Japan and the World Tsunami Awareness Day, the Cabinet Office, relevant ministries and agencies, local governments, and private companies, among others, conduct nationwide initiatives to raise awareness of tsunami preparedness.

(1) Tsunami Evacuation Drills

Around the Tsunami Preparedness Day (November 5) in FY2019, the national government (14 ministries and agencies), local governments (171 government bodies) and private companies (73 organizations) held earthquake and tsunami preparedness drills nationwide, in which approximately 910,000 people took part.

These included drills for residents held by the Cabinet Office in partnership with local governments in seven locations nationwide (Hiroo Town in Hokkaido, Nishinomiya City in Hyogo Prefecture, Inami Town in Wakayama Prefecture, Seiyo City in Ehime Prefecture, Kochi City in Kochi Prefecture, Shimabara City in Nagasaki Prefecture and Kagoshima City in Kagoshima Prefecture). Approximately 9,000 citizens participated; learning how to protect themselves if an earthquake were to hit the area (ShakeOut drill) and evacuate to the nearest evacuation site once tremors subsided (evacuation drill). Various other drills were also held according to regional disaster management plans in order to practice skills such as setting up a shelter, installing disaster management headquarters, preparing and serving food to evacuees and first aid.

ShakeOut drill (Inami Town, Wakayama Prefecture)

Tsunami Evacuation Drills with the participation of surrounding companies (Kagoshima City, Kagoshima Prefecture)

Evacuation drill for persons requiring special care (Shimabara City, Nagasaki Prefecture)

Opening of shelter (Nishinomiya City, Hyogo Prefecture)

(2) Public Awareness Campaigns Conducted by the Cabinet Office

(i) Public Awareness Campaign for Tsunami Preparedness

The campaign was deployed nationwide to boost public awareness of appropriate emergency evacuation in the event of a tsunami. The FY2019 campaign included displaying public awareness posters at various locations, including company and local government buildings and customer-facing cash registers at major convenience stores and supermarkets nationwide.

FY2019 public awareness poster

(ii) FY2019 Public Awareness Event on Tsunami Preparedness Day

On November 5, the Tsunami Preparedness Day, the Cabinet Office, National Council for Promoting Disaster Risk Reduction and Council for Promoting Disaster Risk Reduction jointly hold the Special Tsunami Preparedness Day Event “Tsunami × Regional Disaster Risk Management × Companies” to promote awareness of tsunami preparedness, in which companies, administrative bodies, and voluntary disaster risk management organizations participated.

The event featured seminars on the "Introduction of Areas that Support Development of Community Disaster

Management Plans" and "Tsunami Preparedness through Collaboration between Local Communities and Private Sector", as well as a corporate exhibition to promote tsunami preparedness efforts.

In his opening remarks, Mr. Takeda, Minister of State for Disaster Management, stated that the Cabinet Office has been working on Community Disaster Management Plans to reduce the risk of tsunami in the region. He stressed the importance of supporting local tsunami preparedness, the contribution of the private sector and academia's superior disaster-prevention technology to tsunami preparedness and the importance of industry-government-academia collaboration to explore more effective tsunami countermeasures.

Dr. Fumihiko Imamura, Director of the International Research Institute of Disaster Science, Tohoku University, gave a keynote speech on "Tsunami Disaster Risk and Self-help and Mutual Support in Japan". In his speech, he emphasized how tsunami disasters are low-frequency catastrophes with involving numerous fatalities; conversely, there is scope to reduce the loss of human life to zero provided lessons of mutual support are applied and appropriate evacuation actions taken. He also stressed the importance of passing on the experience of disaster to the next generation as a lesson to be learned and the need of support and cooperation for this purpose.

Concerning areas like the development of Community Disaster Management Plans, the participants actively discussed problems faced by merged municipalities and the challenges of tsunami evacuation in areas visited by many foreign tourists.

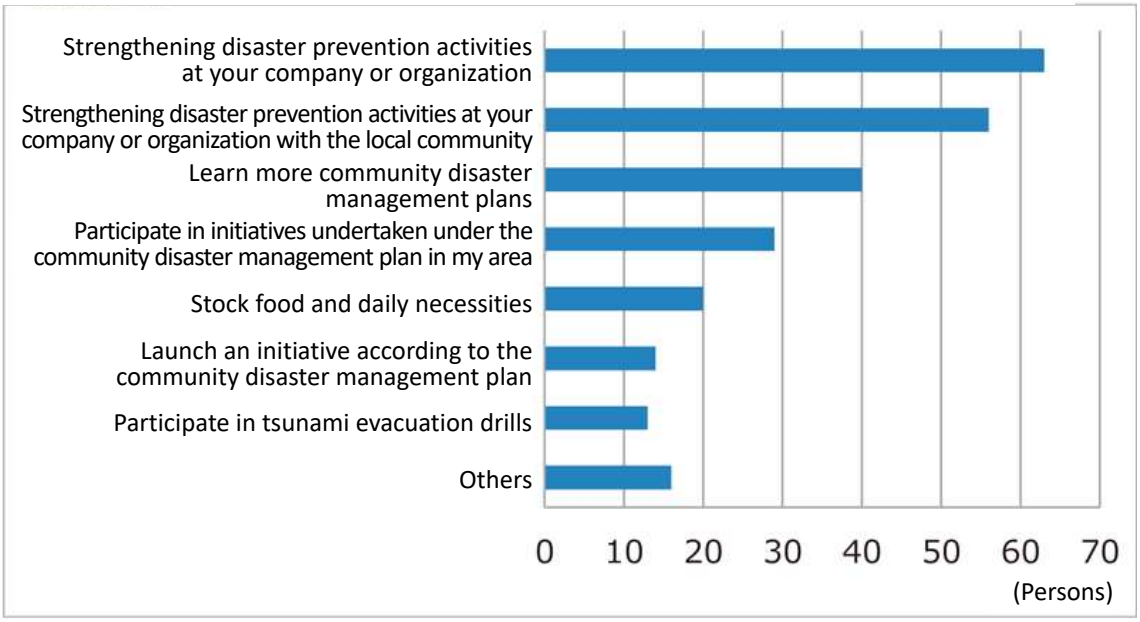
Opening remarks by Mr. Takeda, Minister of State for Disaster Management

Special Tsunami Preparedness Day Event

According to a survey of the event participants (143 valid responses), the following were identified as

"Activities I would like to do in future based on the event" (multiple responses): "Strengthen DRR activities at my company" (63), "Enhance disaster-prevention activities at my company and other institutions" (56). These indicate a high level of interest in DRR activities among participants, including those from companies.

Q. What action would you like to take based on what you learned through this event? (Multiple answers allowed)



Source: Cabinet Office

1-5 Citizen-led Initiatives (Promoting Community Disaster Management Plans)

The community disaster management planning system was established following the amendment of the Basic Act on Disaster Management in 2014 with an aim to enhance regional disaster resilience through the promotion of self-help and mutual support initiatives based on cooperation among residents (including companies operating in the area). This system allows community residents (including business operators with offices there) to draft a community disaster risk management plan and present it in the municipal council for disaster management to be reflected in the municipal disaster risk management plan.

As of April 1, 2019, 3,028 districts have undertaken activities to formulate disaster reduction plans, and another 827 districts have formulated a community disaster risk management plan to be included in the municipal disaster risk management plan. Six years after the establishment of the system, formulating a Community Disaster Management Plan is becoming more and more common.

(1) Significance of a Community Disaster Management Plan

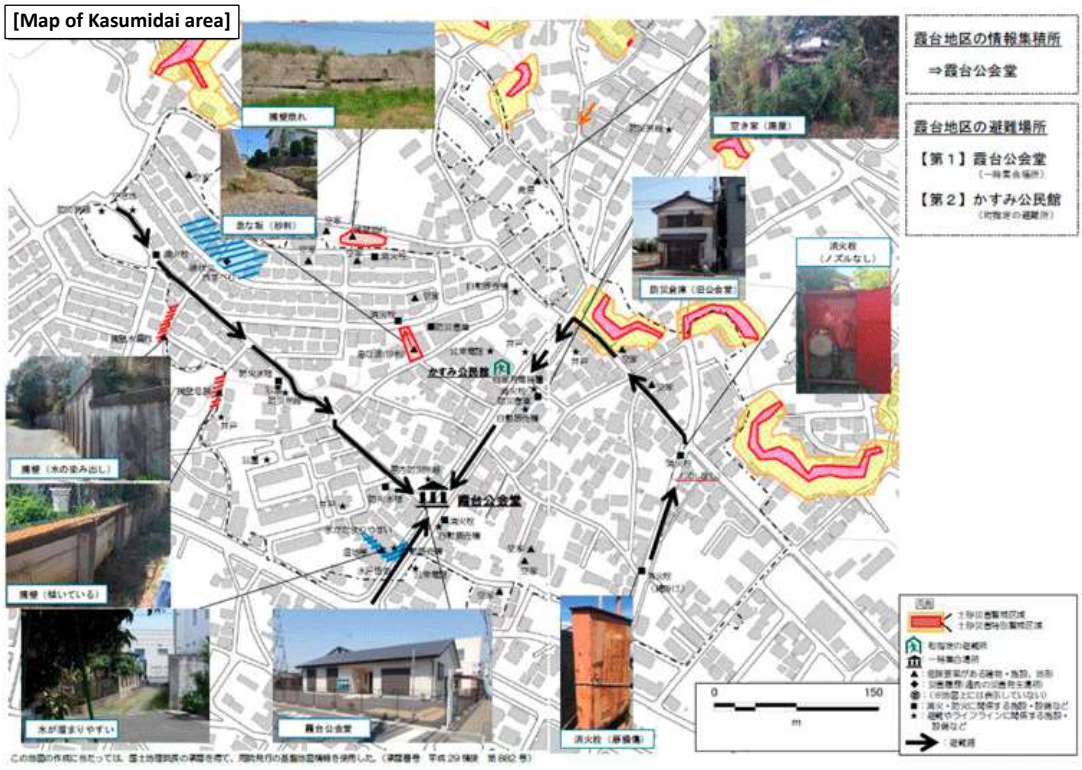
A Community Disaster Management Plan is a tool for local residents to build a safe neighborhood based on the spirit of self-help and mutual support and in accordance with local disaster risks and population characteristics. The mutual support efforts set out in the plan also ensure that we and our parents can live in peace in old age through our own efforts. Proactive planning and implementation by adults in the community will not only enhance community safety but also serve as a disaster education tool for the next generation to protect the community.

(2) Trends of Community Disaster Management Plans

The Cabinet Office analyzed cases of 579 districts (23 municipalities) that have been reflected in community disaster management plans during FY 2018. It was found that they have the following common characteristics.

(i) Activities for preparing a community disaster risk management plan were started at the initiative of the local (municipal) government in 96% of the communities. It is important to ensure the government-initiated activities for developing Community Disaster Management Plans, in order to encourage residents to engage in such activities, keeping in mind that a community disaster management plan should be prepared at the initiative of the residents in principle.

(ii) Some residents investigated disaster risks, hazard areas, and social characteristics of the area (such as the ratio of older people and daytime and night-time populations) in their communities. For example, residents examined past disasters in the area (e.g. Nishi District, Atsubetsu, Sapporo City), checked hazard areas by laying a disaster map provided by the government over a detailed map of the area (e.g. Kasumidai District, Ami Town, Ibaraki Prefecture; Nara District, Kumagaya City, Saitama Prefecture), mapped hazard spots and issues identified in field studies (e.g. Shimoji District, Kochi City, Kochi Prefecture), and analyzed the constitution, history, natural and social environment of the community (e.g. Miharudai District, Mishima City, Shizuoka Prefecture).



Map of hazardous areas created by the neighborhood association

Source: Kasumidai Area Disaster Management Plan (Ami Town, Ibaraki Prefecture)

(iii) Most of the districts include long-term plans such as targets and schedules for activities, disaster drills, organization and systems and key aspects for saving lives such as persons requiring special care and evacuation. (Figure 1-5-1).

Fig. 1-5-1 Examples of items included in a disaster management plan

Items in the plan	Number of responding districts	Items in the plan	Number of responding districts
Objectives	566	Organization / Structure	573
Schedule of activities	540	Persons needing special care	562
Disaster risk management drills	577	Evacuation	573
Material Stockpile	566	Shelters	544

n=579（Multiple answers allowed）

Source: Case study analysis of the Cabinet Office survey (disaster management plan that led to the revision of the regional disaster management plan), as of April 2019

(4) Many community disaster risk management plans define neighborhood and community associations, voluntary disaster management organizations as preparation bodies of the plan. Although only a few are involved, it emerged that school districts and community development councils have also been involved in this process. It is expected that the types of preparation bodies involved in making the plans will diversify depending on the social characteristics of the region (Figure 1-5-2).

Fig. 1-5-2 Preparation bodies of the disaster management plan

Preparation bodies	Number of districts
Neighborhood and community associations, voluntary disaster management organizations	556
School districts	9
Former village district	6
Community development councils	3
Joint neighborhood associations	4
Buildings	1
Total	579

Source: Case study analysis of the Cabinet Office survey (disaster management plan that led to the revision of the regional disaster management plan), as of April 2019

(2) Initiatives by the Cabinet Office

(1) Preparation and publication of the Guidelines for Drafting Community Disaster Management Plans

To promote the preparation of community disaster management plans, it is important for municipalities to reach out to their districts. Guidelines for Drafting Community Disaster Management Plans have been prepared and published to support the preparation of the plan and facilitate the efforts of municipal officials in developing and promoting the same. It is important that community disaster management plans first focus on the key aspects of life-saving evacuation, to reaffirm their role as an important tool for defining mutual aid evacuation methods. This guidebook clearly shows that a community disaster management plan can be created

with only a single evacuation component.

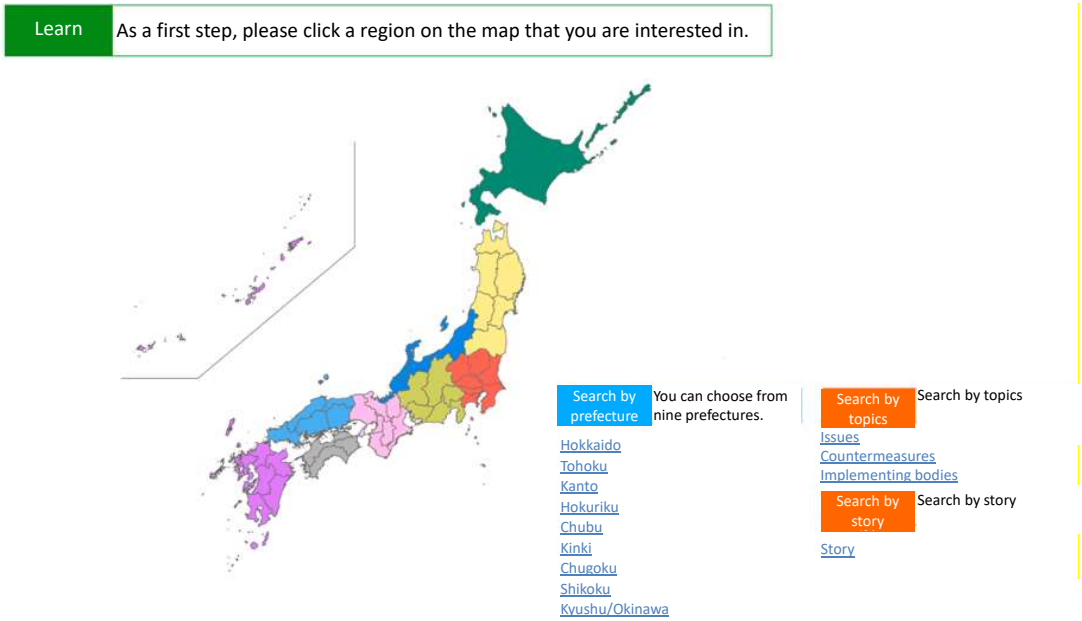
(2) Supporting the activities of Chikubo'z, a network of local communities working on community disaster management plans

Chikubo'z is a network of local communities working on community disaster management plans and a platform for local government officials to exchange information on issues related to disaster management plans and share their experiences on a daily basis. As of the end of March 2020, this network had 326 local government officials involved in supporting preparation for Community Disaster Management Plans and workshops were held occasionally.

Mr. YAMAMOTO, Minister of State for Disaster Management (then) and the Chikubo'z meeting participants (members of the Chikubo'z)

(3) Establishment of the Community Disaster Risk Management Plan Library

A library is available on the Cabinet Office's website to categorize the community disaster management plans defined in the municipal disaster risk management plan according to the contents (target issues, countermeasures and bodies involved) and support the preparation of the plans by the planning body.



Source: Cabinet Office website
(Reference: http://www.bousai.go.jp/kyoiku/chikubousai/chikubo/chikubo/index.html)

1-6 Development of an Enabling Environment for Volunteer Activities

Volunteer activities in affected areas have played an increasingly vital role. Individual volunteers, NPOs, and other organizations that gathered in the affected areas have provided support for affected people in the fields that are difficult for public support to reach. The Cabinet Office has strived to make an environment that facilitates volunteers' support for the affected people. In the event of a major disaster, it has become more common for the government, NPOs and volunteers to collaborate with each other, share information and complement each other's activities to support the victims.

For the Faxai and Hagibis typhoons in 2019, they held regular information-sharing meetings to coordinate operation areas and support activities for the affected people in the affected areas, including Miyagi, Fukushima, Ibaraki, Tochigi, Saitama, Chiba, Tokyo, Nagano and Shizuoka Prefectures. Aiming at sharing information and issues on a wide scale and finding effective solutions, the Cabinet Office, the Japan National Council of Social Welfare, the Central Community Chest of Japan, the Japan Voluntary Organizations Active in Disaster (JVOAD) and other organizations involved in disaster relief held "regular information-sharing meetings" to coordinate and supplement relief activities and to call for volunteer participation.

In order to prepare for major disasters, which are predicted to occur in the future, it is important for each region to have established a collaborative network among the government, volunteers, and NPOs before a disaster occurs. The Cabinet Office and JVOAD signed a "Tripartite Collaboration between Government, NPOs and Volunteers / Declaration of Collaboration Tie-up" in May 2019. Under the Declaration, the Cabinet Office has been cooperating with JVOAD to establish a regional cooperation system before the disaster and hold regular information-sharing meetings in the event of a disaster. The Cabinet Office also co-sponsored the JVOAD Forum held by JVOAD in May 2019, in which Mr. Yamamoto, then Minister of State for Disaster Management, was a participant. He called on volunteers, including community officials and those involved in NPOs, to further promote cooperation.

Welcome speech from Mr. Yamamoto, then Minister of State for Disaster Management, at JVOAD Forum

Signing of the Tie-up Declaration

Recent Trends Concerning DRR Volunteer Activities

<Major disasters and volunteer activities> (Year)	(Disaster)	(Total number of volunteers)	<Trends concerning volunteerism>	<Measures taken by the government>
1995	**The Great Hanshin-Awaji Earthquake**	**Approx. 1,377,000**	☆Volunteerism for affected people support became more active (beginning year of volunteerism). ★The situation became chaotic as many volunteers rushed to disaster affected areas.	■Amendment of the Basic Act on Disaster Management (1995) Stipulated that the government would strive to establish an environment for disaster volunteerism
1997	The marine accident involving the M.V. Nakhodka	Approx. 270,000		
2004	The Typhoon Tokage (0423)	Approx. 56,000	☆It became common that Councils of Social Welfare establish and manage disaster volunteer centers (VCs).	■Investigative Committee on Volunteer Activities Launched by the Cabinet Office in 2004
2004	**The Mid Niigata Prefecture Earthquake**	**Approx. 95,000**		
2007	Noto Hanto Earthquake	Approx. 15,000		
2007	Chuetsu-oki Earthquake	Approx. 15,000		
2009	The Typhoon Etau (0909)	Approx. 22,000	☆Volunteer activities by NPOs, NGOs, companies, etc. (approx. 4 million volunteers worked outside the management of disaster VCs) ☆Various needs were fulfilled by expert volunteers. ★Building a network became a challenge.	■Amendment of the Basic Act on Disaster Management (2013) Stipulated that the government would strive for effective collaboration with volunteers The Basic Plan for DRR was also revised.
2011	**The Great East Japan Earthquake**	**Approx. 1,500,000**		
2014	Hiroshima Torrential Rain	Approx. 43,000		
2015	Torrential Rain in the Kanto and Tohoku Regions	Approx. 47,000	★The need for **intermediaries** to coordinate NPO volunteer activities was noted.	
2016	**The Kumamoto Earthquake**	**Approx. 118,000**	☆**Information sharing meetings** were held under **tripartite collaboration** among the government, NPOs, and volunteers (Hinokuni Meeting)	■Guidebook for tripartite collaboration (April 2018) ■Revision of the Basic Plan for DRR (2018) Stipulated that the government would strive to establish a collaborative network incorporating intermediaries ■Revision of the Basic Plan for DRR (2019) Clearly stating to "promote the development of information sharing meetings ■Declaration of Collaboration Tie-up with JVOAD (2019)
2017	**Northern Kyushu Heavy Rain**	**Approx. 60,000**	☆The JVOAD was established as an intermediary.	
2018	**Heavy Rain Event of July 2018**	**Approx. 263,000**	☆Information meetings were held in the affected areas.	
2018	Hokkaido Eastern Iburi Earthquake	Approx. 11,000	☆Information meetings were held on prefectural and national levels.	
2019	Heavy Rain Event of August 2019 related to the rain front	Approx. 11,000	☆Progress in the establishment of the tripartite collaborative network system before disasters	
2019	The Typhoon Faxai (1915)	Approx. 23,000		
2019	The Typhoon Hagibis (1919)	Approx. 185,000		

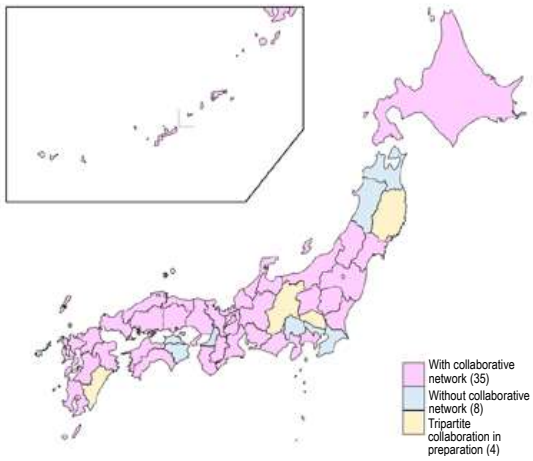
Source: Formulated by the Cabinet Office based on materials provided by the Ministry of Health, Labour and Welfare, and documents and reports by the Japan National Council of Social Welfare

(1) Promotion of Cooperation Between the Government, NPOs, and Volunteers

The Cabinet Office held a Study Group on Developing an Environment for DRR Volunteer Activities in 2017. The study group issued in April 2018 the Guidebook for the Government in Collaboration and Coordination with NPOs and Volunteers, which mainly covered tasks assigned to administrative officers before and after a disaster, with a view to promoting collaboration and coordination with NPOs and volunteers.

(Reference: http://www.bousai.go.jp/kaigirep/kentokai/bousai_volunteer_kankyoseibi/index.html)

According to a survey conducted by the Cabinet Office, as of April 1, 2019, 35 prefectures responded that they had a framework to prepare for a disaster through discussions among government, NPOs and volunteers before the disaster. There is an urgent need to clarify the role of supporters in the event of a disaster by establishing and strengthening the cooperation framework at the prefectural level. It is equally important to establish cooperation between municipalities and promote coordination over a wide area beyond prefectures in preparation for a major disaster such as the Nankai Trough Earthquake.



* Regarding presence/absence of a collaborative network, the Cabinet Office determines whether the local governments, social welfare councils, and various entities such as NPOs are members of the network. (As of April 1, 2019)

Prefecture	Name of collaborative networks
Hokkaido	Disaster Volunteer Network
Miyagi	Miyagi Disaster Relief Volunteer Center Support Network Association
Yamagata	Yamagata Disaster Relief Volunteers Network Association
Fukushima	Fukushima Disaster Relief Volunteer Network
Ibaraki	Ibaraki Disaster Volunteer Network
Tochigi	Disaster Volunteer Network
Gunma	Gunma Disaster Relief Volunteer Network Association
Kanagawa	Kanagawa Disaster Relief Volunteer Support Center
Niigata	Niigata Disaster Relief Volunteer Coordination Council
Toyama	Toyama Disaster Relief Volunteer Association
Ishikawa	Ishikawa Disaster Relief Volunteer Association
Fukui	Fukui Disaster Relief Volunteer Center Association
Gifu	Gifu Disaster Relief Volunteer Coordination Meeting
Shizuoka	Disaster Relief Volunteer Network Committee for the Nankai Trough Earthquake
Aichi	Aichi Volunteer Association for Disaster Prevention
Mie	Mie Disaster Relief Volunteer Support Center
Shiga	Shiga Disaster Relief Volunteer Center Management Council
Kyoto	Kyoto Disaster Support Agreement Network for Coordinating Disaster Volunteers
Hyogo	Liaison Conference of Organizations Related to Support for Disaster Relief Volunteer Activities
Nara	Nara Disaster Relief Platform Association
Wakayama	Wakayama Disaster Relief Volunteer Center
Tottori	Liaison Association of Related Organizations for Disaster Relief Volunteers
Shimane	Shimane Liaison Association of Related Organizations for Disaster Relief Volunteers
Okayama	Disaster Support Network Okayama
Hiroshima	Hiroshima Volunteer Network for Disaster Survivors
Yamaguchi	Yamaguchi Disaster Relief Volunteer Activities Support Network
Kochi	Kochi Disaster Relief Volunteer Support Headquarters
Ehime	Ehime Information Support Meeting for Heavy Rain Disaster
Fukuoka	Fukuoka Disaster Relief Volunteer Association
Saga	Saga Disaster Relief Volunteer Network
Nagasaki	Nagasaki Disaster Relief Volunteer Association
Kumamoto	Kumamoto Disaster Relief Volunteer Center Association
Oita	Oita Disaster Relief Volunteer Network
Kagoshima	Welfare and Disaster Relief Volunteer Network
Okinawa	Liaison Association of Related Organizations for the Operation of the Disaster Volunteer Center

Source: Cabinet Office

In view of these issues, in January 2020, a "Gathering of Disaster Prevention and Volunteer Activities" was held in Kobe City, Hyogo Prefecture, to mark the 25th anniversary of the Great Hanshin-Awaji Earthquake. Looking back on the environment surrounding volunteers since the Great Hanshin-Awaji Earthquake, known as the beginning year of volunteerism, those involved in the volunteer sector gathered to engage in lively discussion about the challenges ahead.

Gathering of Disaster Prevention and Volunteer Activities
Welcome speech from Ms. Imai, Parliamentary Vice-Minister of Cabinet Office

Conference venue

(2) Seminars and Drills in Collaboration With Government, NPOs and Volunteers

In order to ensure smooth collaboration and coordination among the government, NPOs, and volunteers in the event of a disaster, it is important to promote mutual interaction and understanding before the disaster through seminars and drills. The Cabinet Office holds seminars and drills using the above guidebook to help governments, Social Welfare Councils, and other volunteer center staff, and NPOs meet face-to-face to discuss various issues in collaboration and to gain deeper mutual understanding.

In 2019, the government held Seminars for Collaboration and Coordination among the Government, NPOs, and Volunteers in the Event of a Disaster in six prefectures (Nara, Ehime, Shiga, Kanagawa, Saga, and Iwate Prefectures). Each seminar had approximately 100 participants from the government, Councils of Social Welfare, and NPOs. The seminars revealed the importance of building a face-to-face relationship among the government, volunteers, and NPOs from before a disaster in order to ensure that they can smoothly work in coordination to support affected people in the event of a disaster. There was also a workshop aimed at building a collaborative network with various support entities, which helped participants gain clearer understanding on such collaboration.

Seminars for Collaboration and Coordination among the Government, NPOs, and Volunteers in the Event of a Disaster

Also, drills were conducted in Shizuoka Prefecture in December 2019. Given concern over the damage caused by the Nankai Trough Earthquake, Shizuoka Prefecture established a Disaster Volunteer Network Committee for Preparing for the Nankai Trough Earthquake in 1995, which involved collaboration among the government, NPOs and volunteers. The drill drew about 200 participants from the government, Social Welfare Councils and NPOs to review the activities of the tripartite collaboration in recent disasters and share information promptly after a disaster. To set up regular information-sharing meetings, mock events were held.

Collaborative drills between government and volunteers

1-7 Development of Business Continuity Systems

(1) Development of Business Continuity Systems by National Government's Ministries and Agencies

The national government's ministries and agencies have reviewed their business continuity plans (BCPs) as required according to the Business Continuity Plan of the National Government (Measures for the Tokyo Inland Earthquake) formulated by the Cabinet in March 2014. Based on the Plan, the Cabinet Office conducts annual assessment on its BCP with experts and improves effectiveness through cooperation training with each ministry and agency. The government service continuity system will be implemented in the event of a potential Metropolitan Inland Earthquake through these initiatives to smoothly continue administrative operations.

(2) Development of Business Continuity Systems by Local Governments

Local governments need to maintain their administrative function and continue to work even when a disaster occurs. Therefore, it is extremely important for them to have their own BCP in place and establish its implementation system before a disaster occurs. The BCP preparation rate of local governments had reached 100% by the end of FY2016. In terms of municipalities (including special zones), this ratio increased from the previous survey by 9 points to 90% in June 2019 (Fig. 1-7-1).

The Cabinet Office published the Business Continuity Plan Formulation Guidelines for Municipalities in May FY2015, aiming to make BCP planning easier for all municipalities, including small municipalities. In addition, the Cabinet Office amended the Business Continuity Manual for Local Governments During Earthquake Disasters to take account of past disasters, published the revised version in February 2016 under the title Business Continuity Manual for Local Governments During Major Disasters, and distributed it to local governments.

Should a major disaster occur, it will be difficult for the affected municipalities to carry out an extensive range of disaster response operations singlehandedly. Accordingly, the Cabinet Office published the Guidelines on Local Government Aid Acceptance Systems in Case of Disaster in FY2016, based on an understanding that local governments should have a BCP in place and establish a system to promptly and appropriately receive assistance from the national government, other local governments, private companies, volunteer organizations and others, and share information and making various arrangements. The Cabinet Office formulated "Guidelines on Aid-Assistance Plan for Municipalities in Relation to the Acceptance of Manpower" in April 2020. These were designed so that municipalities without full-time disaster management staff and other concerns about disaster management systems could understand how to develop aid-assistance systems and prepare plans with as little burden as possible.

Moreover, since FY2015, the Cabinet Office has held workshops (co-organized by the Cabinet Office and the Fire and Disaster Management Agency) to train relevant municipal employees in order to support the establishment of a system for business continuity in local governments.

Together with the Ministry of Internal Affairs and Communications (MIC) and the Fire and Disaster Management Agency, the Cabinet Office will continue to promote through the above initiatives the establishment of business continuity systems in local governments, which involves the formulation of BCPs, enhancement of the Six Critical Factors* in formulated BCPs, and the establishment of a structure to receive support.

Note) Six Critical Factors (Reference: Guidelines for Business Continuity of Local Governments):

(1) clearly defined leadership structure in the case of absence of the mayor, and a system to gather employees; (2) specification of an alternative building to use when the local government's main building has become unavailable; (3) procurement of electricity, water, food, etc. (which are necessary for employees to perform their duties); (4) various communication means that tend to be available even in the event of a disaster; (5) backup of important administrative data; and (6) priority duties in the event of a disaster.

Fig. 1-7-1 BCP Preparation Rate in Local Governments

The BCP preparation rate reached 100% in prefectures and 90% in municipalities as of June 1, 2019.

Source: November 2009 Survey of Business Continuity Plans Based on an Earthquake Disaster (Cabinet Office and 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 BCP Preparation Rate for Large-Scale Earthquakes and Other Natural Disasters (preliminary figures) (Fire and Disaster Management Agency Survey)

December 2015 Survey of the Preparation of Business Continuity Plans and the Formulation of Specific Criteria for the Issuance of Evacuation Advisories by Local Governments (Fire and Disaster Management Agency Survey)

April 2016, June 2017, June 2018 and June 2019 Survey Results of the Current Status of the Preparation of Business Continuity Plans by Local Governments (Fire and Disaster Management Agency Survey)

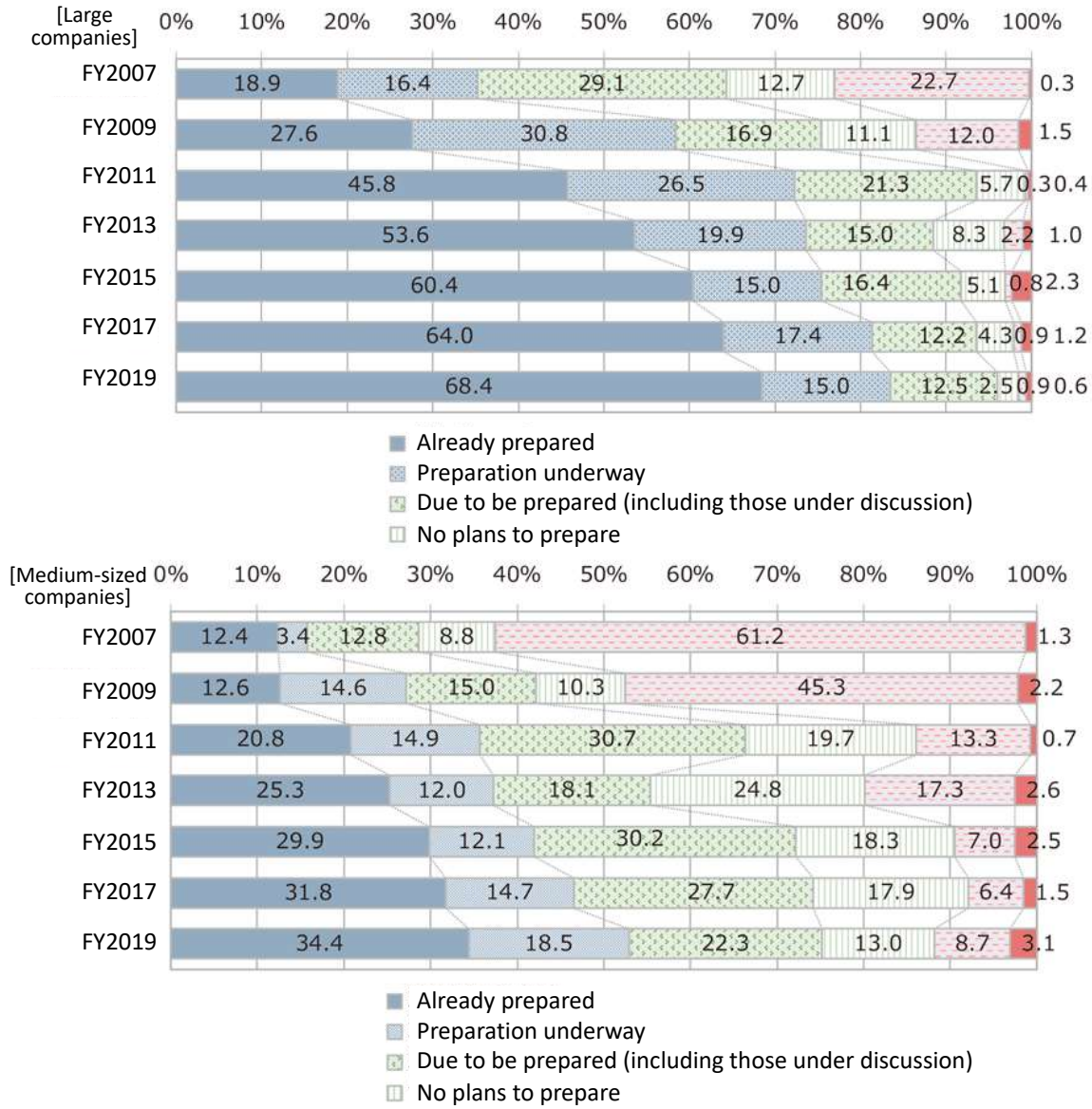
(3) Development of Business Continuity Systems by private sector companies

The Great East Japan Earthquake in 2011 clearly highlighted the importance of incorporating business continuity management (BCM) into the routine management strategy of companies. As such, in 2013, the Cabinet Office revised the guidelines to incorporate the concept of BCM and published them under the title "Business Continuity Guidelines (Third Edition) - Strategies and Responses for Surviving Critical Incidents –". While the government is working on the promotion of them currently, companies are encouraged to build a business continuity system in accordance with these Third Edition Guidelines.

In terms of specific government targets, the Annual Plan for National Resilience 2019 currently sets a goal

of ensuring that 100% (nationwide) of large companies and 50% (nationwide) of medium-sized companies have prepared BCPs by 2020. The Cabinet Office conducts a survey every second fiscal year, to ascertain what proportion of private sector companies have prepared a BCP and investigate their disaster preparedness initiatives. The results of the FY2019 Survey on Company Business Continuity and Disaster Preparedness Initiatives, which was conducted in February 2020, showed that formulation of BCPs was on the rise, with 68.4% of large companies (64.0% in the previous survey) and 34.4% of medium-sized companies (31.8% in the previous survey). When companies currently in the process of formulating a BCP are also included, these figures rise to approximately 83% and 53%, respectively (Fig. 1-7-2) (Fig. 1-7-3).

Fig. 1-7-2 **Preparation of BCPs by Large and Medium-sized Companies**



Source: Formulated by Cabinet Office (Release of the Results of the FY2019 Fact-Finding Survey on Company Business Continuity and Disaster Preparedness Initiative)

Fig. 1-7-3 Collection Rate of Questionnaires in FY2019 Company Survey

			Overall	Large companies (with capital of more than 1 billion yen and more than 50 regular employees, etc.)	Medium-sized companies (less than 1 billion yen and more than 50 regular employees, etc.)	Other companies (other than large and medium-sized companies with capital of over 100 million yen)
Overall		Number of companies	1651	554	518	579
		Proportion of companies that have formulated a BCP	**41.8**	**68.4**	**34.4**	**38.2**
Affected/not affected by the disaster	Affected	Number of companies	853	308	280	265
		Proportion of companies that have formulated a BCP	**42.0**	**65.6**	**31.1**	**40.6**
	Not affected	Number of companies	791	245	234	312
		Proportion of companies that have formulated a BCP	**41.8**	**72.0**	**38.4**	**36.4**

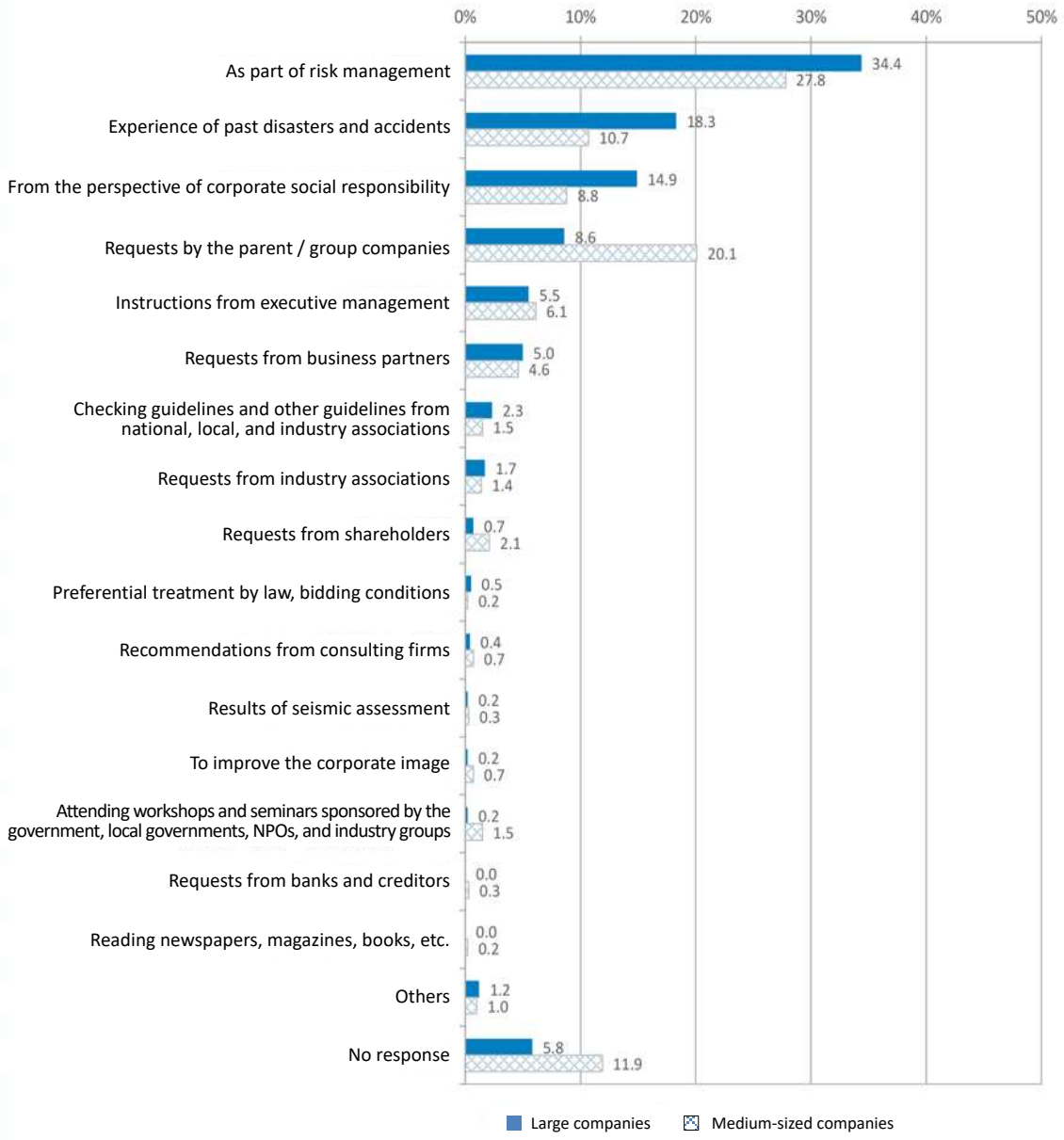
Source: Formulated by Cabinet Office (Release of the Results of the FY2019 Fact-Finding Survey on Company Business Continuity and Disaster Preparedness Initiative)

In this survey, the most common reason for starting (or planning) to formulate a BCP was "as part of risk management" (34.4% of large companies and 27.8% of medium-sized companies), rather than "past experience of a disaster or accident" (18.3% of large companies and 10.7% of medium-sized companies). (Figure 1-7-4)

The results show that 37.1% of large companies and 29.7% of medium-sized companies "review BCPs annually" and 36.0% of large companies and 36.1% of medium-sized companies "review BCPs regularly, but not annually." This means that more than 60% of medium-sized companies review it regularly. (Figure 1-7-5)

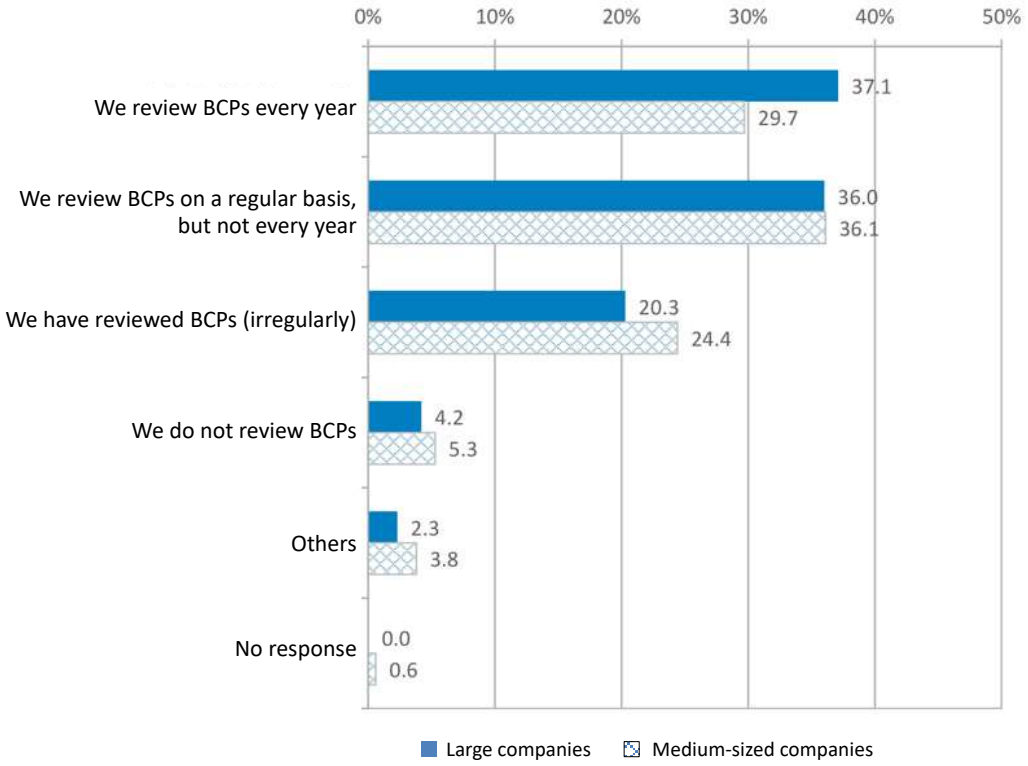
Furthermore, 204 large- and 87 medium-sized companies having already formulated a BCP and been affected by the Great East Japan Earthquake were asked whether or not their BCPs were helpful at the time of the disaster. Consequently, 62.8% of large companies and 66.7% of medium-sized companies answered that they were "very useful" and "somewhat useful," respectively; while 1.9% of large companies and 3.1% of medium-sized companies responded that the BCP was "not useful at all." This indicates that the effectiveness of the BCP is being felt. (Figure 1-7-6)

Fig. 1-7-4 **The most common reason for starting to formulate (or planning to formulate) a BCP and the status of the responses**



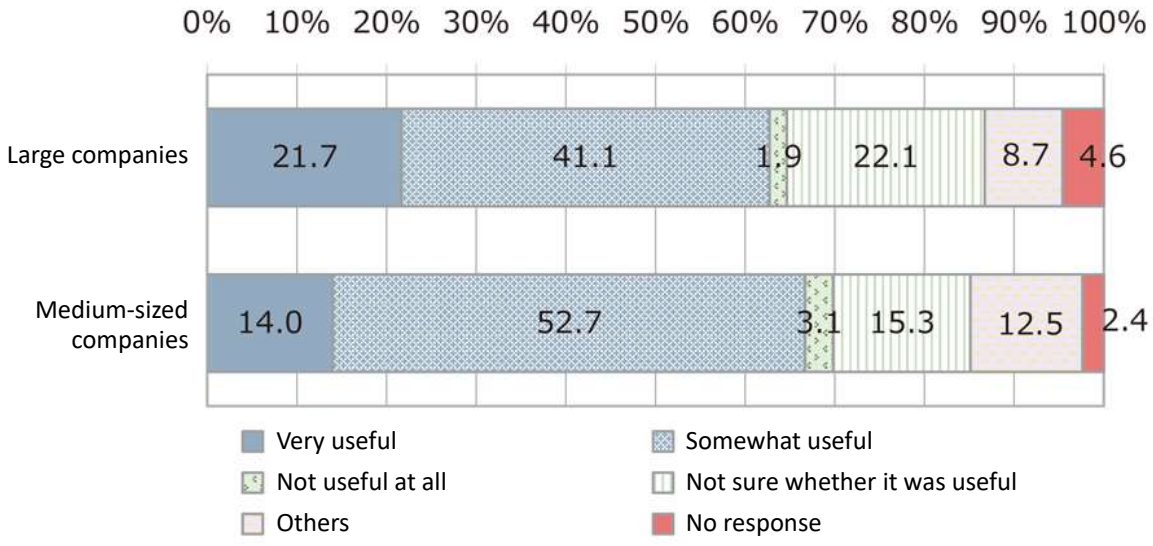
Single choice response, n: 533 Large companies, 391 Medium-sized companies
Target: Companies that have, are in the process of formulating, or plan to formulate BCPs
Source: Formulated by Cabinet Office (Release of the Results of the FY2019 Fact-Finding Survey on Company Business Continuity and Disaster Preparedness Initiative)

Fig. 1-7-5 Status of Responses to BCP Review



Single choice response, n: 384 Large companies, 177 Medium-sized companies
Target: Companies that have already formulated BCPs
Source: Formulated by Cabinet Office (Release of the Results of the FY2019 Fact-Finding Survey on Company Business Continuity and Disaster Preparedness Initiative)

Fig. 1-7-6 Responses to whether the BCP was helpful in the event of a disaster

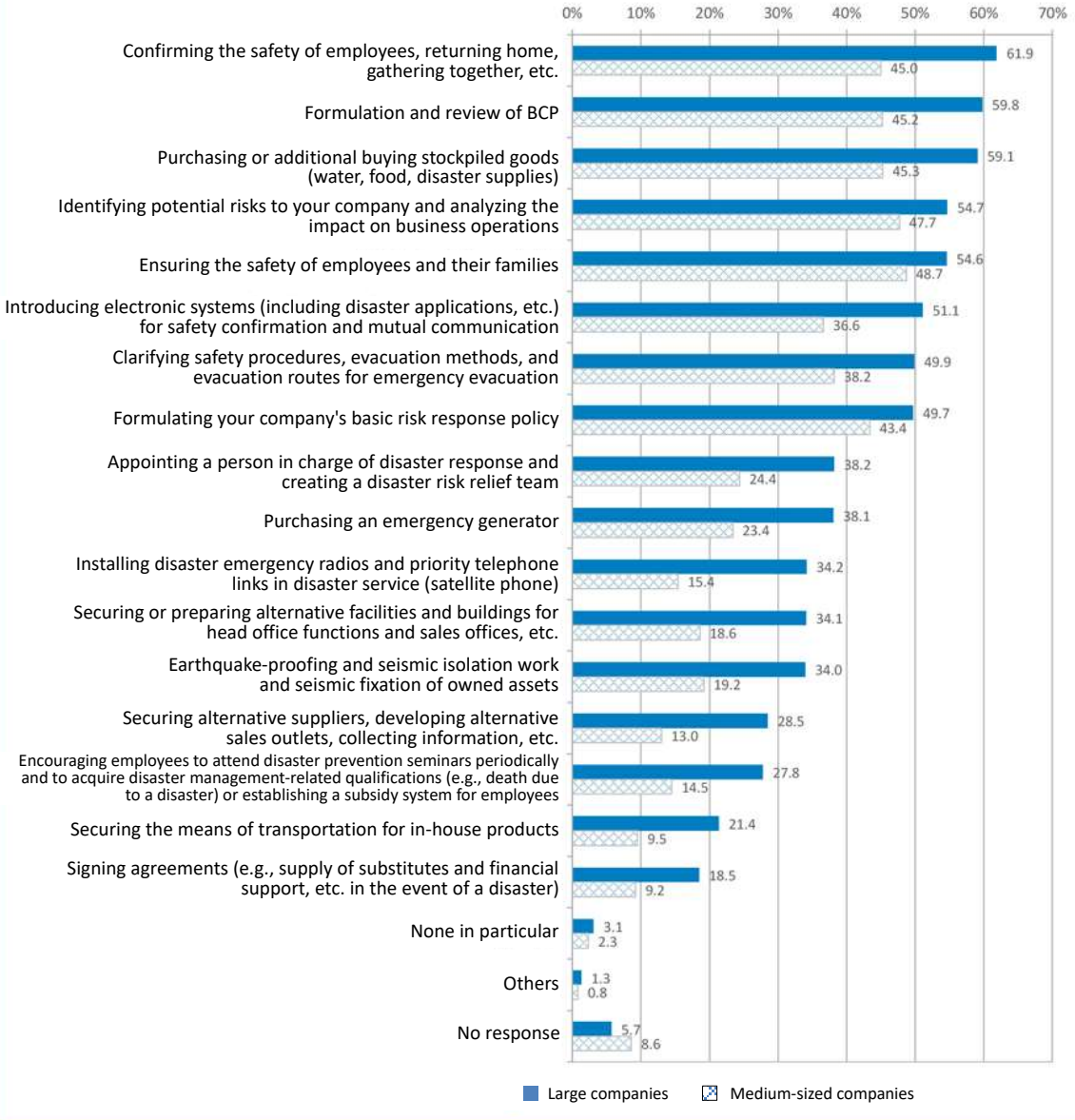


Source: Formulated by Cabinet Office (Release of the Results of the FY2019 Fact-Finding Survey on Company Business Continuity and Disaster Preparedness Initiative)

In addition, the respondents were asked about new initiatives they wanted to take in disaster response in future. Consequently, the most common response from large companies was to start or review drills (e.g. confirming the safety of employees, returning home, gathering together, etc.) (61.9%) and from medium-sized companies to ensure the safety of employees and their families (48.7%). The second most common response was "formulation and review of BCP" (59.8%) among large companies, while it was "awareness of possible risks and analysis of the impact on business" (47.7%) among medium-sized companies. The fourth most common answer (45.2%) was "formulation and review of the BCP" from among large companies. (Figure 1-7-7).

The Cabinet Office will continue to promote awareness to improve the rates of BCP development and promotion in companies, referring to the results of this survey.

Fig. 1-7-7 New initiatives for disaster response in the future (N=1,651)



Multiple choice response, n: 554 Large companies, 518 Medium-sized companies
Target: All Companies
Source: Formulated by Cabinet Office (Release of the Results of the FY2019 Fact-Finding Survey on Company Business Continuity and Disaster Preparedness Initiative)

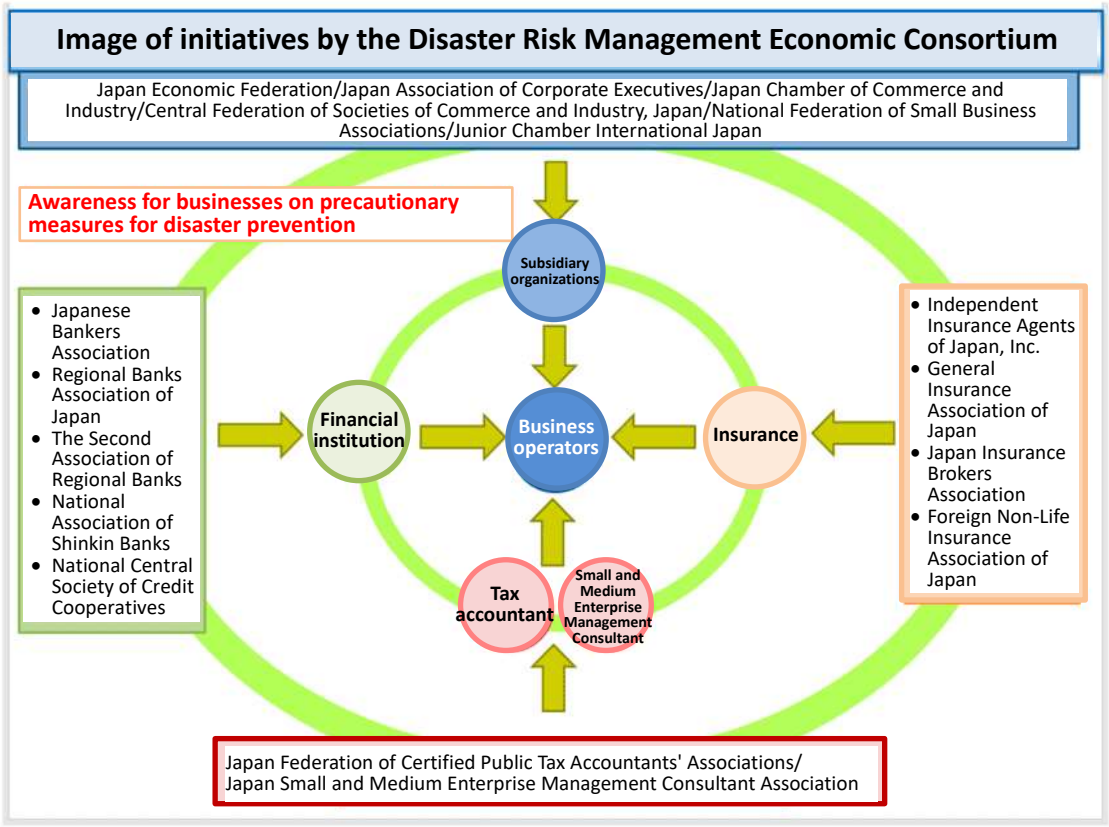
1-8 Partnerships with Private Sector

To improve the capability of disaster risk management in the entire society, private business operators must also improve their preparations for large-scale natural disasters. In this context, the Disaster Risk Management Economic Consortium was launched on March 23, 2018 to provide a venue for exchanging opinions and communicating with each other (Fig. 1-8-1).

The Cabinet Office promotes such private initiatives by sharing information under the framework of public-private collaboration. In FY2019, the Cabinet Office published a simulation of flood damage (losses estimation tool) on its website for corporate use.

(Reference: http://www.bousai.go.jp/kyoiku/consortium/index.html)

Fig. 1-8-1 Disaster Risk Management Economic Consortium



Source: Cabinet Office

The Disaster Risk Management Economic Consortium issued the Principles of Disaster Risk Management Economic Action as the common concept of business operators on preparations for disasters (Figure 1-8-2).

In FY2019 the members of the 17 economic groups carried out awareness-raising activities to ensure that the Principles are known and understood by their subordinate groups. Also, two secretariat meetings were held for information sharing and interaction among the consortium members, information provision on disaster prevention from various government organizations, and presentations by experts.

Fig. 1-8-2 Principles of Disaster Risk Management Economic Action

Principles of Disaster Risk Management Economic Action

March 23, 2018
Disaster Management Economic Consortium

[Preface]

Since Japan is prone to natural disasters, it is important for business operators to make decisions aware that disaster risk management is what underpins business management. For large scale disasters in particular, it is critical for business operators to make preparations as described in (1) to (4) below based on self-help and mutual support approaches because of the limitations of public support.

(1) Business operators adequately recognize and determine disaster risks on their own.
(2) Business operators take measures against disasters using effective disaster risk management by combining risk control (seismic retrofitting, BCP measures, etc.) and risk finance (purchase of insurance, loans, cash holding, etc.) depending on the recognized disaster risks.
(3) Business operators raise awareness among their executives and employees on disaster management through disaster management education to make proactive activities possible.
(4) Business operators ensure collaboration and communication with their business partners essential for their business management such as financial institutions, employers' associations and other related organizations, and take self-help and mutual support-based disaster management measures.

The Principles of Disaster Risk Management Economic Action must be respected in the activities of consortium members to boost disaster risk management capability across society by making self-help and mutual support-based preparations.

[Principles of Disaster Risk Management Economic Action]

1. The members of the Disaster Risk Management Economic Consortium must strive to achieve the preparations (1) to (4) as described in the Preface.
2. The members of the Disaster Risk Management Economic Consortium must strive to the improve disaster risk management capability across the entire society by sharing as much insight as possible and distributing information to business operators.
3. The members of the Disaster Risk Management Economic Consortium must strive to promote public awareness and education to improve the disaster risk management capability of business operators by employing ingenuity, according to the characteristics of the industries to which the members belong.

End.

Source: Cabinet Office website
(Reference: http://www.bousai.go.jp/kyoiku/consortium/index.html)

1-9 Initiatives by Academic Communities

A wide range of research is being conducted in Japan on the subject of disaster risk management, including hazards such as earthquakes, tsunamis, volcanoes, and meteorological phenomena; civil engineering; buildings; seismic proof structures; emergency medical care; environmental health and other medical care and hygiene issues; geography; history and other aspects of human life; information; and energy. The Great East Japan Earthquake led to an awareness that disaster risk management and mitigation research from a comprehensive

perspective that integrated all these fields is essential, giving rise to a need for interdisciplinary collaboration through information sharing and interaction with other fields across the boundaries of different specialisms. Accordingly, following discussions with the Science Council of Japan and various other relevant academic societies, the Japan Academic Network for Disaster Reduction (JANDR) was established to serve as a network of academic societies involved in disaster risk management, mitigation, and reconstruction. The network comprised 47 academic societies among its membership at the time of its launch in January 2016, but this figure had grown to 57 by the end of March 2020.

With an aim to strengthen pre-disaster and emergency collaboration between academia and the government, the JANDR held the first Liaison Conference on Disaster Risk Management among the Science Council of Japan, Academic Societies, and Government Ministries and Agencies in June, 2018, which was participated by 56 member academic societies, the JANDR, Science Council of Japan (SCJ), and the representatives of ministries and agencies engaged in DRR. In the 2nd Liaison Conference in June 2019, cooperation to facilitate medical and nursing activities after disaster was discussed. In December 2019, an Emergency Briefing Session on the East Japan Typhoon No. 19 was held and the results of the investigation on Typhoon Hagibis (1919) in 2019 were shared among the societies.

Second Liaison Conference on Disaster Risk Management among the Science Council of Japan, Academic Societies, and Government Ministries and Agencies

1-10 Initiatives from the Perspective of Gender Equality

In the Fourth Basic Plan for Gender Equality (approved by the Cabinet on December 25, 2015) and the Basic Plan for DRR (approved by the National Disaster Management Council on February 16, 2016), the Cabinet Office has specified that the different needs of men and women should be taken into consideration in all aspects of disaster risk management including prevention, emergency response, and recovery and reconstruction. Moreover, these plans call for promoting women's participation in decision-making process in disaster planning

and reconstruction. (Figs. 1-10-1 to 1-10-3).

Various problems emerged in the Great East Japan Earthquake due to insufficient consideration of stockpiling and provision of supplies and the shelter operation. Among the issues raised were the lack of specific supplies for women and a failure to provide breastfeeding or changing places. From these circumstances, the Cabinet Office consolidated “Guidelines for disaster planning, response and reconstruction for a gender-equal perspective” based on past experiences in responding to disasters, such as the Great East Japan Earthquake. Serving as a basic set of guidelines for local governments in their efforts to take necessary measures and responses from the perspective of gender equality, these are shared with local governments and related agencies and organizations.

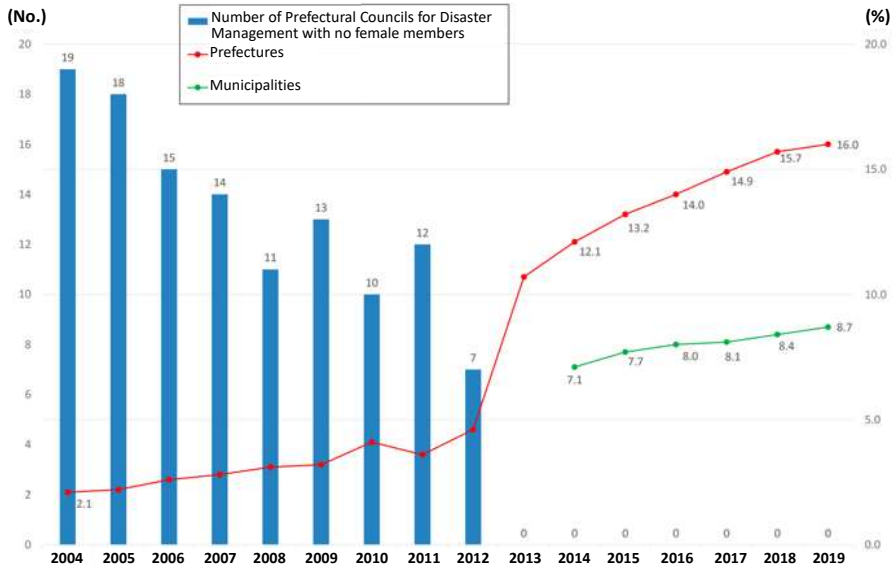
In accordance with these guidelines, the Cabinet Office has been encouraged local governments to increase the proportion of female members in local disaster management councils in normal times, to reflect the perspective of gender equality in the preparation and revision of local disaster management plans, and to take measures such as shelter operation from the perspective of gender equality in the event of a large-scale disaster. The use of the guidelines was again notified prior to the approach of Typhoon Hagibis (1919) in 2019.

In October 2019, a study group comprising experts (Study Group on Disaster Prevention and Recovery Efforts from a Gender-Equal Perspective) was held to revise the guidelines to reflect lessons learned, challenges and initiatives from the perspective of gender equality, focusing on disasters that have occurred since the guidelines were created.

In the study, interviews were held with a total of 47 organizations nationwide regarding their recovery efforts after the Great East Japan Earthquake, their disaster responses to major disasters from the Kumamoto Earthquake in 2008 to Faxai and Hagibis Typhoons in 2019, and their measures to prepare for future large-scale disasters.

Based on the results of the interviews, the study group released a summary of the discussion in March 2020, consisting of recommendations and a new draft guideline as an annex.

Fig. 1-10-1 Female Member in Local Disaster Management Councils



Note: Following its revision in June 2012, the Basic Act on Disaster Management specified that members of voluntary disaster management organizations and/or individuals with a relevant academic background should be added to the membership of the Local Disaster Management Council in addition to the staff of disaster management organizations who are already ex officio members, to reflect the views of a more diverse range of bodies in preparing the Local Plans for DRR and similar.

Notes: 1. Figures for April 1 each year, in principle.

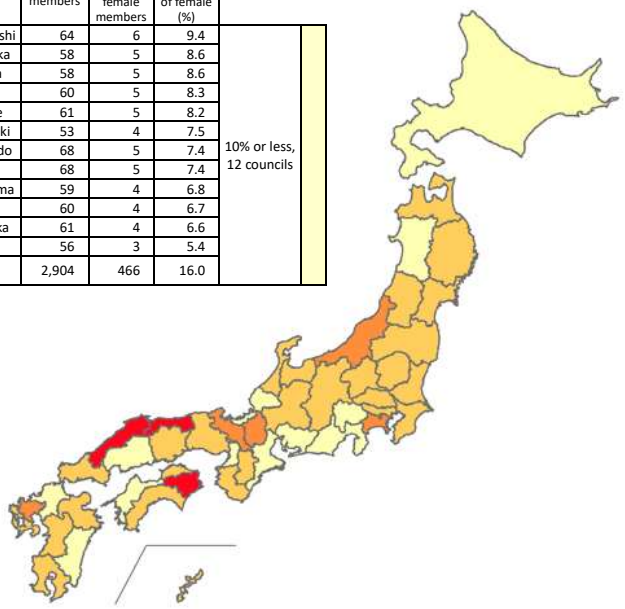
2. Due to the impact of the Great East Japan Earthquake, figures for 2011 do not include parts of Iwate Prefecture (Hanamaki City, Rikuzentakata City, Kamaishi City, Otsuchi Town), Miyagi Prefecture (Onagawa Town, Minamisanriku Town) and Fukushima Prefecture (Minamisoma City, Shimogo Town, Hirono Town, Naraha Town, Tomioka Town, Okuma Town, Futaba Town, Namie Town, Iitate Village), while figures for 2012 do not include parts of Fukushima Prefecture (Kawauchi Village, Katsurao Village and Iitate Village).

Source: Compiled from Cabinet Office, Progress of Local Government Measures Focused on Women or the Promotion of a Gender-Equal Society

Fig. 1-10-2 Female Member in Prefectural Councils for Disaster Management

Prefecture	Total No. of members	No. of female members	Percentage of female (%)	
Tokushima	81	39	48.1	40% or more, 3 councils
Shimane	73	34	46.6	
Tottori	65	28	43.1	
Saga	70	18	25.7	20% - 30%, 5 councils
Kanagawa	57	13	22.8	
Niigata	72	16	22.2	
Kyoto	66	14	21.2	
Shiga	59	12	20.3	
Nagano	77	15	19.5	10% - 20%, 27 councils
Tochigi	52	10	19.2	
Nagasaki	68	13	19.1	
Iwate	76	14	18.4	
Saitama	69	12	17.4	
Aomori	59	10	16.9	
Toyama	67	11	16.4	
Gifu	61	10	16.4	
Miyagi	58	9	15.5	
Okayama	58	9	15.5	
Chiba	52	8	15.4	
Tokyo	73	11	15.1	
Fukushima	54	8	14.8	
Hyogo	56	8	14.3	
Kagawa	60	8	13.3	
Okinawa	54	7	13.0	
Yamagata	62	8	12.9	
Gunma	47	6	12.8	
Wakayama	55	7	12.7	
Kochi	58	7	12.1	
Ibaraki	51	6	11.8	
Yamaguchi	60	7	11.7	
Nara	61	7	11.5	
Kagoshima	63	7	11.1	
Kumamoto	56	6	10.7	
Oita	58	6	10.3	
Ishikawa	70	7	10.0	

Prefecture	Total No. of members	No. of female members	Percentage of female (%)	
Yamanashi	64	6	9.4	10% or less, 12 councils
Shizuoka	58	5	8.6	
Osaka	58	5	8.6	
Mie	60	5	8.3	
Ehime	61	5	8.2	
Miyazaki	53	4	7.5	
Hokkaido	68	5	7.4	
Aichi	68	5	7.4	
Hiroshima	59	4	6.8	
Akita	60	4	6.7	
Fukuoka	61	4	6.6	
Fukui	56	3	5.4	
Total	2,904	466	16.0	



(Note) 1. Formulated based on the Progress of Local Government Measures Focused on Women or the Promotion of a Gender-Equal Society (FY2019) (Cabinet Office).
2. The data is as of April 1, 2019, in principle. However, the date may vary depending on the situation of each local government.
3. The percentage of females is rounded to the nearest tenth.
4. Some islands are omitted for editorial reasons.

Source: Formulated from the Progress of Local Government Measures Focused on Women or the Promotion of a Gender-Equal Society (2019) by the Cabinet Office

Fig. 1-10-3 Targets for Prefectural Councils for Disaster Management and Municipal Councils for Disaster Management in the Fourth Basic Plan for Gender Equality

Item	Current	Target (Deadline)
Female Representation in Prefectural Councils for Disaster Management	13.2% (2015)	30% (2020)
Female Representation in Municipal Councils for Disaster Management	・Number of bodies with no female as members: 515 (2014) ・Female as a proportion of the membership: 7.7% (2015)	・Number of bodies with no female as members: 0 (2020) ・Female as a proportion of the membership: 10% (ASAP), aiming for 30% in due course (2020)

Source: Formulated by the Cabinet Office from the Fourth Basic Plan for Gender Equality

Column: Female Disaster Prevention Leaders Fostered by Local Communities (Equal-Net Sendai and Kita Sendai Area Neighborhood Association)

Equal-Net Sendai, an NPO, launched a three-year training course in Sendai City in 2013 to train women who will be responsible for local disaster prevention. The NPO provides the necessary know-how and financial support for the course, as well as a mechanism for course graduates to be involved in managing the following year's course and establish a network connecting each region. It also provides support for the candidates trained in the course until they have a place to work and become active in the community. At present, each of the established networks is working independently in collaboration with local organizations, which also provides opportunities for them to be appointed to decision-making positions related to disaster prevention.

These efforts led to the implementation of the "Female Disaster Prevention Leader Training Course" as part of the community development project in 2017 at the Kita Sendai Area Neighborhood Association in Aoba Ward, Sendai City, Miyagi Prefecture. Neighborhood associations belonging to the Kita Sendai Area Neighborhood Association recommend participants, mainly women who are active in the PTA or children's associations and the goal is to train 100 persons in three years. Participants in this course are requested to be appointed by their respective town chairmen as secretaries of the Kita Sendai Area Disaster-Prevention Council. They are required to become members of the Kita Sendai Women's Disaster Prevention Network and continue their activities. A system is in place to ensure that the trained female disaster prevention leaders are linked to local disaster-prevention activities.



(Left) Female Disaster Prevention Leader Training Course
(Middle) Workshop on Toilet Issues at Evacuation Shelters (for local residents)
(Right) Let's make it together! Evacuation Shelter Design Workshop (for elementary and junior high school students)

Section 2: Disaster Management Frameworks, Disaster Response, and Preparation

2-1 Revision of the Basic Plan for Disaster Risk Reduction

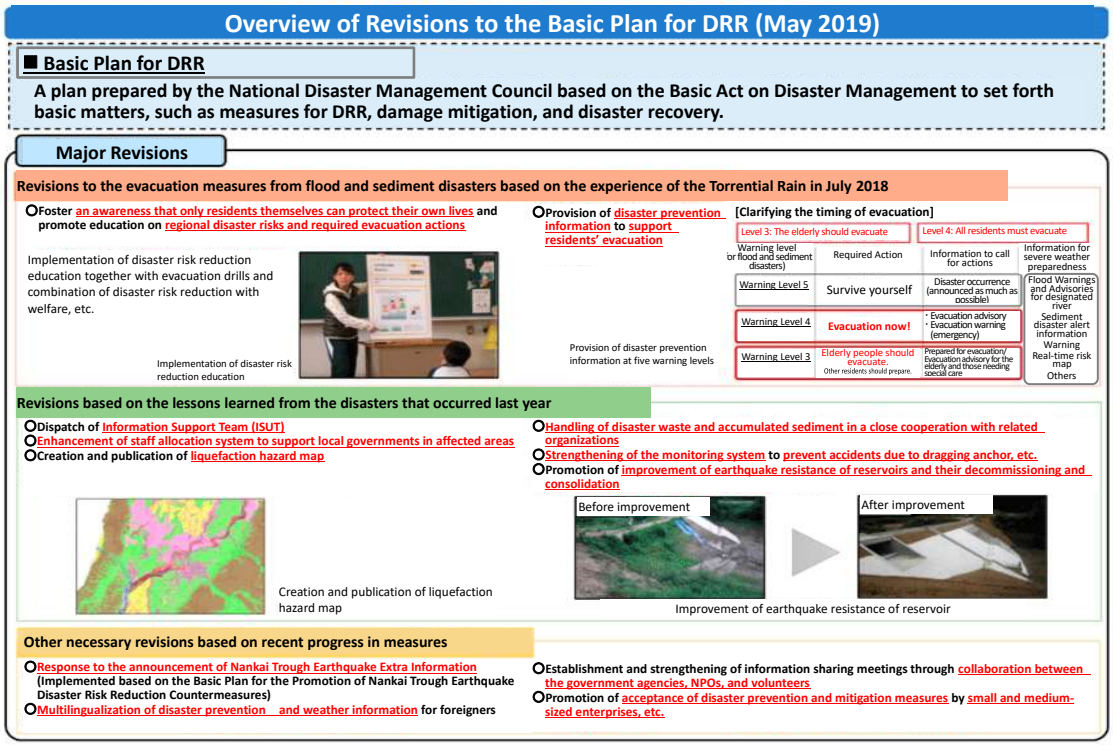
The Basic Plan for Disaster Risk Reduction is decided by the National Disaster Management Council in accordance with Article 34 of the Basic Act on Disaster Management. It is reviewed annually and revised when deemed necessary, to take account of the findings from scientific research concerning disasters and their prevention, as well as disasters that have occurred and the effects of emergency disaster management measures implemented in response. Local governments are required to develop Local Plans for DRR, while Designated Administrative Organizations and Designated Public Corporations are required to develop Disaster Management Operations Plans, which must be based on the Basic Plan for DRR.

In FY2019, the Basic Plan for DRR was revised in May of FY2019 (Fig. 2-1-1). The main revisions include the addition of the description of how to deal with issues revealed during the Heavy Rain Event of July 2018.

More specifically, we have added the following content for evacuation measures from flood and sediment disasters based on experience of the Heavy Rain Event of July 2018: Fostering an awareness that "protecting our own lives by ourselves" disseminating local disaster risks and evacuation actions that should be taken and providing disaster prevention information that supports the evacuation of residents, etc., as well as a description based on the lessons learned from the disasters that occurred in 2018, such as dispatching Information Support Teams (ISUTs) and enhancing the staff allocation system to support local governments in affected areas.

In addition, necessary revisions have been made based on recent developments in measures, such as responding to the announcement of Nankai Trough Earthquake Extra Information and providing multilingual disaster prevention and weather information for foreigners.

Fig. 2-1-1 Overview of Revisions to the Basic Plan for DRR (May 2019)



Source: Cabinet Office

2-2 Enhancement of the Training Contents for Local Government Heads and Officials

The ability to respond swiftly and accurately to a disaster largely relies on the knowledge and experience of the head of a local government and officials in charge of disaster management. Accordingly, in FY2013, the Cabinet Office began offering Disaster Management Specialist Training Courses for national and local government employees, to build capacity to respond swiftly and accurately to crises and to develop networks of national and local government organizations.

As part of such efforts, we conducted “Training at Ariake-no-Oka Core Wide-Area Disaster Prevention Center” in FY2019. This involved holding a Working Group for each course to examine and review matters such as curriculums, training guidelines, textbooks, tests and human networks with coordinators. From FY2019, we conducted Regional Training to help the region promote the development of independent disaster risk reduction personnel. In the training, we included contents that reflected the actual situation and needs of a particular region and trained local government staff engaged in disaster risk reduction activities.

The Cabinet Office and Fire and Disaster Management Agency jointly held a National Seminar on Disaster Prevention and Crisis Management for Heads of Local Government to improve the capacity of municipal mayors who would spearhead the municipality in the event of a disaster to make decisions faster and more accurately. In the seminar held in FY2019, which specifically encouraged those newly in office, 297 new municipal mayors joined and learned about the proper initial responses as the head of a municipality and actual examples of initial responses taken by the disaster-affected local governments.

In addition, the Cabinet Secretariat, Cabinet Office and Fire and Disaster Management Agency co-sponsored a Special Training Course on Disaster Prevention and Crisis Management for persons overseeing disaster and crisis management at related ministries and agencies, prefectural governments and ordinance-designated cities over two days in April FY2019 at the Local Autonomy College.

These training courses and seminars should be further enhanced to improve the national capability of disaster management and response now and in future.

The Training Course at the Ariake-no-Oka Core
Wide-area Disaster Prevention Base in FY2019

The National Seminar on Disaster Prevention and Crisis Management for Heads of Local Government in FY2019

2-3 Securing Designated Emergency Evacuation Sites and Designated Shelters

Designated emergency evacuation sites are positioned as facilities or places to which local citizens and others should evacuate urgently to safeguard their lives in the event of imminent danger from a tsunami, flood, or other such hazard. Designated shelters are facilities for accommodating people who have evacuated until the danger posed by a disaster has passed or for accommodating them temporarily when a disaster prevents their returning home.

The distinction between evacuation sites and shelters was not entirely clear at the time of the Great East Japan Earthquake, which was a factor that increased the harm. Accordingly, the Cabinet Office revised the Basic Act on Disaster Management in 2013 to require mayors of municipalities to designate both kinds of evacuation facility in advance, making a distinction between designated emergency evacuation sites and designated shelters, and issue a public notice to notify citizens of details of these facilities. Fig. 2-3-1 shows the designation status of designated emergency evacuation sites as of April 1, 2019.

Fig. 2-3-1 Designated Emergency Evacuation Sites

	Number of designated emergency evacuation sites by type of anomalous phenomenon								Total
	Flood	Sediment disaster	Storm surge	Earthquake	Tsunami	Widespread fire	Rain inundation	Volcanic phenomena	
Number of designated evacuation sites (sites)	67,283	61,828	19,514	80,546	36,313	37,513	36,286	9,276	109,764
Expected capacity (10,000 people)	12,220	12,903	5,464	22,645	8,428	15,623	7,239	2,351	

Source: Formulated by the Cabinet Office based on the Fire and Disaster Management Agency report “Status of Regional Disaster Management Administration” (multiple responses permitted for each category)

To help local governments evacuate people smoothly and promptly, the Cabinet Office, the Fire and Disaster Management Agency of the Ministry of Internal Affairs and Communications and the Geospatial Information Authority of Japan have enabled designated emergency evacuation sites, i.e., places to evacuate urgently to protect people against disasters, to be displayed on the “GSI Map”, which is managed by the Geospatial Information Authority of Japan. (Fig. 2-3-2) (Reference: https://www.gsi.go.jp/bousaichiri/hinanbasho.html)

Fig. 2-3-2 Display example of designated emergency evacuation site

Source: Geospatial Information Authority of Japan website
(Reference: https://www.gsi.go.jp/bousaichiri/hinanbasho.html)

Along with the Fire and Disaster Management Agency of the Ministry of Internal Affairs and Communications, the Cabinet Office is encouraging local governments to specify their designated emergency evacuation sites without delay. As local governments are required to specify designated emergency evacuation sites for each type of disaster, the Cabinet Office is calling on local governments nationwide to lose no time in starting to install signs that comply with the Hazard Specific Evacuation Guidance Sign System (JIS Z 9098), which was instituted in March 2016 to enable evacuees to clearly identify such facilities (Fig. 2-3-3).

(Reference: http://www.bousai.go.jp/kyoiku/zukigo/index.html)

- Symbol indicating an evacuation site (required)
- General disaster symbols (required)
- Marks indicating compatibility (“○” for compatible disaster types; “×” for non-compatible disaster types)

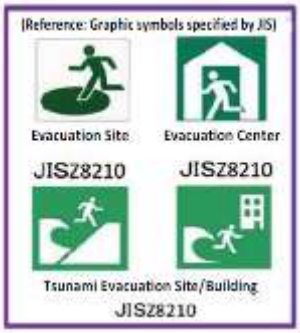
- Indicate that it is an evacuation site (indicate the name of the site)
- Multiple languages are preferred (the example uses English)

Example of a sign compliant with the Hazard Specific Evacuation Guidance Sign System

Fig. 2-3-3 Standardization of graphic symbols for evacuation sites, etc.

Disaster type in Basic Act	JIS symbol by disaster type
Tsunami	Tsunami/storm surge (Old symbols are also used, symbols for general maps are created)
Storm surge	
Flood	Flood
Rain inundation	Rain inundation
Slope failure Debris flow Landslide	Slope failure Landslide
	Debris flow
Fire disaster	Fire disaster
Earthquake	Indicated by a disaster (tsunami, widespread fire, etc.)
Volcanic eruption	A dissemination campaign is conducted for evacuation to designated sites.

- **Evacuation sites need to be specified for each disaster type** by the revised Basic Act on Disaster Management.
- Related ministries and agencies decided to launch a liaison conference to standardize graphic symbols for evacuation sites, etc. The JIS Drafting Committee creates draft symbols, which are then reported to the Minister of Economy, Trade and Industry.
  →The graphic symbols were standardized by JIS on March 22, 2016.
- **Discussion for international standardization is ongoing** based on the proposal from Japan to the ISO.



Source: Cabinet Office

The number of shelters designated pursuant to Article 49-7 of the Basic Act on Disaster Management increased from 48,014 as of October 1, 2014 to 78,243 as of October 1, 2019, as a result of the government's effort to urge municipalities that have not designated shelters to swiftly complete designation, which had been continued since the establishment of the designation system in April 2014.

Following situations that have arisen in recent disasters, various problems have been pointed out in relation to efforts to provide an appropriate living environment at shelters, including the need to improve toilet facilities there. Even in the event of a disaster, when evacuees are compelled to lead their lives amid the inconvenient conditions of a shelter, it is important to improve the quality of life in shelters and seek to ensure a good living environment. Accordingly, since July 2015, the Cabinet Office has been holding meetings of the Study Group on Securing Shelters and Improving their Quality, to consider and take the necessary steps to deal with a wide range of issues, including encouraging municipalities to designate shelters and welfare shelters, improving toilet facilities at shelters, and developing support and consultation systems for persons requiring special care.

Based on discussions by this committee, the Guidelines for Ensuring Satisfactory Living Conditions at Shelters (published by the Cabinet Office in August 2013) were partially revised in April 2016. At the same time, based on these revised guidelines, the Cabinet Office published three other sets of guidelines: the Shelter Management Guidelines; the Guidelines for Securing and Managing Toilets at shelters; and the Guidelines for Securing and Managing Welfare Shelters (Fig. 2-3-4).

In addition, the FY2016 Report on Case Examples of Support for Affected People at shelters was compiled and published in FY2017. The Report on the Study on Measures for Ensuring Satisfactory Living Conditions at Designated Shelters was published in FY2018 as supplementary documents to the Shelter Management Guidelines (Fig. 2-3-4)

(Reference: http://www.bousai.go.jp/taisaku/hinanjo/index.html)

Fig. 2-3-4 Guidelines on Shelters

Evacuation Shelter Management Guidelines (April 2016)

The guidelines emphasize the establishment of systems for internal and external partnership and cooperation before disaster occurs, as well as attaching importance to maintaining the health of evacuees. In addition, they provide a specific checklist of 19 tasks that should be carried out at each stage of disaster response (preparation, initial response, emergency response, and recovery), specifying detailed tasks that tend to be overlooked, such as arrangements for toilets, beds, baths, and pets.

Guidelines for Securing and Managing Toilets at Evacuation Shelters (April 2016)

The guidelines stress the importance of securing and managing toilets. This is because a growing number of affected people experience discomfort due to the unhygienic state of toilets in times of disaster, which leads them to refrain from using the toilet by restricting food and/or water intake to reduce the need to use the toilet, running the risk of adverse impacts on their health or even their lives in a worst-case scenario.

Guidelines for Securing and Managing Welfare Evacuation Shelters (April 2016)

These guidelines are the updated version of the Guidelines on the Establishment and Management of Welfare Shelters (June 2008) revised based on the lessons learned from the Great East Japan Earthquake. Based on an understanding that preparedness efforts are essential in bringing about effective response operations in the event of a disaster, these Guidelines stress the importance of promoting welfare shelters-related initiatives under the initiative of municipalities before a disaster occurs.

FY2016 Report on Case Examples of Support for Affected People at shelters (April 2017)

This report is based on the results of surveys with local governments, social welfare facilities, persons with disabilities, and evacuees from the Kumamoto Earthquake, as well as interviews with NPOs, disabled people's groups, persons with disabilities, and local government employees who were in charge of managing shelters. Based on the results of these surveys, the Report summarized facts and challenges concerning support for the affected people at shelters, as well as advanced examples of countermeasures promoted in various areas.

Report on the Study on Measures for Ensuring Satisfactory Living Conditions at Designated Shelters (August 2018)

Based on the experience of the July 2017 Northern Kyushu Heavy Rain and opinions from local governments, the government carried out a survey concerning the needs of affected people, interviews with experts, a survey and interviews with local governments. The Report summarizes measures to ensure good living conditions in designated shelters based on the results of the above surveys.

Source: Cabinet Office website
(Reference: http://www.bousai.go.jp/taisaku/hinanjo/index.html)

Column: Ideal Shelter in the Event of a Disaster

It is crucial to secure supplies for evacuees and improve the living environment at shelters as part of such work.

For the Faxai and Hagibis typhoons having occurred last year in 2019, the Cabinet Office notified local governments eligible under the Disaster Relief Act that the national government would bear the cost of installing kitchenettes and cardboard beds, etc. to help improve the living environment at the shelters. In addition, the Cabinet Office dispatched staff to affected local governments to understand the needs and issues of the affected areas and promoted a push-mode support for food, beverages, cardboard beds and other supplies necessary for daily life.

For local governments subject to the Disaster Relief Act, the residents of which are expected to endure long-term evacuation life, the Cabinet Office has provided an adequate system to maintain a hygienic environment and manage the health of evacuees and offered opportunities for bathing, etc. Bathing opportunities were secured, not only for those living in shelters but also those at home who may be otherwise unable to take a bath due to power or water outages. The Cabinet Office has decided to subsidize the costs of bathing, staying, etc. at private hotels or inns with disaster relief costs. During Typhoon Hagibis in 2019, approximately 1,000 victims used the bathing services in five prefectures.

Performance of push-mode support in the Typhoon Hagibis in 2019

Article	Quantity
Food (Packed rice, retort food, etc.)	179,500
Beverages (Water, tea, etc.)	357,800
Cardboard bed	3,900
Clothing (Underwear, sweatshirts, etc.)	20,400
Heating apparatus (Electric blankets, hot carpets, stoves, etc.)	1,100
Blanket	11,500
Others (Baby products, masks, sandbags, etc.)	655,500

(As of January 10, 2020: Cabinet Office survey)

Scene of shelter (Former 2nd Kashimadai Elementary School, Osaki City, Miyagi Prefecture)

Flyers distributed by Chiba Prefecture to its municipalities

Conversely, there were inappropriate responses at some shelters; street dwellers (the homeless) were not accepted because they did not have a certificate of residence at the municipality. Accordingly, we stipulated in the Basic Plan for DRR that municipalities should properly accept all evacuees, regardless of whether or not they have a certificate of residence. At some shelters, there were cases in which insufficient measures were taken for pets and their owners. Moreover, we stipulated in the Basic Plan for DRR that the municipalities should promote the acceptance of pets, such as securing space for pets at shelters. (This revision is to be decided at the National Disaster Management Council scheduled for mid-May 2020)

2-4 Use of ICT in Disaster Management

As seen in recent disasters, many of affected people would stay in their cars or elsewhere but not in shelters. This may also hinder efforts to integrate information, including understanding the action of these people, the needs of evacuees at shelters and the distribution of supplies. In response, the national government, local governments and private companies and organizations must share information through public-private partnership at ordinary times and respond to disasters promptly.

For this reason, the Cabinet Office organized the National and Local Government Public-Private Disaster Information Hub Promotion Team under the Working Group for the Promotion of Standardization of Disaster Measures of the Disaster Management Implementation Committee, the National Disaster Management Council to utilize information and communication technology (ICT), which may be an effective means of sharing

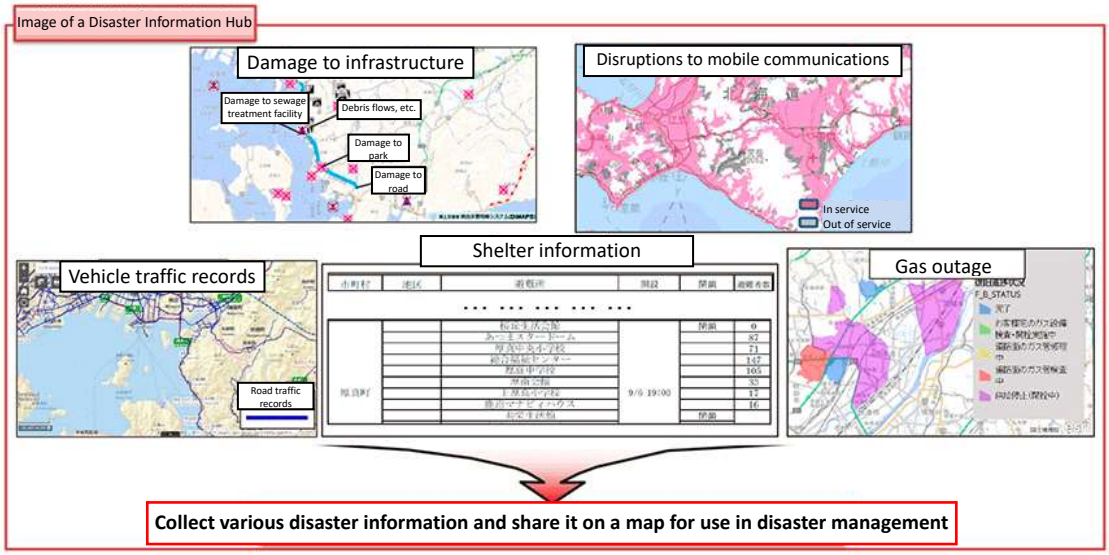
information, and promote rules for the methods and periods of sharing information between related agencies and the distribution of information according to these rules (“disaster information hub” (Fig. 2-4-1)). (Refer to: http://www.bousai.go.jp/kaigirep/saigaijyouhouhub/index.html)

In FY2018, we set up a local dispatch team called Information Support Team (ISUT) to work on a trial basis, with full-scale operation commencing from FY2019. The ISUT collects, maps and provides disaster and shelter information in the event of a large-scale disaster to support disaster responses by local governments. At some disaster sites, some information (dynamic information), such as on damage status and disaster waste, changes from moment to moment, making it difficult to establish a system based on such information even if data is shared in advance. However, in order for disaster responders to make accurate decisions, it is very important to superimpose such dynamic information on a map and systematically grasp the situation. So, the ISUT, which collects, organizes, maps, and shares such information with related organizations, can support disaster responders in making quick and accurate decisions.

The ISUT has responded to disasters seven times, including the Heavy Rain Event of July 2018 and Typhoon Hagibis in 2019. At the time of Typhoon Hagibis in 2019, in particular, we dispatched it to six prefectural government offices, such as Miyagi, Fukushima, Ibaraki, Tochigi, Saitama and Nagano, to support efforts to collect and organize information and create maps (Fig. 2-4-2). These maps were used to explain the situation at the Disaster Management Headquarters of the affected prefectures and municipalities and to the support staff from working organizations and other local governments, thus boosting effective disaster responses on the part of local governments.

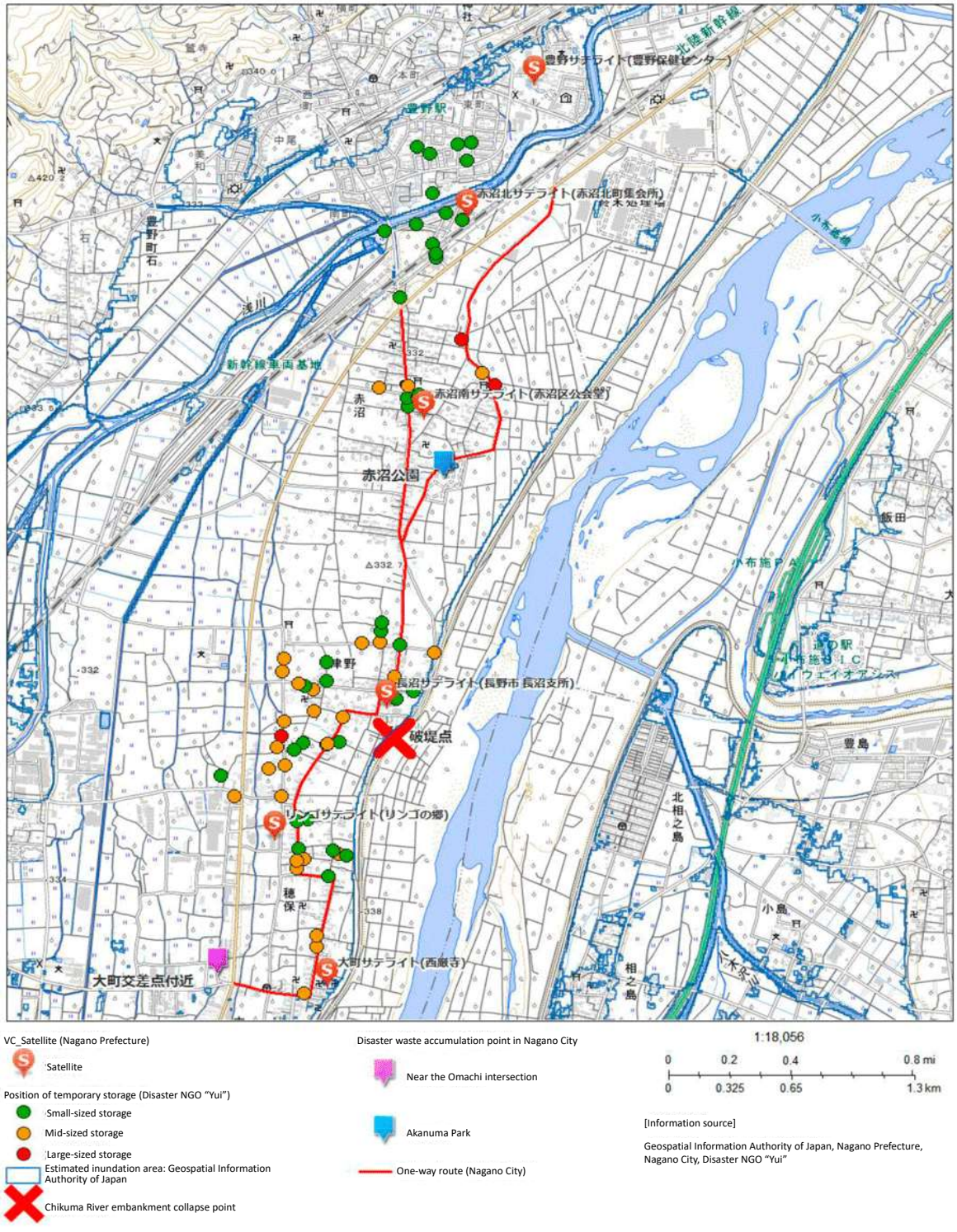
On the other hand, there were also some challenges, such as the time-consuming manual data input, information gathering and organization processes, which delayed the sharing of map information with local government and other relevant organizations. The government intends to work toward more effective operation of the ISUT and swift preparation and sharing of map information. Specifically, it plans to develop a system to automate as much data input work as possible, while also working with relevant organizations toward the expansion of the scope of information to be shared among disaster response organizations.

Fig. 2-4-1 Image of a Disaster Information Hub



Source: Cabinet Office

Fig. 2-4-2 **Example of a Map Created at the Time of Typhoon Hagibis in 2019 (Nagano Prefecture Disaster Waste Temporary Storage Map)**



Source: Cabinet Office

2-5 Changes to the Basic Plan for the Promotion of Nankai Trough Earthquake Disaster Risk Reduction Countermeasures

The Basic Plan for the Promotion of Nankai Trough Earthquake Disaster Risk Reduction Countermeasures is prepared by the National Disaster Management Council as per the provisions of Article 4 of the Act on Special Measures for the Promotion of Nankai Trough Earthquake Disaster Management. This Basic Plan, which aims

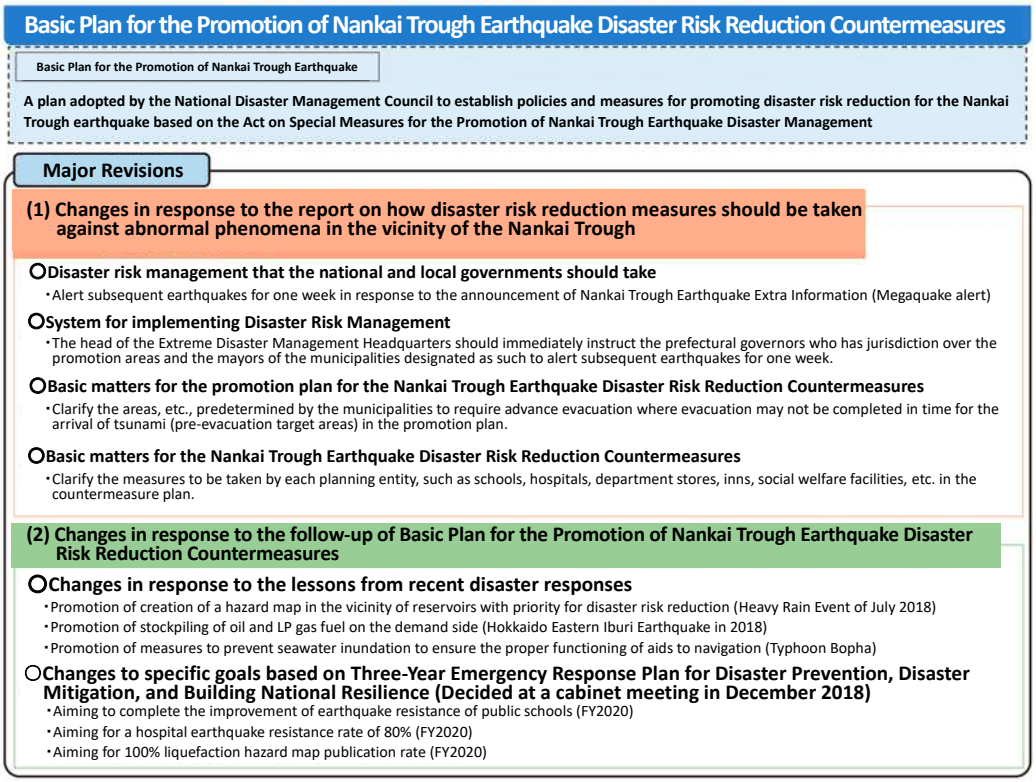
to promote Earthquake Disaster Risk Reduction Countermeasures in areas specifically designated for the promotion, covers the following content: Nation's basic policies and measures for promoting Nankai Trough Earthquake Disaster Risk Reduction Countermeasures; specific goals for the countermeasures and the period for achieving them; basic policies for implementing disaster response measures in the event of a Nankai Trough Earthquake; basic matters for a promotion plan for the Nankai Trough Earthquake Disaster Risk Reduction Countermeasures established by designated administrative organizations, related local governments, etc.; and basic matters for the Nankai Trough Earthquake Disaster Risk Reduction Countermeasures plan established by related business operators, etc.

In May 2019, the National Disaster Management Council decided to change the Basic Plan. (Fig. 2-5-1). Major changes include additionally setting out measures to be taken when the possibility of the Nankai Trough Earthquake is evaluated to have relatively increased.

Specifically, the following disaster responses were added to the Basic Plans: National and local governments, etc. should alert subsequent earthquakes for one week in response to the announcement of Nankai Trough Earthquake Extra Information (Megaquake alert); and in implementing disaster management, the head of the Extreme Disaster Management Headquarters should immediately instruct prefectural governors with jurisdiction over disaster risk reduction countermeasure promotion areas and mayors of the municipalities designated as such to alert subsequent earthquakes for one week.

Besides, the Basic Plan has been subject to changes to reflect the lessons learned from recent disaster responses and changes of specific targets based on the "Three-Year Emergency Response Plan for Disaster Prevention, Disaster Mitigation, and Building National Resilience" (Decided at a cabinet meeting in December 2018).

Fig. 2-5-1 Outline of Changes to Basic Plan for the Promotion of Nankai Trough Earthquake Disaster Risk Reduction Countermeasures



Source: Cabinet Office website
(Reference: http://www.bousai.go.jp/jishin/nankai/pdf/nankaitrough_keikaku_henkou_gaiyou.pdf)

2-6 Immediate Disaster Response and Cooperation Team Meeting, etc.

Immediately after recent large-scale disasters, the government has successfully initiated prompt and smooth initial responses and emergency countermeasures. This is mostly thanks to the efforts of directors overseeing disasters at the government, such as Deputy Chief Cabinet Secretary for Crisis Management, who have successfully increased the sense of unity and built face-to-face relationships, while sharing experience and knowledge through successive disaster responses and repeating systematic learning. This also helped divide roles appropriately and boost mutual cooperation.

To retain such organizational strength, we have decided to hold “Immediate Disaster Response and Cooperation Team Meeting” from FY2020 onwards to exchange and share information among related parties, not only after the occurrence of a natural disaster but also in normal times.

In the event of a large-scale disaster, such as the Heavy Rain Event of July 2018 or the Typhoon Hagibis in 2019, the Cabinet Office, as a government agency, has established a cross-ministerial Team to Support the Daily Lives of Affected People under the Deputy Secretary of the Cabinet Secretariat (for administration) to further support the lives of victims in a more detailed, prompt and powerful manner. We have used this team to do what we should do in advance: Quickly restoring electricity and water, determining what victims need, providing push-mode support for water, food, cardboard beds, etc., improving the living environment in shelters, dispatching staff to affected local governments and securing housing, etc. Accordingly, we have collaborated with related ministries and agencies to swiftly promote life support for victims, such as compiling a package of measures to rebuild lives and livelihoods in the affected area.

Based on these experiences, we stipulated work to establish and institutionalize the “Team to Support the Daily Lives and Livelihood Restoration of Affected People” in the Basic Plan for DRR to ensure prompt and smooth support for lives and restore the livelihood of victims in response to a future large-scale disaster from FY2020 onwards.

2-7 Stockpile of Emergency Relief Supplies

In the event of a large-scale disaster, it takes time for affected local governments to obtain accurate information and their capacity to provide private supplies declines, which hinders their efforts to procure the necessary supplies quickly and unaided.

In response, the national government uses a push-mode support to urgently transport supplies to the affected areas. The push-mode support focuses on support for evacuees at shelters, procures supplies expected to be crucial without awaiting specific requests from the affected prefectures and provides them to shelters urgently. However, some supplies are manufactured to order and take time to procure. To quickly deliver such supplies to shelters, we need to stockpile them at all times.

In FY2019, we procured and stockpiled 1,500 sets of custom-made cardboard beds and associated cardboard partitions, which are particularly in demand at shelters.

Besides the eight basic items, such as food and blankets covered by the push-mode support, the government will also stockpile a required amount of supplies (masks, disinfectants, etc.) in advance to prevent COVID-19 infections in accordance with their amounts in circulation and in stock, etc. The Cabinet Office will determine the situation in the affected area through its “Support System for Supply Procurement and Transportation Coordination, etc.” and reports from local dispatched staff and implement push-mode support in cooperation with related ministries and agencies.

Scene of shelter in Nagano Prefecture (Typhoon Hagibis in 2019)

2-8 Response to COVID-19

In Japan, the person who was first infected with COVID-19 was confirmed on January 15, 2020, whereupon the number of patients with unknown infection routes increased in some areas and then the spread of infection was observed in some areas. On March 26, 2020, the government countermeasures headquarters was established based on the Act on Special Measures for Pandemic Influenza and New Infectious Diseases Preparedness and Response as a means of countering the COVID-19. On March 28, the government established "Basic Policies for Novel Coronavirus Disease Control" and is now collaborating to combat the COVID-19 pandemic. Should a disaster occur in this situation, we should thoroughly implement COVID-19 countermeasures at shelters based on the Basic Policy.

To combat infectious diseases at shelters, the government already has the Shelter Management Guidelines, etc. in place and has informed local governments to take the necessary countermeasures for such infectious diseases, such as implementing handwashing and gargling, wearing masks and securing a system for doctor and/or nurse patrol or dispatch at shelters. For COVID-19 countermeasures, we should strive to reduce the density of evacuees and secure sufficient space.

Besides the efforts to date, the government notified prefectural governments of the following items to be considered in the event of a disaster under the joint names of related ministries and agencies (the Cabinet Office, the Fire and Disaster Management Agency and the Ministry of Health, Labor and Welfare) on April 1 and 7 2020:

- Opening as many shelters as possible
- Considering the use of hotels and inns
- Considering evacuation to homes of relatives or friends
- Ventilation and sufficient space at shelters
- Response to people having fever or infected persons in collaboration with health centers and medical institutions

To promote the use of hotels and inns as shelters, the Ministry of Health, Labor and Welfare and the Japan Tourism Agency requested that accommodation groups prepare a list of hotels and inns capable of accommodating evacuees in advance on April 28. The related ministries and agencies, including the Cabinet Office and the Fire and Disaster Management Agency, jointly notified prefectural governments, etc. to smoothly secure shelters in cooperation with accommodation groups, etc., as needed.

Having verified last year's disasters, the government are proceeding with initiatives for the flood season, such as "Campaign for Better Understanding of Evacuation." From the perspective of preventing the spread of infection at shelters, with this campaign in mind, the government asked the prefectural governments to promote further understanding of the following among residents on April 21 in the joint name of the Cabinet Office and the Fire and Disaster Management Agency: (1) "Evacuation" means to escape danger. If you are in a safe place, you do not need to evacuate and (2) a safe relative's or friend' house can also be an evacuation destination.

The government will continue to strive to advise and support local governments appropriately and take the necessary measures with the COVID-19 infection status in mind.

Section 3 Preparedness for Disasters Anticipated to Occur

3-1 Development of Countermeasures against Wide-Area Ash Falls from Major Volcanic Eruptions

A major volcanic eruption may cause considerable disruptions to the life and social and economic activities of people living around the base of the mountain and those living afar alike, as volcanic ashes fall over an extensive area. In this view, we established the "Working Group on Countermeasures for Wide-Area Ash Falls from Major Volcanic Eruptions" under Disaster Management Implementation Committee of the National Disaster Management Council in August 2018 to examine the basic concept of ash fall countermeasures during a large-scale eruption in the Tokyo metropolitan area, where urban functions are concentrated.

Reference: http://www.bousai.go.jp/kazan/kouikikouhaiworking/index.html

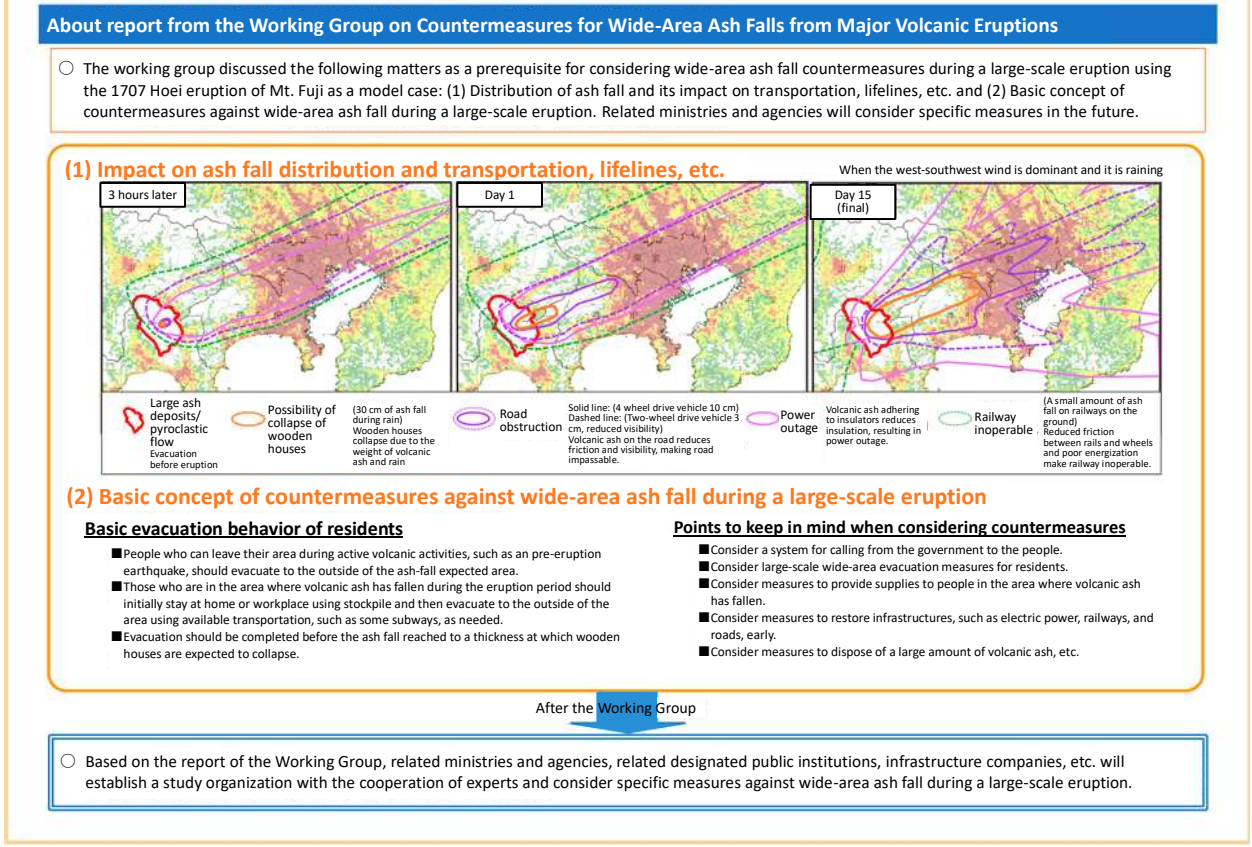
The following are prerequisites for related ministries and agencies to start studying specific measures against wide-area ash falls during large-scale eruptions in the Tokyo metropolitan area:

- Ash fall distribution
- Impact on transportation and lifelines
- Basic evacuation behavior of residents, etc.
- Points to keep in mind when considering countermeasures, etc.

The Working Group examined the above and summarized the examination results in "About Countermeasures for Wide-area Ash Fall during a Large-scale Eruption - Impact and Countermeasures of Ash Fall in the Tokyo Metropolitan Area - Mt. Fuji Eruption as a Model Case" in April 2020.

Based on this report, related ministries and agencies and related designated public institutions will establish a study organization in future with the cooperation of experts and proceed to consider specific measures against wide-area ash falls during large-scale eruptions. (Fig. 3-1-1)

Fig. 3-1-1 Summary of Working Group Report



Source: Cabinet Office

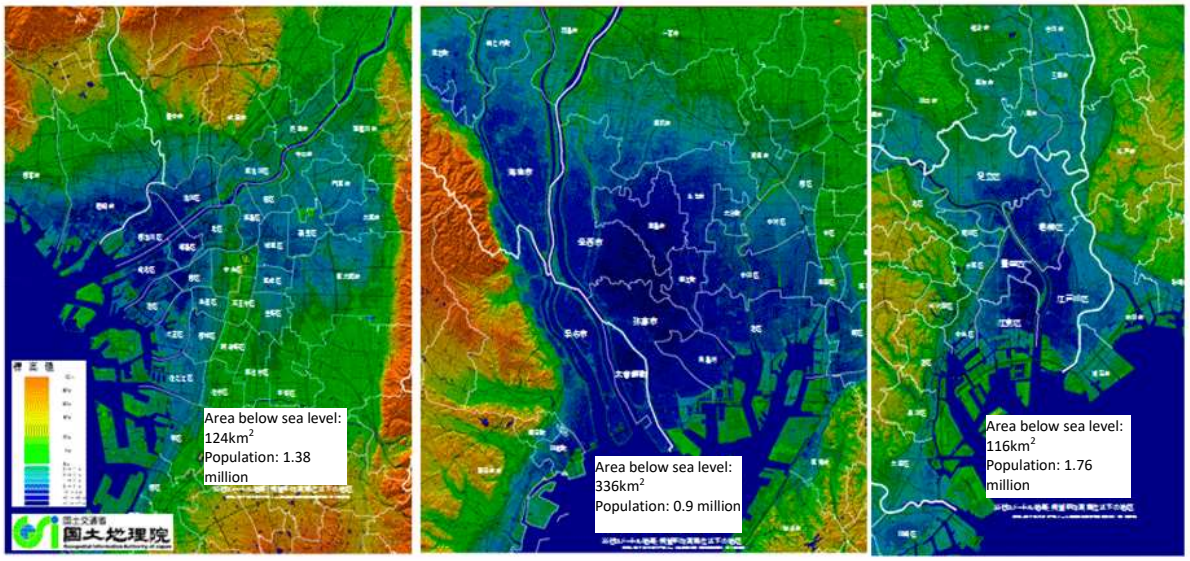
3-2 Deliberations on Large-scale, Extensive Evacuation from Flooding or Storm Surge Inundation in the Tokyo Metropolitan Area

Experts predict that there will be risks of major flood disasters that would require large-scale, extensive evacuation, as typhoons may increase their intensity into the future with global warming. Extensive portions of Japan's three major metropolitan areas are located below sea level. As such, large-scale flooding caused by the collapse of river embankments is expected to result in huge crowds as large numbers of residents seek to evacuate, as well as many people being left stranded after failing to escape in time.

Accordingly, approaches to large-scale, extensive evacuation from flooding or storm surge inundation were examined in Japan's three major metropolitan areas at the Working Group for Studying Large-scale, Extensive Evacuation from Flooding or Storm Surge Inundation established under the National Disaster Management Council's Disaster Management Implementation Committee in June 2016. The Working Group submitted a report titled "Basic Approaches for Large-scale, Extensive Evacuation from Flooding or Storm Surge Inundation" in March 2018.

(Reference: http://www.bousai.go.jp/fusuigai/kozuiworking/)

Fig. 3-2-1 Area below Sea Level in the Tree Major Metropolitan Areas



Source: Formulated by the Cabinet Office based on materials from the Geospatial Information Authority of Japan website (GSI)

In order to identify initiatives that administrative and other organizations should promote for large-scale, extensive evacuation from major floods and discuss collaboration and role sharing among these organizations based on the above report, the Cabinet Office has hosted three sessions of the Study Group on Extensive Evacuation from Large-Scale Flood Disasters in Urban Areas from June 2018 to March FY2019 in cooperation with the Tokyo Metropolitan Government. The main topics of the meetings were the securing of extensive evacuation sites, evacuation means and guidance.

(Reference: http://www.bousai.go.jp/fusuigai/suigaiworking/suigaiworking.html)

In FY2019, while we were proceeding with specific studies on securing wide-area evacuation sites, securing evacuation means and evacuation guidance, Typhoon Hagibis hit us. The typhoon reaffirmed the challenges of large-scale wide-area evacuation, such as the planned suspension of railway operations and difficulty in determining the timing of evacuation from rainstorms and securing the time required for evacuation. After the typhoon, a “Working Group on Evacuation from Disasters Caused by the Typhoon Hagibis, etc. in FY2019” was established under the National Disaster Management Council. Within this group, issues related to the wide-area evacuation and efforts to be implemented were discussed. From FY2020 onwards, we will conduct a concrete study on division of roles and cooperation among related organizations based on the discussions.

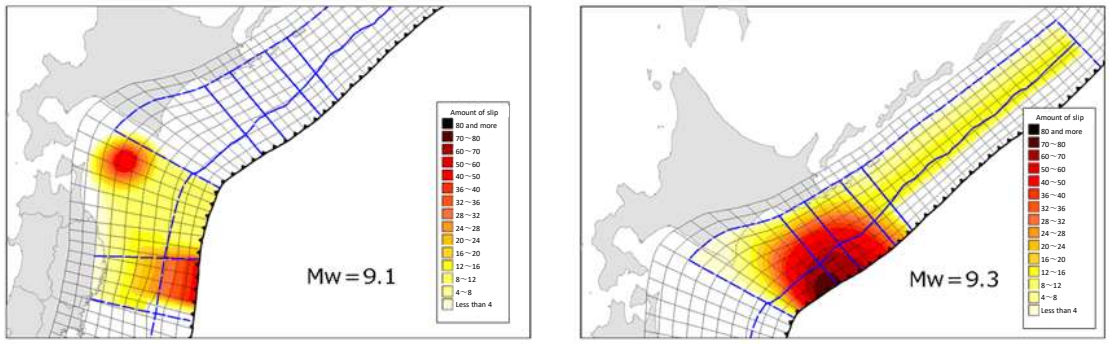
3-3 Examination of Measures against Megaquake in the Vicinity of the Japan and Chishima Trenches

The government has been proceeding with Disaster Management against trench-type earthquakes in the Vicinity of the Japan and Chishima Trenches throughout the government based on the “Basic Plan for Promotion of Disaster Management for Trench-type Earthquakes in the Vicinity of the Japan and Chishima Trenches.” The National Disaster Management Council is reviewing countermeasures for the largest earthquakes and tsunamis based on the opinions of the “Special Investigation Committee on Earthquake and Tsunami Countermeasures Reflecting the Lessons Learned from the Tohoku-Pacific Ocean Earthquake” (September 28, 2011) to establish comprehensive tsunami countermeasures in which all possible means are taken while prioritizing the residents’ lives above all.

In the review process, the National Disaster Management Council established a “Study Group on a Megaquake Model in the Vicinity of the Japan and Chishima Trenches” in the Cabinet Office, which comprises

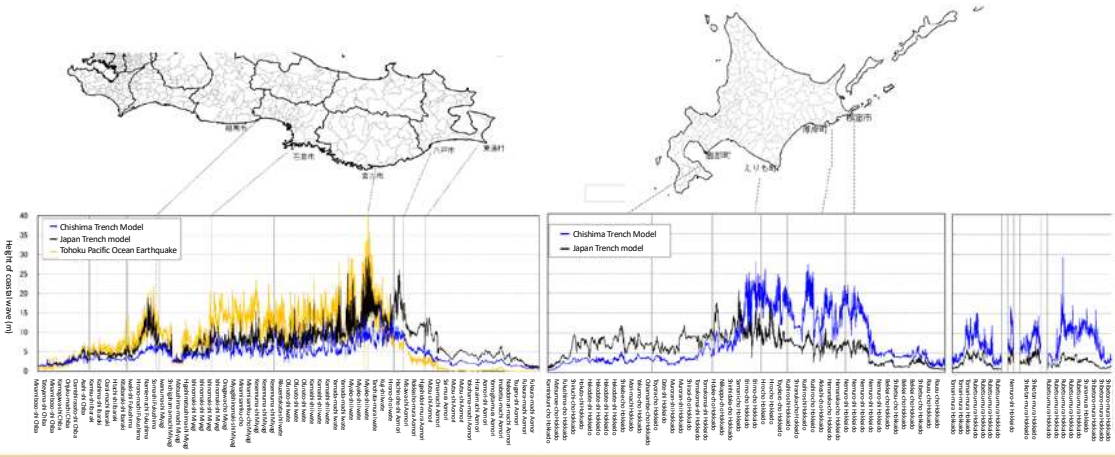
researchers in science and engineering, in February 2015. The study group organized and analyzed wide-ranging traces of tsunamis having occurred to date and set out largest-in-class earthquake and tsunami fault models that are possible based on scientific knowledge. It has also been studying the expected seismic intensity distribution and estimating tsunami heights along the coastline.

Fig. 3-3-1 **The largest-class tsunami fault models examined (Left: Japan Trench model, right: Chishima Trench model)**



Source: Reference Chart for Summary Report, Study Group on Megaquake Models in the Vicinity of the Japan and Chishima Trenches (Reference: http://www.bousai.go.jp/jishin/nihonkaiko_chishima/model/index.html)

Fig. 3-3-2 **Expected height of coastal tsunami**



Source: Reference Chart for Summary Report, Study Group on Megaquake Models in the Vicinity of the Japan and Chishima Trenches (Reference: http://www.bousai.go.jp/jishin/nihonkaiko_chishima/model/index.html)

To estimate damage and consider Disaster Management to mitigate the damage based on the study results of these largest-class earthquake and tsunami fault models, we established a “Working Group for Studying Megaquake Countermeasures in the Vicinity of the Japan and Chishima Trenches” under the Disaster Management Implementation Committee of the National Disaster Management Council in April 2020.

The Working Group will consider the aspects of and quantify human damage caused by tsunamis and tremors expected from the megaquake in the vicinity of the trenches and damage to buildings, lifelines (water, electricity and gas, etc.) and transportation facilities (roads and railroads, etc.) to formulate various disaster prevention and mitigation measures that the national government should implement and promote them. The Working Group will then sort out issues that may be raised at the time of a megaquake in the Vicinity of the Japan and Chishima Trenches based on the aspects of damage and consider basic megaquake countermeasures. In particular, a megaquake in winter would cause damage specific to snowy and cold regions. The Working

Group will take this into consideration and proceed with the study.

Column: Amendment to Act on Provision of Disaster Condolence Grant

The disaster relief fund loan system is a system under the Act on Provision of Disaster Condolence Grant (No. 82 of 1973, hereinafter referred to as the "Disaster Condolence Grant Act"). This system loan funds to rebuild lives to the heads of households with incomes below a certain level as per an ordinance if they are injured or their homes or property sustain damage in a natural disaster (Loan limit: 3.5 million yen, repayment period: 10 years).

At the time of the Great Hanshin-Awaji Earthquake that caused unprecedented damage, the Act Concerning Support for Reconstructing Livelihoods of Disaster Victims (Act No. 66 of 1998) was not enacted. Many victims were forced to rebuild their lives by relying on loans for the affected by disasters. Many people had difficulty in repaying loan within the predetermined period of 10 years and the deadline was extended 5 times to date.

During this period, the relevant local governments endeavored to collect claims as much as possible by taking legal action against delinquents, resulting in a loan redemption rate of 90% or more, but some claims remain difficult to collect even now, more than 20 years after the earthquake, due to a lack of sufficient financial resources on the part of borrowers.

With this in mind, an ultimate solution to this problem was considered, taking into account requests of the relevant local governments. Following coordination between ruling and opposition parties, the Act on Provision of Disaster Condolence Grant was amended by lawmaker-initiated legislation to include the following seven points (Promulgated on June 7, 2019, enforced on August 1).

<Outline of Amendments to the Act on Provision of Disaster Condolence Grant>

(1) For disasters before the enactment of the Act Concerning Support for Reconstructing Livelihoods of Disaster Victims (the Great Hanshin-Awaji Earthquake), repayment is exempted based on income or asset requirements.
(2) From April 2019 onwards, grant municipalities the authority to determine the necessity of a guarantor and waive the guarantee claims after the elapse of 10 years from the repayment deadline for disasters before April 2019.
(3) Clarify that repayment can be postponed if it is difficult.
(4) In the case of bankruptcy, repayment is exempted even before the elapse of 20 years, similar to death or severe disability.
(5) Grant municipalities the authority to investigate assets and income for exemption, etc.
(6) Municipalities endeavor to establish a council, etc. to investigate and deliberate matters concerning the payment of disaster condolence grant and disaster and disability relief money.
(7) The national government familiarizes people with the systems of disaster condolence grant, disability relief money, and relief funds.

Source: Cabinet Office

Section 4: International Cooperation for Disaster Risk Reduction

Japan has accumulated a great deal of experience and knowledge concerning disasters, along with numerous policies on disaster risk reduction. By sharing these with the world, it is driving global discussions in the field of disaster risk reduction and contributing to initiatives in this field in countries worldwide. In particular, the international community expects Japan to play a leading role in the implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030 (SFDRR), which was approved at the Third UN World Conference on Disaster Risk Reduction, hosted by Japan in Sendai City in March 2015. Accordingly, the Cabinet Office (in charge of disaster prevention) and the Ministry of Foreign Affairs are proactively promoting cooperation in disaster risk reduction through the UN and other international organizations, as well as bilateral disaster risk reduction cooperation.

4-1 Disaster Risk Reduction Cooperation through the UN and Other International Organizations

(1) Disaster Risk Reduction Cooperation through the United Nations Office for Disaster Risk Reduction (UNDRR)

To promote the SFDRR, the Ministry of Foreign Affairs and the Cabinet Office contributed approximately 5.2 million dollars (approximately 572 million yen) in total in FY2019 to support the activities of the UN Office for Disaster Risk Reduction (UNDRR), which is engaged in SFDRR-related activities, such as monitoring, coordination and support of each region and country.

The UNDRR held the 6th session of the Global Platform for Disaster Risk Reduction with the Swiss government in Geneva, Switzerland, from May 15-17, 2019. This meeting was intended to share the results and challenges of disaster risk reduction efforts and review measures for possible future disasters by exchanging opinions on the implementation status of the SFDRR in each country and its promotion initiatives. About 4,000 people from about 180 countries and regions participated.

Mr. Kenji Yamada, Parliamentary Vice-Minister of Foreign Affairs attended the meeting to represent Japan. In his official statement at the meeting in which high-level officials from governments and international organizations participated, he mentioned the experience of the Great Hanshin-Awaji Earthquake and emphasized the importance of reflecting the idea of “No one will be left behind” in the disaster risk reduction strategy as well as the need for mutual cooperation and efforts on the part of each country to increase the number of countries with national and local disaster risk reduction strategies, which is one of the main goals of the SFDRR.

Mr. Yamada, then Parliamentary Vice-Minister of Foreign Affairs making a formal speech

Mr. Akihiro Nakamura, Vice-Minister for Policy Coordination of the Cabinet Office served as a panelist in high-level dialogue on the theme of “Disaster Risk Reduction Strategies for National and Local Governments,” and introduced Japan's disaster risk reduction planning system to each country.


Mr. Nakamura, then Vice-Minister for Policy Coordination of the Cabinet Office serving at panelist in a high-level dialogue session

(2) International Recovery Platform (IRP)

The Hyogo Framework for Action was adopted in 2005 at the Second UN World Conference on Disaster Risk Reduction, which was held in the city of Kobe, Hyogo Prefecture. In response to this, the IRP was established in the Kobe City the same year, to enhance networks and frameworks for supporting smoother post-disaster reconstruction, disseminate lessons concerning reconstruction and develop common techniques and mechanisms to facilitate reconstruction and provide advice and support to those formulating reconstruction plans and visions following a disaster. The SFDRR advocates that the IRP should be enhanced, as an international mechanism for promoting the “Build Back Better” approach. The Government of Japan (Cabinet Office) supports the activities of the IRP, as well as contributing to enhancing the infrastructure for its development, as Co-Chair of the IRP Steering Committee.

The IRP forum for FY2019 was held in Kobe on January 28, 2020. Under the theme of “Aiming to Build Back Better with Strong Infrastructures,” 172 people from 23 countries participated, including Mr. Murate, Assistant Vice-Minister for Disaster Management, Cabinet Office, Mr. Kanazawa, Deputy Governor of Hyogo Prefecture and Dr. Murosaki, Professor of Graduate School of Hyogo Prefectural University. Focusing on advance planning and restoration of infrastructure, the IRR forum introduced recovery cases from past disasters and discussed sharing of lessons learned from. From Japan, the Reconstruction Agency and the National Resilience Promotion Office, Cabinet Secretariat participated and introduced efforts, including on reconstruction from the Great East Japan Earthquake and the National Resilience Basic Plan.


The International Recovery Forum

(3) Disaster Risk Reduction Cooperation through Asia-Pacific Economic Cooperation (APEC)

The 13th Asia-Pacific Economic Cooperation (APEC) Senior Disaster Management Officials Forum was held in Santiago, Chile on August 20, 2019. The Chairman of the Asian Disaster Reduction Center (ADRC) attended the forum from Japan and introduced Japan's recent efforts in the technological development of quasi-zenith satellites in a session under the theme of “International Cooperation in Emergency Assistance.” At the recommendation of Japan, the director of the ADRC was appointed as the co-chair (Term: 2020 - 2021) of the

“Emergency Preparation Working Group,” which is a Working Group of the Disaster Risk Reduction Department of the APEC.

(4) Disaster Risk Reduction Cooperation through the Activities of the Asian Disaster Reduction Center (ADRC)

The Asian Disaster Reduction Center (ADRC) was established in Kobe City, Hyogo Prefecture in July 1998 to share the lessons of disasters in Japan with the rest of Asia. As of March 2020, the ADRC has 31 Asian members. The ADRC’s activities center on four key areas: sharing information about disasters, human resource development in member countries, improving the disaster resilience of communities and promoting partnerships with member countries, international organizations, local organizations and NGOs. It also hosts visiting researchers from member countries each year: as of March 2020, the ADRC had hosted a total of 117 such researchers, thereby helping to foster personnel who contribute to policymaking in the field of disaster risk reduction in member countries through studies on Japanese disaster risk reduction policies. The ADRC also gathers information about disaster risk management systems and the latest disasters in each country and publishes it on its website, as well as providing information obtained from satellite observation on the extent of the damage when a disaster occurs.

The ADRC co-sponsored the holding of an ACDR meeting every year with the Cabinet Office. Member countries and international organizations participate to share information, exchange opinions and promote cooperation on disaster prevention and mitigation issues in Asia. The 15th meeting was held in Ankara, Turkey from November 25-27, 2019, under the themes of “Innovative Approach to Disaster Risk Reduction” and “Recovery from Major Disasters”. 148 people from member countries (21 out of 31 countries), the UNDRR, the Japan International Cooperation Agency (JICA) and other international organizations participated to share information and exchange opinions on the status of SFDRR efforts, including disaster risk reduction strategies in each country. From Japan, Mr. Taira, State-Minister of Cabinet Office attended and introduced examples of how Japan's cutting-edge science and technology were being used for disaster risk reduction. At the meeting, Mr. Taira, State-Minister of Cabinet Office also met with Mr. Soylu, Minister of Interior of Turkey and Mr. GÜLLÜOĞLU, the Commissioner of the Crisis Management Agency of Turkish (AFAD) to confirm future cooperation in disaster risk reduction with Turkey.

Asian Conference on Disaster Reduction

(5) 7th Tokyo International Conference on African Development (TICAD7)

The TICAD7 was held in Yokohama in August 2019. At the conference, Mr. Maitachi, then Parliamentary Vice-Minister of Cabinet Office participated in the “Climate Action and Disaster Risk Reduction” session and stated that “Japan, as an advanced country for DDR, wants to help construct a resilient and sustainable society in African countries and help realize SDGs by holding public-private disaster risk reduction seminars.”

UN Secretary-General Guterres and Mr. Maitachi, then Parliamentary Vice-Minister of Cabinet Office

4-2 Bilateral Disaster Risk Reduction Cooperation

Alongside the initiatives through international organization, the Cabinet Office also strengthened its collaboration with disaster management agencies in the governments of various countries by sharing experiences of disaster management policies through various opportunities such as visits from ministerial level personnel overseeing disaster management from abroad. In particular, the bilateral partnership with the United States, India and Turkey is described below.

(1) Partnership between the Cabinet Office and the U.S. Federal Emergency Management Agency (FEMA)

Based on the Memorandum of Cooperation (MOC) concluded with the U.S. Federal Emergency Management Agency (FEMA) in December 2014, the Cabinet Office enters into an action plan every year to share information and exchange opinions through international conferences or video conferences. The Cabinet Office renewed the MOC in December 2019 and agreed on a working plan in February 2020. In December 2019, Cabinet Office staff visited the FEMA and exchanged information on the FEMA system and human resource development measures.

(2) Partnership between the Cabinet Office and the Ministry of Home Affairs in India

In September 2017, the Cabinet Office concluded an MOC with the Ministry of Home Affairs in India, aiming to develop and extend bilateral cooperation and relationships in disaster risk management. Based on this MOC, we held the “3rd Japan-India Disaster Risk Reduction Cooperation Conference Follow-up Meeting” in Delhi, India, in June 2019 to discuss public-private cooperation efforts. In September, the Commander of the National Disaster Response Force of India Kumar visited the joint emergency drill involving nine prefectures and cities held in Chiba Prefecture and exchanged opinions with the Cabinet Office on DRR policies and drills.

(3) Cooperation between Japan, China and South Korea through the Holding of Trilateral Ministerial Meeting on Disaster Management

In 2008, a “Trilateral Joint Statement on Disaster Management Cooperation” was made at the “1st Japan-China-ROK Trilateral Summit Meeting.” Based on the Trilateral Joint Announcement, the three countries of Japan, China and South Korea have held the Trilateral Ministerial Meeting on Disaster Management every other year since 2009 to further strengthen tripartite cooperation in the area. The 6th Trilateral Ministerial Meeting on Disaster Management was held in Seoul, South Korea in December 2019, and Mr. Taira, State-Minister of Cabinet Office attended the meeting and reported on Japan's recent disaster countermeasures. At this meeting,

we confirmed the need to strengthen Disaster Management Cooperation in the three countries and issued a joint statement that the exchange of information and opinions among the three countries would continue. It was agreed that the next conference would be held in Japan in 2021.

6th Trilateral Ministerial Meeting on Disaster Management

4-3 Establishment of the Japan International Public-Private Association for Disaster Risk Reduction (JIPAD)

In December 2018, the “Overseas Deployment Strategy in the Disaster Risk Reduction Field” was formulated in the “Infrastructure System Export Strategy.” Based on this strategy, the Cabinet Office decided to actively disseminate information on disaster risk reduction technologies and know-how that Japan has strengths overseas in collaboration with public and private sectors and promote the overseas deployment of disaster risk reduction technologies by building relationships with public and private sectors in the partner country. To this end, the Cabinet Office established the Japan International Public-Private Association for Disaster Risk Reduction (JIPAD) on August 23, 2019.

As of March 1, 2020, the JIPAD has 187 members from the fields of manufacturing, construction/engineering, research/design, trading companies, telecommunications, insurance, etc. Administrative cooperation ministries and organizations include the Cabinet Secretariat, the Cabinet Office (overseeing science and technology/innovation), the Ministry of Internal Affairs and Communications, the Fire and Disaster Management Agency, the Ministry of Foreign Affairs, the Ministry of Economy, Trade and Industry, the Ministry of Land, Infrastructure, Transport and Tourism, the Meteorological Agency, the Ministry of the Environment and the Ministry of Defense, JICA, Japan External Trade Organization (JETRO), Japan Bosai Platform (JBP) and the Asia Disaster Reduction Center.

JIPAD 1st General Meeting (Establishment of general meeting)

(1) The JIPAD Meeting

The JIPAD 1st General Meeting was held on August 23, 2019 and was attended by the Ambassadors of Mozambique and Indonesia and Extraordinary Ambassador of Ecuador and 151 member companies. The Cabinet Office proposed main activity plans for FY2019 and the Cabinet Secretariat, JETRO and JBP, which are administrative cooperation ministry and organizations, reported their efforts to support overseas deployment. When the JIPAD was established, Mr. Yamamoto, Minister of State for Disaster Management said, “I would like to cooperate with private companies with various technologies and proceed to try and save as many lives as possible in the world.”

The JIPAD 2nd General Meeting was held on December 11, 2019 and attended by 20 people from the embassies of 14 countries, including the Ambassadors of Turkey, Malawi, Ecuador, Nicaragua and Bulgaria and the Colombia Minister and 84 people from 53 member companies. The Cabinet Office introduced the English translation of the White Paper on Disaster Management for FY2019 and reported on the main activities up to December 2019. At the same time, the Cabinet Secretariat, the Cabinet Office (overseeing science and technology/innovation) and the JBP, which are administrative cooperation ministries and an organization, reported their efforts to support overseas expansion. At the conclusion, Mr. Taira, State-Minister of Cabinet Office said, “We would like to utilize cutting-edge science and technology in collaboration with private companies to boost global disaster risk reduction effectively.”

Address by Mr. Taira, State-Minister of Cabinet Office at the 2nd General Assembly of the JIPAD

Mr. Yamamoto, Minister of State for Disaster Management at the 1st General Assembly of the JIPAD

(2) Public-private Disaster Risk Reduction Seminars

The JIPAD introduces Japan's disaster risk reduction policies, technology and know-how in an integrated manner, builds a public-private network and hold “public-private disaster risk reduction seminars” in Japan and overseas to strengthen disaster risk reduction cooperation.

In November 2019, the JIPAD held a Japan-Turkey public-private disaster risk reduction seminar in Ankara, Turkey, in collaboration with the aforementioned Asian Conference on Disaster Reduction and featuring the participation of 11 JIPAD companies. The seminar was attended by many from Turkey, including Mr. İsmail Çataklı, the Deputy Minister of Interior, public and private disaster risk reduction officials, as well as disaster risk reduction officials from Asian countries who participated in the Asian Conference on Disaster Reduction.

In January 2020, the JIPAD visited Quito City, Ecuador and Bogota City, Colombia and held a public-private disaster risk reduction seminar with the participation of 12 JIPAD companies. In Ecuador, the seminar was participated in by Mr. Sudo, Ambassador to Ecuador from Japan, Mr. Murate Assistant Vice-Minister for Disaster Management and other public and private disaster risk reduction officials from Ecuador, including the Commissioner of the Crisis Management Agency Ocles. In Colombia, the seminar attracted public and private disaster risk reduction officials, including Mr. Morishita, Ambassador of Japan in Colombia, Mr. Murate, Assistant Vice-Minister for Disaster Management, Cabinet Office and Ms. Gonzalez, Deputy Director of the National Unit for Disaster Risk Management (UNGRD).

Japan-Turkey Public-Private Disaster Risk Reduction Seminar

Japan-Ecuador Public-Private Disaster Risk Reduction Seminar

Taking the opportunity of executives and officials overseeing disaster risk reduction administrations from different countries to visit Japan for JICA training, etc., the Cabinet Office held a public-private disaster risk reduction seminar, etc. involving the participation of JIPAD companies. In FY2019, we held a total of 11 public-private disaster risk reduction seminars for the following countries: In October 2019, Bulgaria (Deputy Minister of Interior Berner, etc.), African countries, ASEAN countries; in November 2019, Mozambique (Executive Director of Mozambican Reconstruction Authority Pereira, Director of National Disaster Management Agency Maita, etc.), Pacific and Caribbean Islands; in January 2020, Ghana (Director-General of Disaster Prevention Organization Prempeh); and in February 2020, six Asian countries, the Republic of Maldives, Bulgaria and Western Balkan countries, Mozambique (Deputy Mayor Marrakes Beira, etc.) and Myanmar (Director General of Disaster Manegement Bureau, Ministry of Social Welfare Relief and ResettlementKo Ko Naing).

ASEAN public-private disaster risk reduction seminar

Public-private disaster risk reduction seminar in Republic of Ghana

[Column] Examples of Disaster Risk Reduction Technologies Deployed by JIPAD Members

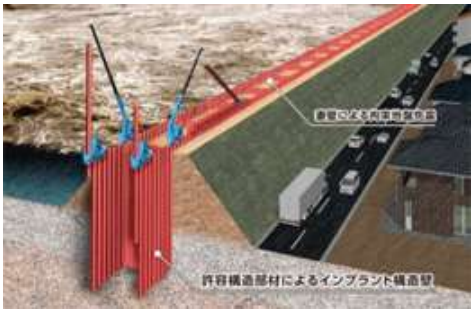
Here are some examples of technologies that JIPAD members introduce overseas:

"Social contribution through technological development for disaster risk reduction and reconstruction": Fujita Corporation

Unmanned construction technology using robots enables construction to be carried out, even in dangerous affected areas or steep slopes. As a construction company, we are developing not only resilient construction and civil engineering technologies, such as seismic isolation and earthquake resistance, but also beds that can be folded compactly without tools.

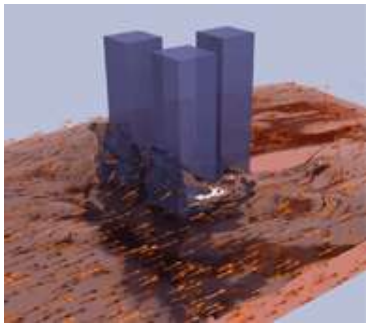
“Protecting human lives and property from disasters with an unbreakable embankment”: GIKEN LTD.

GIKEN have developed an “implant method” that enables the embankment to withstand external forces from ground subsidence, tsunami, etc., caused by an earthquake by press-fitting high-rigidity steel sheet piles and piles deep into the ground. This method can be used even in narrow spaces without scaffolding.



“Preparing for the tsunami”: Yachiyo Engineering Co., Ltd.

Yachiyo Engineering have developed a simulation model capable of analyzing any rise of a tsunami caused by a building using 3D analytical technology and make recommendations on what floors are safe. The purpose of this development is to utilize this model for developing a tsunami-resistant town plan.

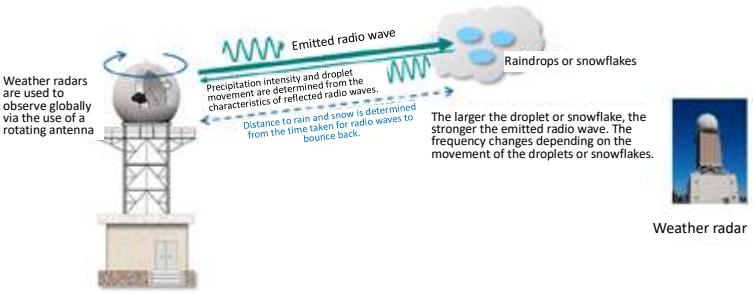


“Contribution to disaster management through advanced weather observation and forecasting”: Japan Weather Association

Japan Weather Association are engaged in wide-ranging weather consulting, from operating meteorological observation equipment to weather forecasting, announcing and transmitting forecasts and warnings. Japan's solid-state weather radar has a better life-cycle cost than conventional radars equipped with vacuum tubes and can be operated stably. The radiosonde we have put into practical use is compact, high-performance, lightweight and very economical.

“Creating regional disaster management capabilities”: TOHATSU Co., Ltd.

TOHATSU develop and manufacture portable fire pumps that are “small, lightweight and compact.” They are also used by Japanese fire brigades. The portable fire pump enables quick fire-extinguishing activities at a fire site at the end of a path inaccessible to fire engines and helps improve the disaster risk reduction capabilities of the region.



“Easy-to-assemble safe and secure toilet booth of storage type for disasters”: Kawahara Technical Research Co., Ltd.

Kawahara Technical Research have developed a public private toilet booth that is mostly made of paper and can be easily assembled. Biological agents placed in a septic tank reduce the risk of infectious diseases. The public private toilet booth is lightweight and able to assemble easily, even by two women, without using tools.

Section 5: Initiatives to Promote National Resilience

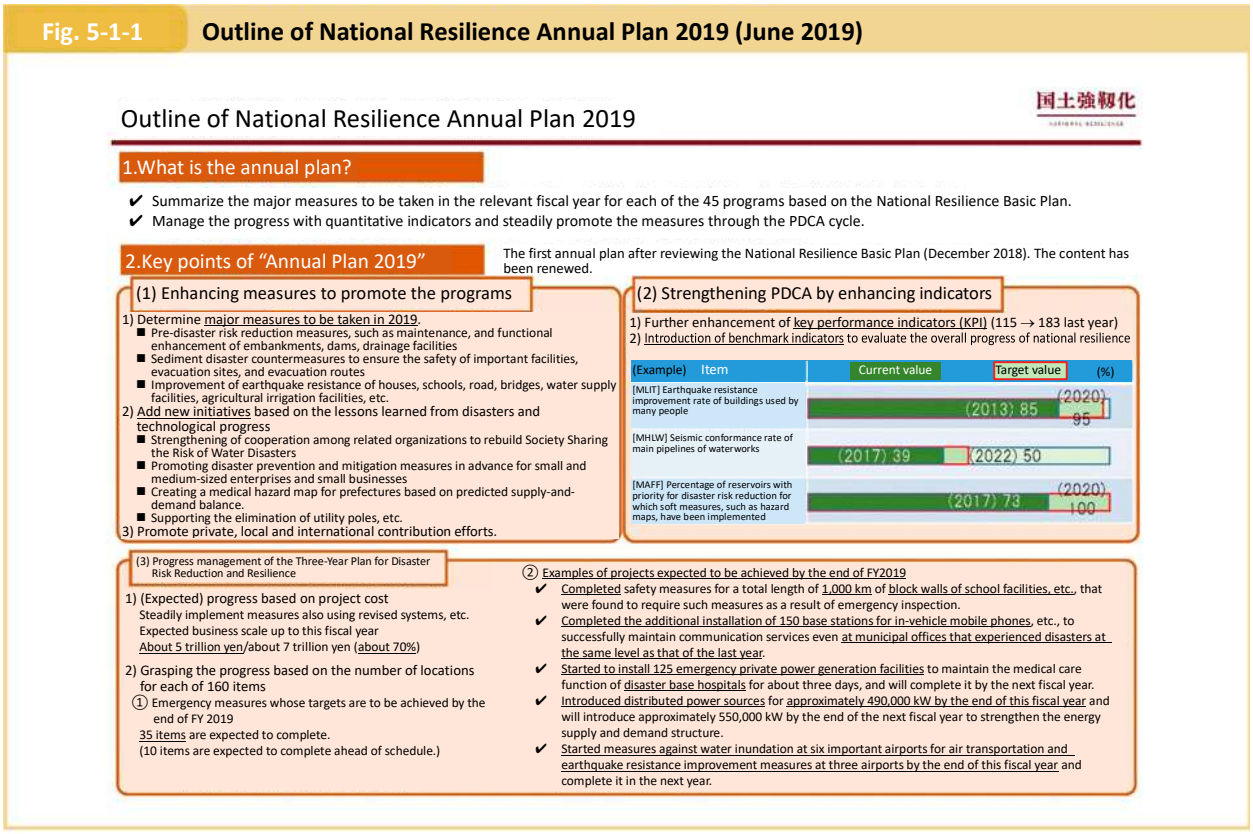
5-1 Decision of the National Resilience Annual Plan for 2019

The government reviewed the National Resilience Basic Plan (Decided at the cabinet meeting on December 14, 2018) and decided the first Annual Plan, “National Resilience Annual Plan for 2019” (hereinafter referred to as “Annual Plan 2019”) on June 11, 2019.

The Annual Plan 2019 includes the following national resilience efforts to be implemented in FY2019: Major measures, such as embankment maintenance and improvement of earthquake resistance of houses, disaster

prevention and mitigation measures for small- and medium-sized enterprises, new support measures to eliminate utility poles, enhancing key performance indicators and introducing benchmark indicators to appropriately determine progress, etc. The government followed up the “Three-Year Emergency Response Plan for Disaster Prevention, Disaster Mitigation and Building National Resilience” (Decided at the cabinet meeting on December 14, 2018) and confirmed that it was expected to spend approximately 5 trillion yen, which is about 70% of the project budget of approximately 7 trillion yen, by FY2019 and that 35 emergency measures, such as block wall safety measures for school facilities, were expected to be completed by the end of FY2019. (Fig. 5-1-1)

Fig. 5-1-1 Outline of National Resilience Annual Plan 2019 (June 2019)



Source: Cabinet Office website
(Reference: http://www.cas.go.jp/jp/seisaku/kokudo_kyoujinka/pdf/nenjikeikaku2019_01.pdf)

5-2 Promotion of National Resilience Based on Disasters in FY2019

Natural disasters that cause enormous damage occur almost every year. Under such circumstances, the government continues to implement the “Three-Year Emergency Response Plan for Disaster Prevention, Disaster Mitigation and Building National Resilience” steadily to create a strong and flexible nation, capable of withstanding such disasters. A series of typhoon damage in 2019 revealed weaknesses in flood control. To further strengthen efforts for disaster prevention and mitigation and national resilience around this issue, the government used the supplementary budget for FY2019 and the budget for FY2020 to secure the necessary funds.

5-3 Support for the Formulation of Fundamental Plans for Regional Resilience

To effectively promote national resilience, it is crucial for local governments to play a central role in promoting regional resilience. Local governments are in the process of formulating their relevant Fundamental Plan for Regional Resilience (hereinafter “Regional Plan”). As of April 1, 2020, 411 municipalities in 47 prefectures had already formulated the Regional Plan while 1034 municipalities were in the process of doing

so (Fig. 5-3-1). Before local governments formulate their Regional Plan, the government held briefing sessions by national staff and supported efforts implemented by local governments based on their regional plans through 34 grants and subsidies under the jurisdiction of related ministries and agencies. From FY2020 onwards, the government has decided to further increase support through grants and subsidies to further promote the formulation of regional plans and regional resilience efforts.

Fig. 5-3-1 Formulation State of Fundamental Plans for Regional Resilience

As of April 1, 2020

Prefecture name	Already prepared	
	Number of groups	Group name
Hokkaido	61	Hokkaido, Sapporo-shi, Hakodate-shi, Kushiro-shi, Iwamizawa-shi, Abashiri-shi, Rumoi-shi, Ashibetsu-shi, Mombetsu-shi, Nayoro-shi, Nemuro-shi, Date-shi, Matsumae-cho, Fukushima-cho, Esashi-cho, Kaminokuni-cho, Assabu-cho, Otobe-cho, Okushiri-cho, Imakane-cho, Setana-cho, Shimamaki-mura, Suttsu-cho, Kuromatsunai-cho, Rankoshi-cho, Niseko-cho, Makkari-mura, Rusutsu-mura, Kimobetsu-cho, Kyowa-cho, Iwanai-cho, Tomari-mura, Kamoenai-mura, Furubira-cho, Yoichi-cho, Akaigawa-mura, Namporo-cho, Chippubetsu-cho, Hokuryu-cho, Numata-cho, Biei-cho, Minamifurano-cho, Horokanai-cho, Mashike-cho, Tomamae-cho, Embetsu-cho, Teshio-cho, Esashi-cho, Bihoro-cho, Koshimizu-cho, Toyora-cho, Sobetsu-cho, Toyako-cho, Biratori-cho, Shinhidaka-cho, Memuro-cho, Nakasatsunai-mura, Taiki-cho, Hiro-cho, Rikubetsu-cho, Hamanaka-cho
Aomori	10	Aomori, Hachinohe-shi, Mutsu-shi, Oirase-cho, Sannohe-machi, Gonohe-machi, Takko-machi, Nambu-cho, Hashikami-cho, Shingo-mura
Iwate	7	Iwate, Miyako-shi, Hanamaki-shi, Tono-shi, Ichinoseki-shi, Ninohe-shi, Yahaba-cho
Miyagi	3	Miyagi, Ohira-mura, Minamisanriku-cho
Akita	3	Akita, Odate-shi, Oga-shi
Yamagata	11	Yamagata, Yamagata-shi, Tsuruoka-shi, Sakata-shi, Higashine-shi, Nanyo-shi, Mogami-machi, Funagata-machi, Mamurogawa-machi, Okura-mura, Sakegawa-mura
Fukushima	7	Fukushima, Fukushima-shi, Koriyama-shi, Kagamiishi-machi, Hinoemata-mura, Bandai-machi, Hanawa-machi
Ibaraki	17	Ibaraki, Hitachi-shi, Tsuchiura-shi, Koga-shi, Kasama-shi, Hitachinaka-shi, Itako-shi, Chikusei-shi, Sakuragawa-shi, Namegata-shi, Omitama-shi, Ibaraki-machi, Oarai-machi, Daigo-machi, Ami-machi, Goka-machi, Sakai-machi
Tochigi	8	Tochigi, Utsunomiya-shi, Nikko-shi, Oyama-shi, Kaminokawa-machi, Nogi-machi, Takanezawa-machi, Nasu-machi
Gumma	2	Gumma, Tatebayashi-shi
Saitama	4	Saitama, Saitama-shi, Kumagaya-shi, Kasukabe-shi
Chiba	4	Chiba, Chiba-shi, Noda-shi, Asahi-shi
Tokyo	3	Tokyo, Arakawa-ku, Hachioji-shi
Kanagawa	4	Kanagawa, Yokohama-shi, Kawasaki-shi, Ebina-shi
Niigata	5	Niigata, Niigata-shi, Nagaoka-shi, Sanjo-shi, Tsubame-shi
Toyama	2	Toyama, Toyama-shi
Ishikawa	8	Ishikawa, Kanazawa-shi, Nanao-shi, Komatsu-shi, Suzu-shi, Hakui-shi, Kahoku-shi, Hakusan-shi
Fukui	3	Fukui, Fukui-shi, Tsuruga-shi
Yamanashi	6	Yamanashi, Yamanashi-shi, Otsuki-shi, Fujikawa-cho, Doshi-mura, Fujikawaguchiko-machi
Nagano	6	Nagano, Matsumoto-shi, Ina-shi, Komagane-shi, Tomi-shi, Iijima-machi
Gifu	8	Gifu, Gifu-shi, Tajimi-shi, Seki-shi, Hashima-shi, Ena-shi, Hida-shi, Kaizu-shi
Shizuoka	9	Shizuoka, Hamamatsu-shi, Shimada-shi, Yaizu-shi, Kakegawa-shi, Fujieda-shi, Makinohara-shi, Nishiizu-cho, Oyama-cho
Aichi	12	Aichi, Nagoya-shi, Toyohashi-shi, Okazaki-shi, Handa-shi, Toyokawa-shi, Toyota-shi, Tokai-shi, Chita-shi, Tahara-shi, Kota-cho, Shitara-cho
Mie	14	Mie, Tsu-shi, Ise-shi, Matsusaka-shi, Kuwana-shi, Suzuka-shi, Kameyama-shi, Kumano-shi, Komono-cho, Watarai-cho, Taiki-cho, Minamiise-cho, Mihama-cho, Kiho-cho
Shiga	11	Shiga, Otsu-shi, Hikone-shi, Nagahama-shi, Omihachiman-shi, Kusatsu-shi, Koka-shi, Yasu-shi, Konan-shi, Higashiomi-shi, Toyosato-cho
Kyoto	15	Kyoto, Kyoto-shi, Fukuchiyama-shi, Maizuru-shi, Ayabe-shi, Uji-shi, Miyazu-shi, Kameoka-shi, Kizugawa-shi, Oyamazaki-cho, Kumiyama-cho, Ujitawara-cho, Seika-cho, Minamiyamashiro-mura, Yosano-cho
Osaka	8	Osaka, Osaka-shi, Sakai-shi, Toyonaka-shi, Takatsuki-shi, Kaizuka-shi, Izumisano-shi, Higashiosaka-shi
Hyogo	6	Hyogo, Kobe-shi, Ashiya-shi, Nishiwaki-shi, Minamiawaji-shi, Taishi-cho
Nara	16	Nara, Nara-shi, Yamatokoriyama-shi, Tenri-shi, Kashihara-shi, Gojo-shi, Gose-shi, Katsuragi-shi, Kawanishi-cho, Koryo-cho, Oyodo-cho, Shimoichi-cho, Kurotaki-mura, Totsukawa-mura, Shimokitayama-mura, Higashiyoshino-mura
Wakayama	31	Wakayama, Wakayama-shi, Kainan-shi, Hashimoto-shi, Arida-shi, Gobo-shi, Tanabe-shi, Shingu-shi, Kinokawa-shi, Iwade-shi, Kimino-cho, Katsuragi-cho, Kudoyama-cho, Koya-cho, Yuasa-cho, Hirogawa-cho, Aridagawa-cho, Mihama-cho, Hidaka-cho, Yura-cho, Inami-cho, Minabe-cho, Hidakagawa-cho, Shirahama-cho, Kamitonda-cho, Susami-cho, Nachikatsura-cho, Taiji-cho, Kozagawa-cho, Kitayama-mura, Kushimoto-cho
Tottori	19	Tottori, Tottori-shi, Yonago-shi, Kurayoshi-shi, Iwami-cho, Wakasa-cho, Chizu-cho, Yazu-cho, Misasa-cho, Yurihama-cho, Kotora-cho, Hokuei-cho, Hiezu-son, Daisen-cho, Nambu-cho, Hoki-cho, Nichinan-cho, Hino-cho, Kofu-cho
Shimane	4	Shimane, Matsue-shi, Oda-shi, Kawamoto-machi
Okayama	5	Okayama, Okayama-shi, Kurashiki-shi, Takahashi-shi, Nagi-cho
Hiroshima	3	Hiroshima, Hiroshima-shi, Jinsekikogen-cho
Yamaguchi	1	Yamaguchi
Tokushima	25	Tokushima, Tokushima-shi, Naruto-shi, Komatsushima-shi, Anan-shi, Yoshinogawa-shi, Awa-shi, Mima-shi, Miyoshi-shi, Katsura-cho, Kamikatsu-cho, Sanagochi-son, Ishii-cho, Kamiyama-cho, Naka-cho, Mugi-cho, Minami-cho, Kaiyo-cho, Matsushige-cho, Kitajima-cho, Aizumi-cho, Itano-cho, Kamiita-cho, Tsurugi-cho, Higashimiyoshi-cho
Kagawa	4	Kagawa, Marugame-shi, Shodoshima-cho, Naoshima-cho
Ehime	5	Ehime, Yawatahama-shi, Saijo-shi, Ozu-shi, Seiyo-shi
Kochi	3	Kochi, Kochi-shi, Sakawa-cho
Fukuoka	2	Fukuoka, Kitakyushu-shi
Saga	20	Saga, Karatsu-shi, Tosu-shi, Taku-shi, Imari-shi, Takeo-shi, Kashima-shi, Ogi-shi, Ureshino-shi, Kanzaki-shi, Yoshinogari-cho, Kiyama-cho, Kamimine-cho, Miyaki-cho, Genkai-cho, Arita-cho, Omachi-cho, Kohoku-machi, Shiroishi-cho, Tara-cho
Nagasaki	9	Nagasaki,Nagasaki-shi,Sasebo-shi,Tsushima-shi,Iki-shi,Goto-shi,Togitsu-cho,Saza-cho,Shinkamigoto-cho
Kumamoto	30	Kumamoto, Kumamoto-shi, Yatsushiro-shi, Hitoyoshi-shi, Minamata-shi, Tamana-shi, Yamaga-shi, Kikuchi-shi, Kamiamakusa-shi, Aso-shi, Koshi-shi, Gyokuto-machi, Nankan-machi, Nagasu-machi, Nagomi-machi, Ozu-machi, Kikuyo-machi, Oguni-machi, Minamiaso-mura, Kosa-machi, Hikawa-cho, Ashikita-machi, Nishiki-machi, Taragi-machi, Yunomae-machi, Mizukami-mura, Sagara-mura, Yamae-mura, Asagiri-cho, Reihoku-machi
Oita	5	Oita, Oita-shi, Saiki-shi, Usuki-shi, Bungoono-shi
Miyazaki	6	Miyazaki, Nichinan-shi, Shintomi-cho, Nishimera-son, Kijo-cho, Kawaminami-cho
Kagoshima	12	Kagoshima, Kagoshima-shi, Makurazaki-shi, Izumi-shi, Hioki-shi, Minamisatsuma-shi, Shibushi-shi, Toshima-mura, Nagashima-cho, Yusui-cho, Setochi-cho, Kikai-cho
Okinawa	1	Okinawa
Total	458	

Source: Material of National Resilience Promotion Office, Cabinet Secretariat

5-4 Promotion of Private Sector Initiatives Contributing to National Resilience

Since FY2016, there has been a system under which companies and organizations actively implementing business continuity initiatives are certified by third parties as an Organization Contributing to National Resilience. The objective is to encourage private sector initiatives contributing to national resilience.

Meanwhile, in order to address a large-scale disaster, it is important to maximize the functionality of mutual support in society as a whole, rather than focusing solely on the self-help efforts by individual companies. In this view, a new system was established in July 2018 to certify Organizations Contributing to National Resilience that have made outstanding social contribution as Organizations Contributing to National Resilience (+ Mutual Support). By the end of March 2020, a total of 195 organizations received the certification (of which 92 organizations have been certified as Organizations Contributing to National Resilience (+ Mutual Support)).

Chapter 2 Progress of Measures for Nuclear Disasters

Section 1: Nuclear Emergency Preparedness Systems

1-1 Nuclear Emergency Preparedness System under Non-Emergency Conditions

In the case of a nuclear emergency, the resultant damage would be immense and extensive, so the whole government must work together cohesively to develop and promote nuclear emergency response measures. Accordingly, the Nuclear Emergency Preparedness Council has been established within the Cabinet Office to promote nuclear emergency preparedness measures by the government as a whole under non-emergency conditions. The main role of this Council is to verify based on the Nuclear Emergency Response Guidelines the concreteness and practicality of the emergency response plans drawn by each Local Nuclear Disaster Management Council, which is comprised of representatives of the Cabinet Office and other related ministries and agencies and local governments. The Nuclear Emergency Preparedness Council is chaired by the Prime Minister, with the Chief Cabinet Secretary, Minister of the Environment, Cabinet Office Minister of State for the Nuclear Emergency Preparedness, and the Chairman of the NRA as Vice Chairpersons, and all Ministers of State and the Deputy Chief Cabinet Secretary for Crisis Management, and others, serving as Council Members (Fig. 1-1-1).

1-2 Nuclear Emergency Preparedness System in an Emergency

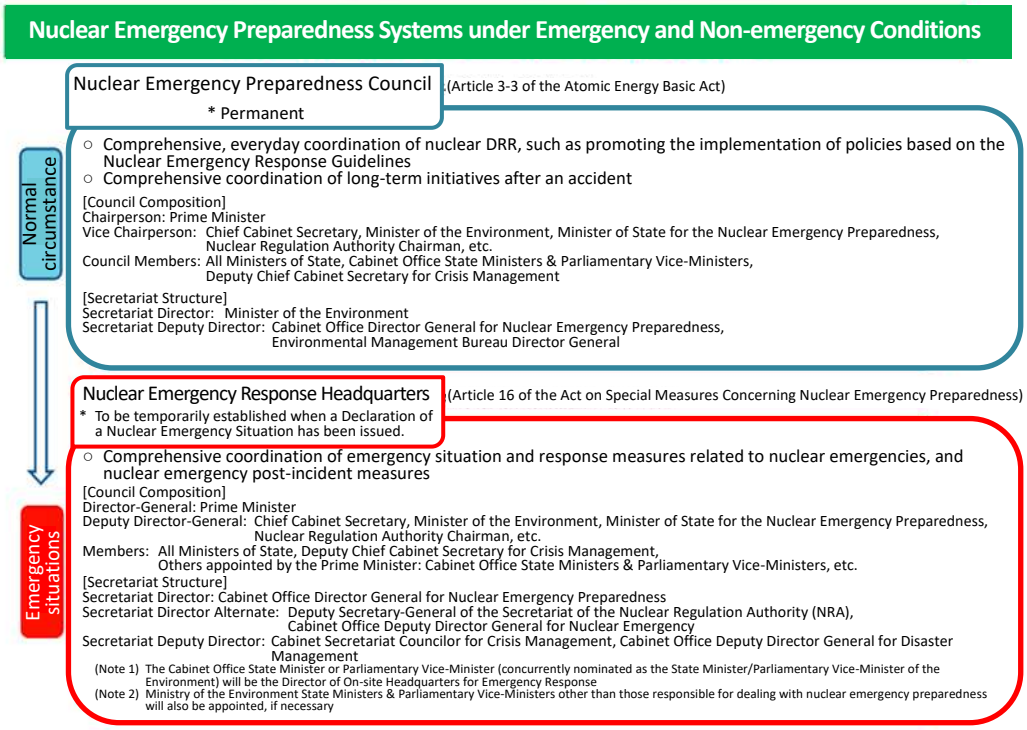
In the event of a nuclear emergency involving the release of a large quantity of radioactive material, a Nuclear Emergency Response Headquarters will be established. The main role of this headquarters will be to ascertain the actual situation on the field and the extent of the damage and to take overall charge of coordinating related national government organizations and local government bodies to ensure that emergency response measures suited to the situation are implemented swiftly and accurately. The Prime Minister will serve as Director General of the Nuclear Emergency Response Headquarters, with the Chief Cabinet Secretary, Minister of the Environment, Cabinet Office Minister of State for the Nuclear Emergency Preparedness, and the Chairman of the NRA as deputy directors-general, and all Ministers of State and the Deputy Chief Cabinet Secretary for Crisis Management, among others, serving as regular members (Fig. 1-1-1).

In the Headquarters, the NRA holds primary responsibility for decisions on technical and specialized matters (urgent area), while matters relating to the procurement of equipment and supplies required to deal with the nuclear facilities and all matters associated with the response outside the facilities (off-site) are handled by the related ministries and agencies, based on the directions of the director-general (the Prime Minister). The organization headed by the Cabinet Office Director-General for Nuclear Disaster Management that was launched on October 14, 2014, will serve as the Secretariat of the Nuclear Emergency Response Headquarters.

Moreover, the Basic Plan for Disaster Risk Reduction was revised in July 2015 to enhance the system for dealing with a complex disaster. This revision put in place a cooperation framework that will, in the event of a complex disaster, enable the Extreme Disaster Management Headquarters (which deals with natural disasters) and the Nuclear Emergency Response Headquarters (which deals with nuclear emergencies) to undertake integrated information gathering, decision-making, and direction and coordination (Figs. 1-2-1 and 1-2-2).

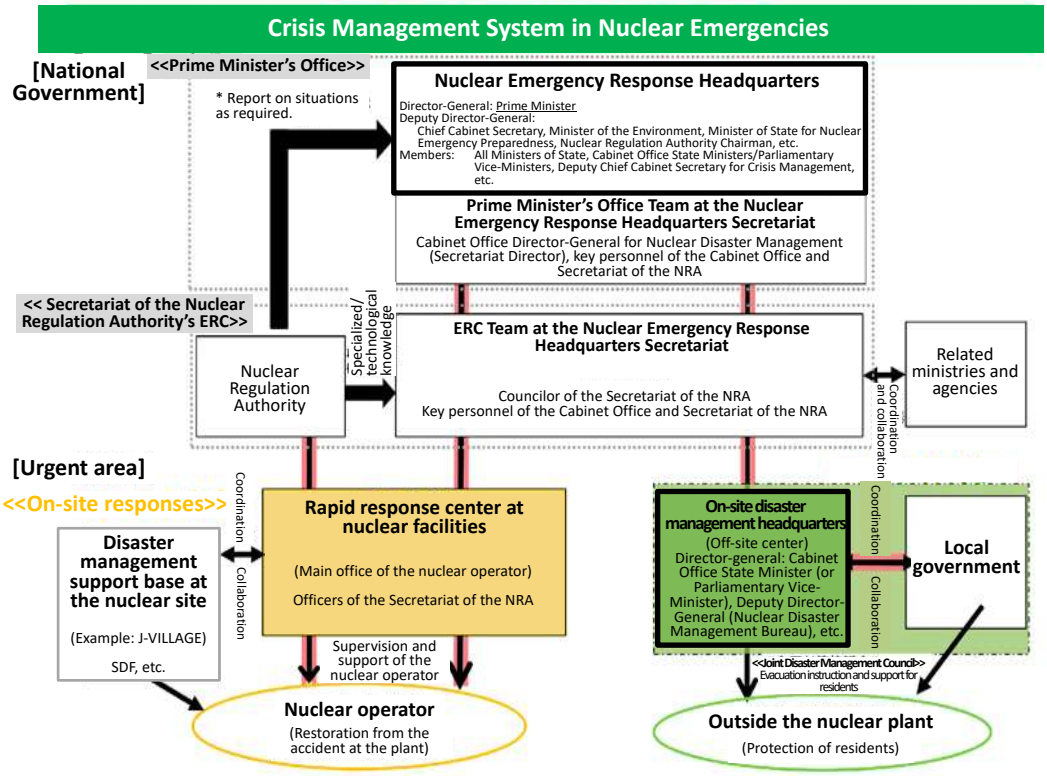
In addition, the 2019 Comprehensive Nuclear Emergency Response Exercise, which was held from November 8 to 10, 2019, was based on the scenario of a complex disaster involving a combination of a natural disaster and a nuclear disaster. The exercise included decision making concerning the evacuation of residents according to the development of the situation as well as field drills.

Fig. 1-1-1 Nuclear Emergency Preparedness Systems under Emergency and Non-emergency Conditions



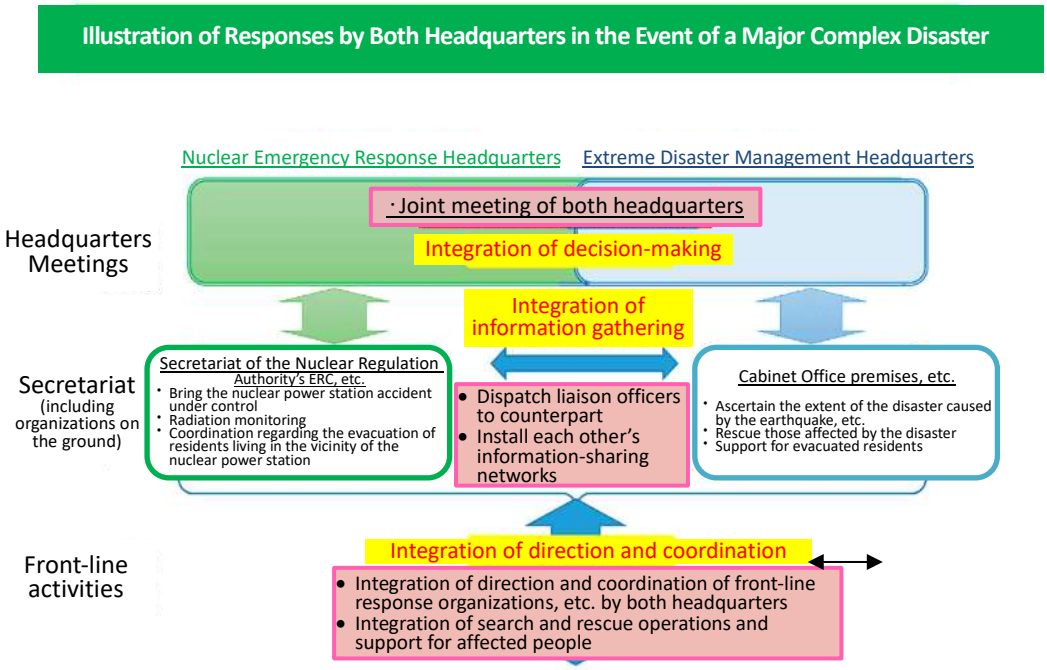
Source: Cabinet Office

Fig. 1-2-1 Crisis Management System in Nuclear Emergencies



Source: Cabinet Office

Fig. 1-2-2 **Illustration of Responses by Both Headquarters in the Event of a Major Complex**



Source: Cabinet Office

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

It is absolutely vital to implement ongoing initiatives to ensure trust in the administration of nuclear energy regulation, taking into account the lessons from the accident at Tokyo Electric Power Company's Fukushima Daiichi Nuclear Power Station. The Nuclear Regulation Authority (NRA) is tackling various policy challenges, based on its guiding principles of independent decision making, effective actions, open and transparent organization, improvement and commitment, and emergency response, in order to fulfill its mission of protecting the general public and the environment through rigorous and reliable regulation for nuclear power.

2-1 Initiatives in Nuclear Disaster Management

The NRA has been constantly improving the contents of NRA Guide for Emergency Preparedness and Response (NRA EPR Guide) to optimize the judgment criteria for developing the disaster prevention plans by actively incorporating the latest international knowledge. On July 3, 2019, the NRA EPR Guide as well as "Distribution and Administration of stable Iodine," which explains the implementation of the contents of the NRA EPR Guide, were revised to distribute and dose stable iodine agents in smoother and more appropriate manners in accordance with a report compiled by the "Study Team on Administration of Stabilized Iodine ".

In addition, on February 5, 2020, based on clarification of initial emergency responses during the land transportation of nuclear fuel materials, etc., the NRA revised the NRA EPR Guide to clarify measures taken by the national government against a disaster during such transportations.

Steady progress is being made in developing a medical care system for nuclear emergency, and support for designation of Nuclear Emergency Core Hospitals.

2-2 Emergency Response Initiatives

In 2019,in order to further strengthen the emergency response capability of its emergency response personnel, the NRA improved its annual training and instruction programs for manpower management as a basis and systematically promoted the preparation of an ability enhancement sheet for each function team and the reflection of this information in the sheets for personnel evaluation. These reinforced the NRA's manpower management system for its personnel.

The NRA also conducted training in conjunction with nuclear operators' emergency drills to explore a method of smooth information sharing between the NRA's Emergency Response Center(ERC)'s plant team and nuclear operators' immediate response centers, thereby improving their emergency response capability.

In addition, at the Debriefing Session of Emergency Drills by Nuclear Operators in FY 2019, the NRA reported the evaluation results for the Emergency Drills by Nuclear Operators in commercial power reactor facilities and nuclear fuel facilities, etc. Furthermore, based on the results of training performed in FY2018, the NRA developed FY2019 training policies, based on which it developed the training scenarios, implemented training and evaluated training results. In FY2019, courses for commander judging ability for 5 nuclear operators and courses for response capabilities for 9 nuclear operators have conducted.

2-3 Emergency Radiation Monitoring Initiatives

To conduct effective emergency monitoring in accordance with the Nuclear Emergency Response Guidelines, the NRA established emergency monitoring centers in all areas in which nuclear power reactor facilities are located. The NRA has maintained necessary equipment and materials at each emergency monitoring center in order to secure their functionality in the event of a nuclear disaster. It also intends to enforce and reinforce the emergency monitoring systems by deploying personnel in charge of radiation monitoring to the NRA regional office.

Emergency monitoring results aggregated in the "Emergency Radiation Monitoring Information Sharing/Announcement System" used to be announced on the NRA website during the notification stage pursuant to Article 10 (1) of the Act on Special Measures Concerning Nuclear Emergency Preparedness, but the 10th NRA (on May 29, 2019) determined announcement of the measured values at ordinary times on the next system, which is due to go into in around October 2020 to facilitate the information transmission to the public in an emergency.

2-4 Accidents and Failures

The Act on the Regulation of Nuclear Source Material, Nuclear Fuel Material, and Reactors requires nuclear operators, etc. while the Act on the Regulation of Radioisotopes, etc., requires users who has been granted permission or who has given utilization notification to report accidents and failures to the NRA. Of the reports received in FY 2019, six came from nuclear operators, etc. and five from permission or notification users, etc.

Section 3: Enhancing and Strengthening Local Nuclear Emergency Preparedness Systems

3-1 Formulating and Supporting Local Plans for Disaster Risk Reduction / Evacuation Plans

Under the Basic Act on Disaster Management, local governments must prepare Local Plans for DRR with Nuclear Emergency Response Measures (hereinafter "Local Plans for DRR") that set out the basic response to be adopted by prefectures and municipalities in dealing with a nuclear emergency.

Currently, related local governments within a radius of around 30km of a nuclear power plant are preparing Local Plans for DRR based on the Basic Plan for DRR and the Nuclear Emergency Response Guidelines (Fig. 3-1-1). Ensuring that the content of Local Plans for DRR is highly specific and satisfactory is crucial, so the government provides proactive support regarding measures to tackle issues that are difficult for local governments alone to resolve in developing more specific Evacuation Plans and measures to assist persons requiring special care.

Fig. 3-1-1 Status of Local Plans for DRR / Evacuation Plans (as of March 31, 2020)

	Municipalities Concerned	Number of Local Plans for DRR Formulated	Number of Evacuation Plans Formulated	Remarks
Municipalities Concerned	13	13	13	
Higashidori region	5	5	5	
Onagawa region	7	7	7	
Fukushima region*	13	13	9	In December 2016, Fukushima Prefecture revised the Fukushima Prefecture Region-wide Evacuation Plan in Case of Nuclear Emergency.
Kashiwazaki-Kariwa region	9	9	9	
Tokai region	14	14	4	In March 2019, Ibaraki Prefecture revised and released the Plan for Region-wide Evacuation in Ibaraki Prefecture in Case of a Nuclear Emergency.
Hamaoka region	11	11	9	In March 2017, Shizuoka Prefecture revised the Plan for Region-wide Evacuation in Case of a Nuclear Emergency in the Hamaoka region.
Shika region	9	9	9	
Fukui area	23	23	23	
Shimane region	6	6	6	
Ikata region	8	8	8	
Genkai region	8	8	8	
Sendai region	9	9	9	
Total for the 13 regions	135	135	119	

Note: * Readers should be aware that Tokyo Electric Power Company's Fukushima Daiichi Nuclear Power Station, which is a Specified Nuclear Facility, is located in the Fukushima region and that the area around it is an evacuation instruction area.

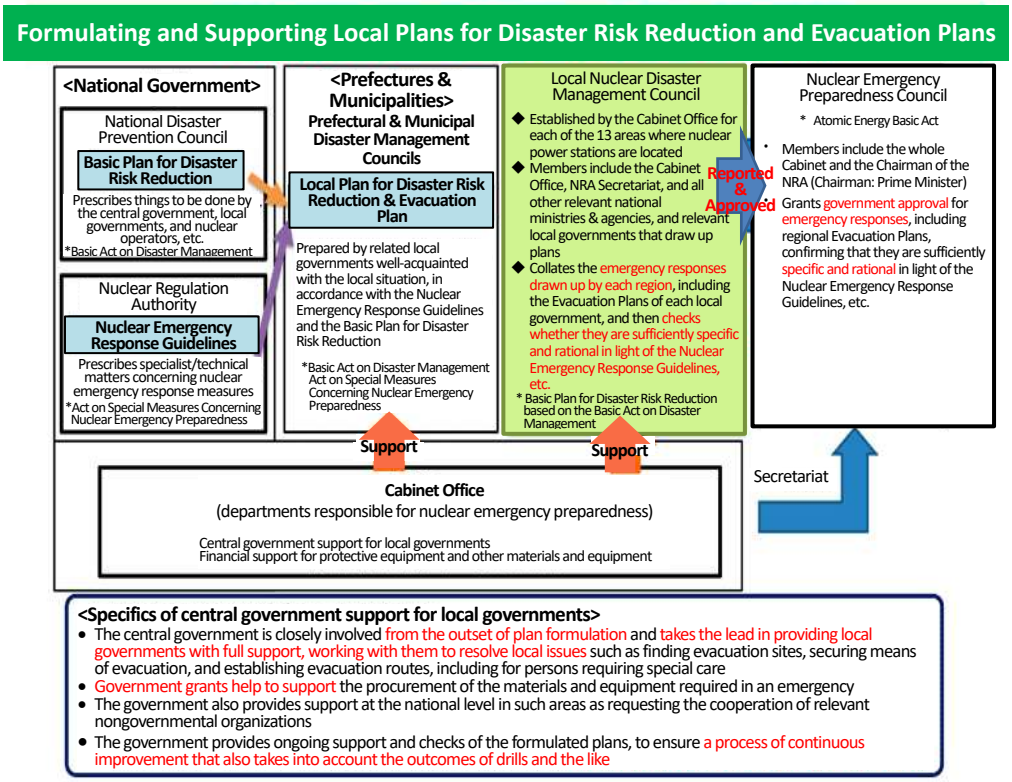
Source: Cabinet Office

In March 2015, the Cabinet Office established Local Nuclear Disaster Management Councils (hereinafter "Management Councils") to serve as working teams for resolving issues in areas where nuclear power plants are located. Its aim in doing so was to support efforts to flesh out and enhance the content of the Local Plans for DRR and Evacuation Plans formulated by prefectures and municipalities in accordance with "Future Responses to Enhancing Local Plans for DRR" (approved by the Nuclear Emergency Preparedness Council in September 2013). The Cabinet Office also established working groups reporting to these Management Councils. The working groups in each region are considering support and region-wide coordination in the formulation of Evacuation Plans, and the assistance provided by national frontline response organizations, while the national government and related local governments are working together to develop more specific, enhanced Local Plans for DRR and Evacuation Plans (Fig. 3-1-2).

Areas where more specific, enhanced Local Plans for DRR and Evacuation Plans have been developed must summarize their emergency response including evacuation plans and have it confirmed by the Management Councils, to ensure that it is specific and rational in light of the Nuclear Emergency Response Guidelines, etc.

The Cabinet Office then reports the councils' findings to the Nuclear Emergency Preparedness Council, to seek the Council's approval. A PDCA review cycle is introduced for regions whose emergency response has been confirmed: in addition to support for enhancing the emergency response and making it more specific, followed by confirmed of the emergency response (Plan), a drill is carried out by the Management Council based on the confirmed emergency response (Do), areas for improvement are identified from the outcomes of the drill (Check), and the emergency response of the region in question is improved on the basis of those areas for improvement (Action). Thus, the local nuclear emergency preparedness system goes through an ongoing process of enhancement and strengthening.

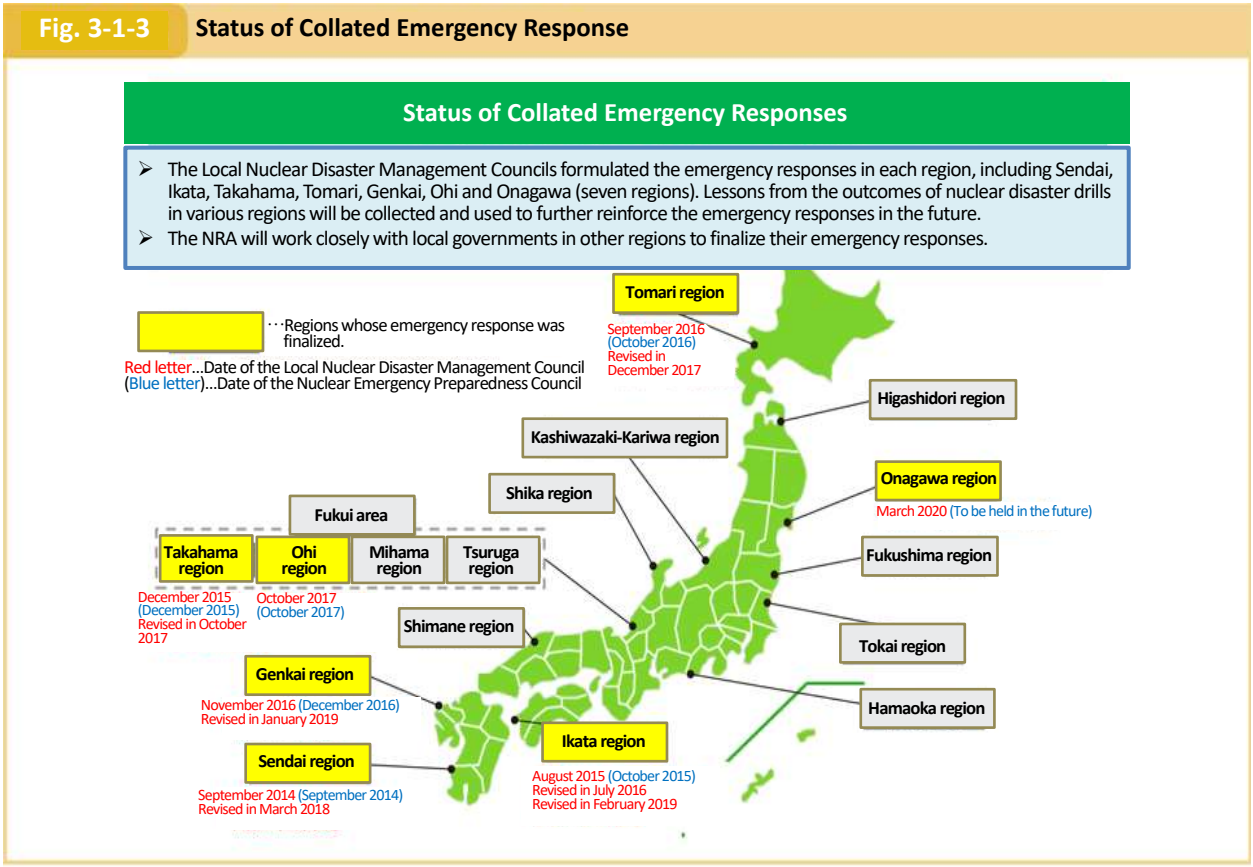
Fig. 3-1-2 **Formulating and Supporting Local Plans for DRR and Evacuation Plans**



Source: Cabinet Office

In FY 2019, the Onagawa Local Nuclear Disaster Management Council developed the Onagawa Region Emergency Response in its 1st meeting and checked the contents (Fig. 3-1-3).

Fig. 3-1-3 Status of Collated Emergency Response



Source: Cabinet Office

A subcommittee will be set up in each of the Tsuruga, Mihama, Ohi and Takahama regions in the Fukui area to discuss how best to solve issues specific to each region.

(1) Onagawa Region

In the Onagawa region, a working group was established under the Onagawa Local Nuclear Disaster Management Council and held 24 meetings between May 2015 and March 2020 to discuss emergency responses in the event of a nuclear disaster. The Onagawa Local Nuclear Disaster Management Council summarized "Emergency Responses in the Onagawa Region" on March 25, 2020.
(Reference: https://www8.cao.go.jp/genshiryoku_bousai/keikaku/02_onagawa.html)

The four key changes to the Onagawa Region Emergency Response are as follows:

(i) PAZ (areas within a radius of approximately 5 km from the nuclear power generation facility with about 1,000 people) carries out immediate evacuation in a state of General Emergency. Secure evacuation sites outside a 30 km radius.
(ii) Onagawa Town with special geographical conditions, manned remote islands outside the PAZ in Ishinomaki City, and Oshika Peninsula area (about 2,000 people) shall be the quasi-PAZ, and the same protective actions as the PAZ shall be implemented.
(iii) Within the UPZ (approximately 5-30 km from the power plant with about 195,000 people), indoor evacuation has been implemented in a state of General Emergency. As a result of emergency monitoring, temporary relocation, etc. was conducted within a week or so in areas with radiation doses exceeding a certain

level. Evacuation sites capable of accommodating about 195,000 people in the UPZ have been secured.
(iv) In the event of a complex disaster with a tsunami (when a tsunami warning or major tsunami warning is issued), evacuation from the tsunami should be prioritized rather than evacuation from a nuclear disaster to avoid the tsunami risk on human lives. If safety against tsunamis can be ensured, residents will be evacuated to the designated evacuation site in preparation for a nuclear disaster.

At the first Onagawa Local Disaster Management Council, Miyagi Prefecture, based on the recognition that "nuclear emergency preparedness must be ceaseless and constantly refined" announced that it would work with related cities and towns to enhance and strengthen preparedness. The national government said it would continue to provide support through the council, and four government agencies related to front-line response organizations, namely, the Police, Firefighters, the Japan Coast Guard, and the SDF said that they would provide necessary support in the event of unforeseen circumstances when requested by the relevant local government. In addition, Tohoku Electric Power Co., Inc. announced that it would safeguard equipment of the business operator, such as securing welfare vehicles and providing personnel and equipment to inspect evacuation and relocation areas. Based on the above, it was confirmed that the measures taken by the relevant local governments such as Miyagi Prefecture and relevant government ministries and agencies were specific and reasonable in light of the Nuclear Emergency Response Guidelines, etc.

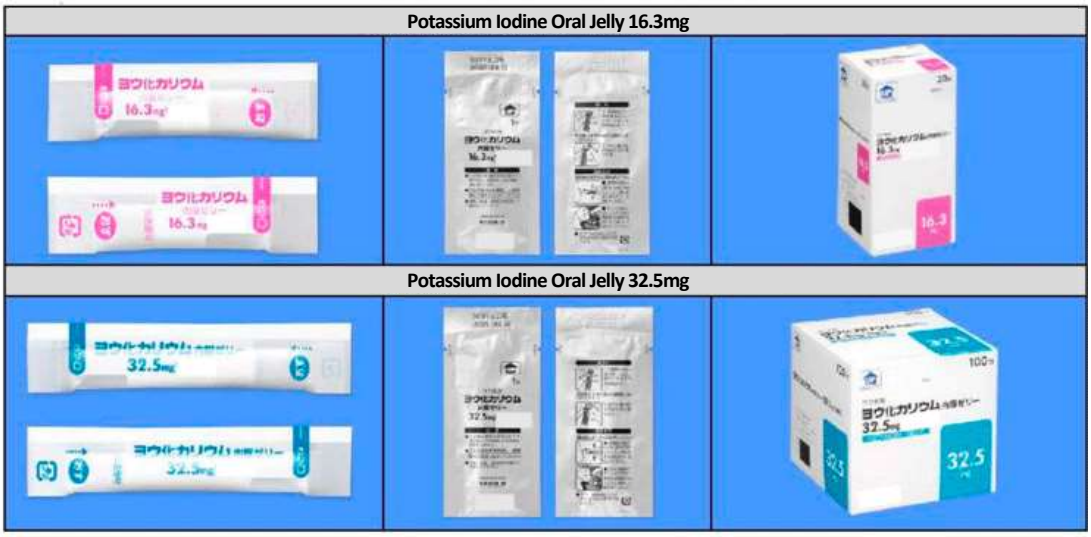
3-2 Support and Initiatives for Other Prefectures

(1) Stockpiling and Distribution of a Stable Iodine Agent in Jelly Form

Stable iodine agents in pill form are not suitable for infants and young children (aged under three) because their swallowing ability is not fully developed by that stage. In an emergency, a pharmacist or other trained person has to administer a powdered stable iodine agent dissolved in syrup. For this reason, agents suitable for such children could not be distributed in advance, which had been a major issue.

In March 2016, the manufacturer of the pills developed a prepackaged product consisting of the active ingredient (potassium iodide) dissolved in a jelly. Accordingly, local governments in the PAZ and UPZ (Urgent Protective Action Planning Zone: Areas in which urgent protective measures are in place) stockpiled stable iodine agents in jelly form and distributed them to residents in advance with financial support by the national government. The necessary amount had been stocked by the end of FY 2018. Besides, the Cabinet Office has stocked stable iodine agents for residents outside the UPZ, and the necessary amount had been stocked by the end of FY 2019.

Stable ioding agent in jelly form



[Usage and dosage]

Potassium iodine should be administered orally. The usual dosage is 100 mg/time for individuals aged 13 or over; 50 mg/time for children aged at least 3 but under 13; 32.5 g/time for infants aged at least 1 month but under 3; and 16.3 mg for newborn infants.

Source: Provided by the pharmaceutical manufacturer

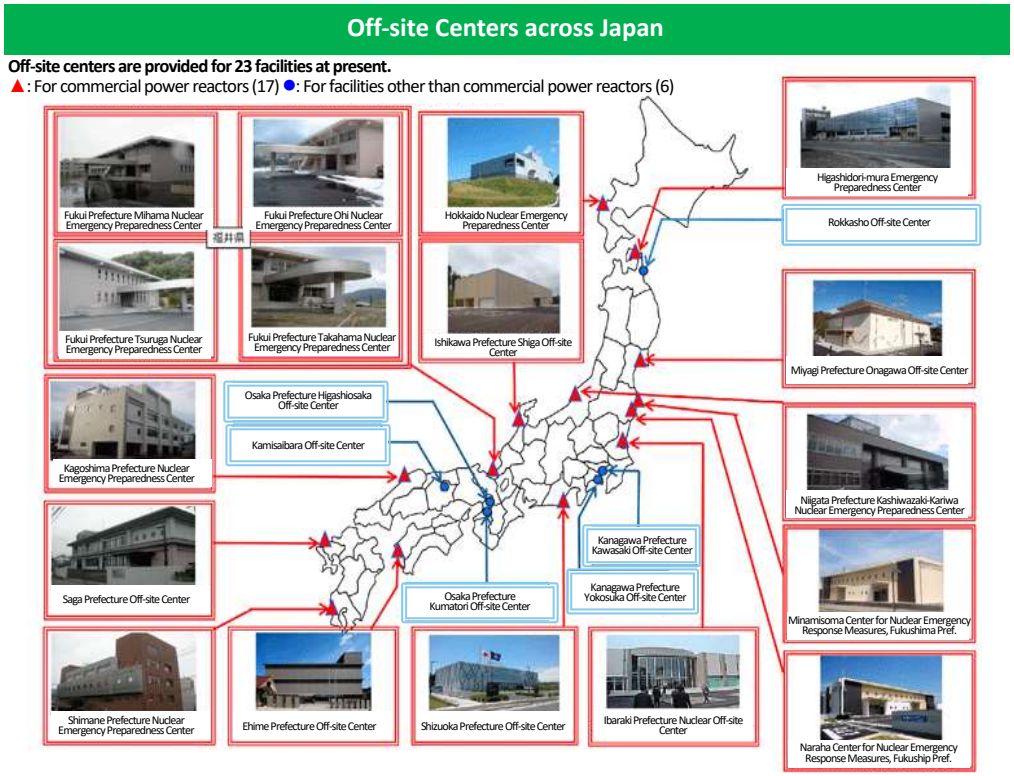
(2) Designation of Off-site Centers

Under Article 12 (1) of the Act on Special Measures Concerning Nuclear Emergency Preparedness, the Prime Minister is required to designate an emergency response base facility (known as “an off-site center”) for each nuclear site, for the coordination of emergency response measures (Fig. 3-2-1).

The requirements that off-site centers must satisfy are prescribed in the Cabinet Office Ordinance on Off-site Centers Pursuant to the Act on Special Measures Concerning Nuclear Emergency Preparedness. Based on the lessons from the accident at Fukushima Daiichi Nuclear Power Station, the siting requirements for the off-site centers of commercial power reactors were revised in September 2012 to be within a radius of 5 - 30 km from the power station in principle (i.e. within the UPZ). Subsequently, in March 2017, the NRA revised the Nuclear Emergency Response Guidelines and established the scope of the Priority Zones for Nuclear Emergency Response for nuclear fuel facilities, etc. In August 2019, the NRA revised the requirements for the off-site center for nuclear fuel facilities to be basically equivalent to those for commercial power reactor facilities.

Since the former Onagawa Off-site Center had been damaged by tsunamis in the Great East Japan Earthquake, a Fire Academy in Sendai City had been designated as a temporary off-site center for the Onagawa region, but a new off-site center was constructed in Onagawa Town and designated as such in April 2020.

Fig. 3-2-1 **Off-site Centers across Japan**

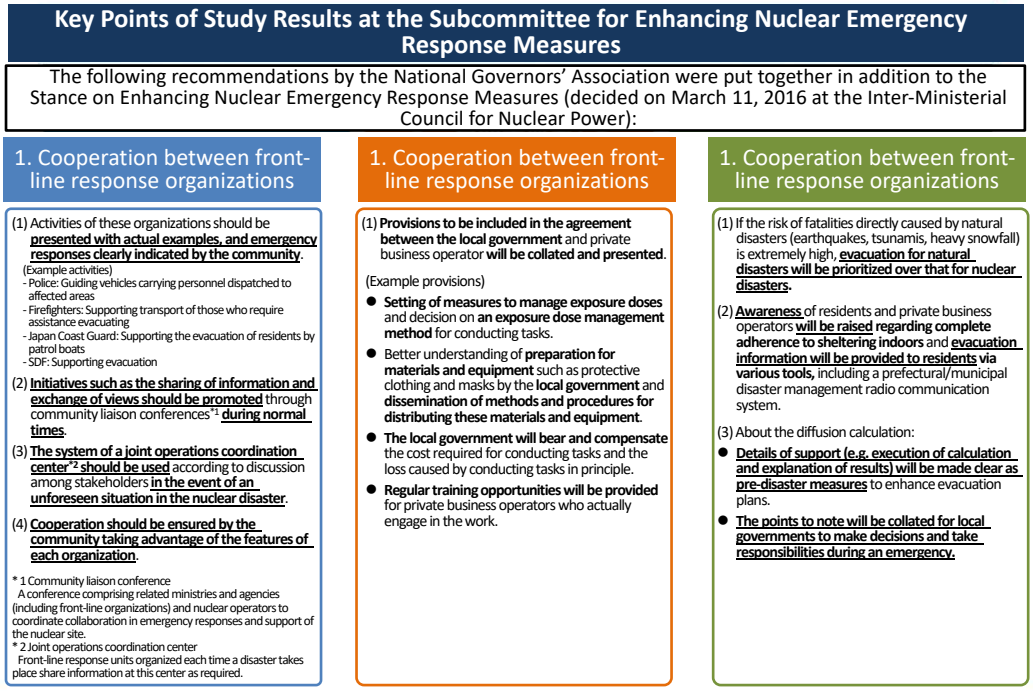


Source: Cabinet Office

(3) Enhancing Nuclear Emergency Response Measures

At a meeting of the Inter-Ministerial Council for Nuclear Power in March 2016, a document concerning nuclear energy policy, entitled the “Stance on Enhancing Nuclear Emergency Response Measures,” was put together at the request of the National Governors’ Association, in response to calls from local governments in charge of local resilience. The Committee of Related Ministries and Agencies on Nuclear Emergency Response Measures was convened in April 2016 to facilitate a government-wide effort to enhance nuclear emergency response measures in light of this stance. At this meeting, committee members decided to establish subcommittees focused on three themes: cooperation between front-line response units (No. 1 Subcommittee), cooperation between private sector business operators (No. 2 Subcommittee), and approaches to the provision of information, including diffusion calculations (No. 3 Subcommittee). Each subcommittee was engaged in professional and practical deliberations that take into account the views of local governments while cooperating with related ministries and agencies. The outcomes were reported at the Inter-Ministerial Council for Nuclear Power, etc. (Fig. 3-2-2)

Fig. 3-2-2 Key Points of Study Results at the Subcommittee for Enhancing Nuclear Emergency Response Measures



Source: Cabinet Office

3-3 Training and Seminars on Regional Nuclear Emergency Preparedness

(1) Support for Nuclear Emergency Preparedness Drills Conducted by Local Governments

Under the Basic Act on Disaster Management, etc., local governments are required to hold a nuclear emergency preparedness drill on a regular basis. Drills organized by related prefectural governments are carried out with the participation of prefectural governors and local governments, as well as national and regional front-line response organizations, namely the police, firefighters, the Japan Coast Guard, and the Self-Defense Forces. They include exercises in evacuating local citizens and conducting inspections when evacuating each area (Fig. 3-3-1).

In regions where the Local Plan for DRR and Evacuation Plan have been enhanced and made more specific, each Local Nuclear Disaster Management Council provides the necessary support in such areas as planning and implementing the drills, promoting the widespread use of evaluation methods, and operating the PDCA cycle via the drills, with the goal of verifying the specificity and effectiveness of the Local Plans for DRR and Evacuation Plan.

In addition, the Cabinet Office formulated the Guidance for Planning, Implementing and Evaluating Emergency Preparedness Drills in March 2018 as basic guidance for the prefectures which operate the entire drills from planning, implementation to evaluation and revised the guidance in March 2019.
(Reference: https://www8.cao.go.jp/genshiryoku_bousai/kunren/kunren.html)

Fig. 3-3-1 Nuclear Emergency Response Exercises Held by Local Governments in FY 2019

Region	Name of Drill	Date
Tomari	Hokkaido Nuclear Emergency Response Exercise	February 6 and 13, 2020
Higashidori	Aomori Prefecture Nuclear Emergency Response Exercise	November 13, 2019
Onagawa	Miyagi Prefecture Nuclear Emergency Response Exercise	November 12 and 13, 2019
Fukushima	Fukushima Prefecture Nuclear Emergency Response Exercise	Canceled due to responding to disasters of Tyhoon Hagris
Kashiwazaki-Kariwa	Niigata Prefecture Nuclear Emergency Response Exercise	November 8 and 9, 2019
Shika	(1) Ishikawa Prefecture Nuclear Emergency Response Exercise (2) Toyama Prefecture Nuclear Emergency Response Exercise	(1) November 4, 2019 (2) November 4 and 17, 2019
Fukui	(1) Fukui Prefecture Nuclear Emergency Response Exercise (2) Kyoto Prefecture Nuclear Emergency Response Exercise (3) Shiga Prefecture Nuclear Emergency Response Exercise (4) Gifu Prefecture Nuclear Emergency Response Exercise	(1) August 30 and 31, 2019 (2) November 30, 2019 (3) November 17, 2019 (4) November 24, 2019
Hamaoka	Shizuoka Prefecture Nuclear Emergency Response Exercise	January 28 and 29, 2020
Shimane	Shimane Prefecture Nuclear Emergency Response Exercise Tottori Prefecture Nuclear Emergency Response Exercise (To be held as a national comprehensive nuclear emergency response exercise this year)	November 8, 9 and 10, 2019
Ikata	Ehime Prefecture Nuclear Emergency Response Exercise Yamaguchi Prefecture Nuclear Emergency Response Exercise	October 30, 2019
Genkai	Saga Prefecture Nuclear Emergency Response Exercise Nagasaki Prefecture Nuclear Emergency Response Exercise Fukuoka Prefecture Nuclear Emergency Response Exercise	November 30, 2019
Sendai	Kagoshima Prefecture Nuclear Emergency Response Exercise	February 9, 2020

Source: Cabinet Office

(2) Training for Staff of the National and Local Governments and Front-line Response Organizations

(Training Programs by the National Government)

The Cabinet Office has organized training of key nuclear emergency response personnel and tabletop exercises for Nuclear Emergency Response Headquarters. The objective of these initiatives was to provide local governments and other disaster response personnel with an understanding of approaches to protection measures in the Nuclear Emergency Response Guidelines and to improve their ability to respond in the event of a nuclear emergency.

In addition, it has organized the Core Personnel Training aimed at promoting the understanding of the core roles among the nuclear emergency response personnel concerning the management of the national headquarters according to the development of the situation of a nuclear disaster and the Practical Capacity Building Training aimed at improving various skills that are necessary for smoothly conducting resident evacuation in the event of a nuclear disaster, such as skills for formulating implementation plans.

It has also provided basic training on nuclear emergency preparedness, aimed at inculcating the basic knowledge required for radiological protection to national disaster response personnel.

(i) Training of key nuclear emergency response personnel

Training is provided to key disaster response personnel at local governments who deal with nuclear emergency preparedness, to teach them basic knowledge required for nuclear emergency management. The course covers legislation concerning nuclear emergency preparedness, the Nuclear Emergency Response Guidelines and lessons from the accident at Fukushima Daiichi Nuclear Power Station. These training sessions

were held on 40 occasions in FY 2019. The main topics covered in the training are as follows:

- Overview of legislation concerning nuclear emergency preparedness (classroom learning)
- Approaches to radiation protection in accordance with the Nuclear Emergency Response Guidelines (classroom learning)
- Lessons from the accident at Fukushima Nuclear Power Station (classroom learning), etc.

(ii) Tabletop Exercises for Nuclear Emergency Response Headquarters

Tabletop Exercises for Nuclear Emergency Response Headquarters are organized for key disaster response personnel at the national and local governments who deal with nuclear emergency preparedness, to provide them with the ability to respond in the event of an emergency and also to review and improve the Local Plans for DRR and Evacuation Plans formulated by local governments. These exercises were held on 13 occasions in FY 2019. The main topics covered in the training are as follows:

- Activities at off-site centers (classroom learning)
- Exercises focused on challenges specific to each functional team
- Tabletop exercise based on scenarios, etc.

(iii) Core Personnel Training

The Core Personnel Training is conducted for those who play leading roles among key disaster response personnel at the national and local governments, with an aim to equip them with necessary knowledge and skills. In FY 2019, two trainings were conducted for national and prefectural government personnel respectively. The main topics covered in the training are as follows:

- Emergency situation concerning power generation reactors (classroom learning)
- Nuclear emergency and health hazards (classroom learning)
- Protective measures against nuclear emergencies (classroom learning)
- Tabletop exercise

(iv) Practical Capacity Building Training

a. Inspection of evacuation and relocation areas, etc.

The Practical Capacity Building Training is conducted for local government employees in charge of developing specific plans for inspection of evacuation and relocation areas, in order to strengthen their skills to formulate specific plans, manuals, etc. In FY 2019, four trainings were conducted. The main topics covered in the training are as follows:

- Basic principles for the inspection of evacuation and relocation areas (classroom learning)
- Planning and development of inspections when evacuating each area and exercises on management

b. Evacuation by bus

The Practical Capacity Building Training was conducted for local government employees in charge of planning evacuation by bus, in order to strengthen their skills to formulate specific bus evacuation plans, manuals, etc. In FY 2019, four trainings were conducted. The main topics covered in the training are as follows:

- Operation procedures related to securing evacuation buses for residents and arrangements and preparation in advance, etc. (classroom learning)

- Status of preparation of a bus evacuation plan in each prefecture, clarification of problems and study for improvement

c. Formulating protective action implementation policy and other responses

Practical Capacity Building Training was conducted for local government employees that oversaw the formulating of protective action implementation policies to develop human resources who understood the contents of implementation policies and formulated them. In FY 2019, two training sessions were conducted. The main topics covered were as follows:

- Formulation and operation of the protective action implementation policy (classroom learning)
- Implementation policy operation preparation and confirmation exercise

(Training Programs by Local Governments)

Each prefecture took initiative in planning and implementing the training for disaster response personnel and basic training in nuclear emergency preparedness, with support from the Cabinet Office as necessary.

(i) Training for disaster response personnel

Training was provided for disaster response personnel including the employees of private business operators who carry out activities to protect local citizens from radiation in the event of a nuclear emergency. As well as providing them with the basic knowledge required for radiation protection, this course teaches them about the basic approach to protecting citizens from radiation and the sequence of protective activities.

(ii) Basic training in nuclear emergency preparedness

Basic training in nuclear emergency preparedness was provided to key disaster response personnel at local governments who deal with nuclear emergency preparedness, to teach them the basic knowledge required for radiation protection.

Lecture
(Training of key nuclear emergency response personnel)

Exercise
(Tabletop Exercises for Nuclear Emergency Response Headquarters)

Lecture
(Core Personnel Training)

Lecture
(Practical Capacity Building Training)

3-4 Strengthening International Partnerships

International organizations such as the International Atomic Energy Agency (IAEA) and various countries undertake initiatives concerning off-site nuclear emergency preparedness. Such advanced knowledge is required to raise the standard of Japan's own nuclear emergency preparedness.

Accordingly, the government has sought to share its knowledge and experience of nuclear emergency preparedness with other countries by such means as strengthening cooperative frameworks with authorities responsible for nuclear emergency preparedness in other countries, conducting regular exchanges of opinions with them and mutual invitation to exercises. In addition, Japan conducts surveys of the IAEA's standards regarding off-site nuclear emergency preparedness and the systems/management of major countries engaging in nuclear power generation

(1) Bilateral Cooperation on Nuclear Emergency Preparedness Systems

(i) Cooperation with the U.S.

Japan is deepening its partnership with the U.S. in the area of nuclear emergency management systems via reciprocal invitations to exercises and regular exchanges of opinions with such bodies as the Department of Energy (DOE), the Federal Emergency Management Agency (FEMA) and the Nuclear Regulatory Commission (NRC), based on the U.S.-Japan Bilateral Commission on Civil Nuclear Cooperation framework established in 2012 under the Emergency Management Working Group (EMWG). The 12th EMWG was held in the United States in September 2019 to discuss the outcome of cooperation and the action plan for the next three years. Prior to the meeting, participants participated in seminars and tabletop exercises on nuclear emergency responses in the United States.

(ii) Cooperation with France

The Memorandum of Cooperation between the Parliamentary Vice-Minister of the Cabinet Office of Japan and the Director-General for Civil Security and Crisis Management, Ministry of the Interior of France on Emergency Management related to Nuclear Accidents was signed in 2015. Based on this memorandum, the Cabinet Office is pursuing closer collaboration with the French Ministry of the Interior and other relevant French organizations in the area of nuclear disaster preparedness through regular opinion exchange and reciprocal invitations to exercises. Specifically, in October 2019, the Cabinet Office held the "Committee for Cooperation in the Field of Emergency Situation and Management in the Event of a Nuclear Accident," introducing the efforts

of the two countries, discussing areas of future cooperation and visiting the Off-site Center in Ibaraki Prefecture and JAEA, etc.

(iii) Other international cooperation

In addition to the above, information and opinions are exchanged as needed. In FY 2019, Japan exchanged opinions with visitors from Singapore and Vietnam and guided tours.

In the annual comprehensive nuclear emergency response exercise, Japan invites representatives from the United States and France as stated above and other countries and international organizations to observe the exercise. Japan invited 21 representatives of international organizations and nuclear emergency preparedness organizations in various countries to observe the Comprehensive Nuclear Emergency Response Exercise held at Shimane Nuclear Power Stations of the Chugoku Electric Power Co., Inc. (hereinafter called “Shimane Nuclear Power Station”) in November 2019. Members of the delegations spent three days in the area, where they observed Nuclear Emergency Core Hospitals, the evacuation of residents and the Declaration of a Nuclear Emergency Situation from the Prime Minister. Furthermore, after the completion of the exercise, the Cabinet Office held a workshop to exchange opinions on the Comprehensive Nuclear Emergency Response Exercise and the system under emergency with the representatives who observed the nuclear emergency response exercise in foreign countries.

Visit at the Comprehensive Nuclear Emergency Response Exercise

（2） Surveys of International Standards, etc.

Japan actively cooperates with the International Atomic Energy Agency (IAEA) and the Nuclear Energy Agency of the Organisation for Economic Co-operation and Development (OECD/NEA) and exchanges opinions with them. With regard to the IAEA, to cooperate in developing standards for off-site nuclear emergency preparedness and gather information, the IAEA has participated in the regular "Emergency Preparedness and Response Standards Committee (EPReSC)" (the 8th meeting: June 25-27, 2019, the 9th meeting: December 3-5, 2019) as well as cooperating in various information exchange and human resource development activities. At meetings related to nuclear emergency preparedness, such as the " Working Party on Nuclear Emergency Matters (WPNEM)" held by the OECD/NEA, information is exchanged on systems and operations, etc. related to nuclear emergency preparedness in major countries using nuclear power.

Section 4: 2019 Comprehensive Nuclear Emergency Response Exercise

4-1 Overview of Exercise

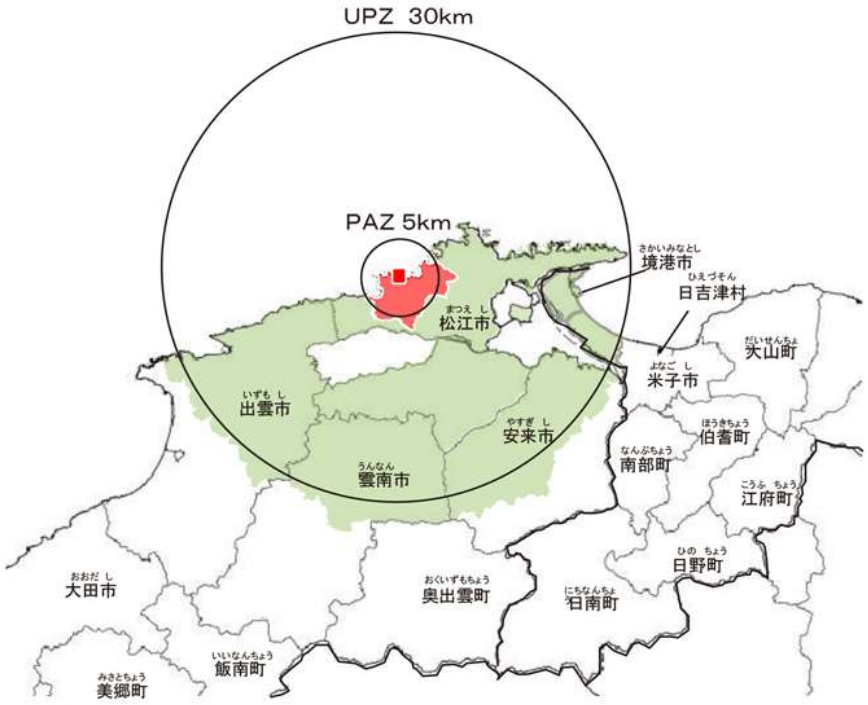
(1) Positioning and Objectives

The Comprehensive Nuclear Emergency Response Exercise is a joint exercise involving the national government, local governments and nuclear operators, in accordance with the Act on Special Measures Concerning Nuclear Emergency Preparedness. Based on the scenario of a nuclear emergency, it aims to verify systems for responding to such an emergency. The 2019 Comprehensive Nuclear Emergency Response Exercise was held at the Chugoku Electric Power Co., Inc. Shimane Nuclear Power Station with the objectives as listed below.

(Reference: https://www8.cao.go.jp/genshiryoku_bousai/kunren/r1sg.html)

- To confirm the effectiveness of the disaster preparedness systems of the national government, local governments and nuclear operators and the cooperative frameworks of related organizations
- To confirm national and local systems and procedures specified in manuals for responding to a nuclear Emergency
- To review an evacuation plan to develop “Emergency responses in Shimane Region” (Fig. 4-1-1)
- To identify lessons from the outcomes of the exercise and study emergency responses
- To enhance the skills of key personnel involved in nuclear emergency response measures and promote public understanding of nuclear emergency preparedness

Fig. 4-1-1 **Shimane Region Priority Zones for Nuclear Emergency Response**



*PAZ: Precautionary Action Zone

*UPZ: Urgent Protective Action Planning Zone

Source: Cabinet Office

(2) Dates and Subject Power Plants and Dates

The exercise was held from November 8 to 10, 2019 at Shimane Nuclear Power Station.

(3) Participants, etc.

(Number of participating organizations: 208; number of participants, including local citizens: approximately 7,780)

- Governmental organizations: Cabinet Secretariat, Cabinet Office, NRA and other related ministries and agencies
- Local governments: Shimane Prefecture, Tottori Prefecture, Matsue City, Izumo City, Yasugi City, Unnan City, Yonago City, Sakaiminato City and related prefectures, cities, towns and villages
- Nuclear operator: the Chugoku Electric Power Co., Inc.
- Related organizations: National Institutes for Quantum and Radiological Science and Technology, and Japan Atomic Energy Agency etc.

(4) Accident Scenario

At Unit 2 of the Shimane Nuclear Power Station, the emergency core cooling system injects water to a nuclear power reactor after the external power source is shut down following an earthquake centered on the eastern Shimane Prefecture. However, water injection to all nuclear reactors of the system becomes impossible due to failures of the emergency core cooling system (ECCS), etc., leading to the state of General Emergency.

(5) Content of Exercise

The exercise involved decision-making and operational drills relating to the evacuation of residents, tailored to the escalation of the situation in a complex disaster scenario, which involved a natural disaster and a nuclear emergency.

4-2 Overview of Performance

(1) Exercise in Rapid Establishment of an Initial Response System

The national government, local governments and nuclear operator mobilized key personnel and understand the current status, use the video conference system, etc. to set up each initial response system and tried to share inter-agency information. In addition, the State Minister for Nuclear Disaster Management, Cabinet Office, national officials and experts were dispatched to Off-site Centers, rapid response centers at nuclear facilities (Head Office of Chugoku Electric Power Co., Inc.), etc., by the government agencies related to emergency transportation and private transport aircraft.

Key personnel gather information
(Shimane Off-site Center)

(2) Exercise in Making Decisions Concerning the Evacuation Policies, etc. Based on Collaboration between National and Local Bodies

Emergency response systems were established at the Prime Minister's Official Residence, the NRA's Emergency Response Center (ERC), Off-site Centers, Shimane Prefectural Government, Tottori Prefectural Government, etc. Assuming the occurrence of a complex disaster involving a combination of a natural and nuclear disaster, a joint meeting was held between the two headquarters on natural disasters and nuclear disasters at the center, and information sharing and decision-making, instructions and coordination, including local organizations, were carried out in an integrated manner. At the same time, the NPA drafted plans and decided how to implement protective measures according to the circumstances and instructed the local governments covered by the decision.

Training at the Nuclear Emergency Response Headquarters (Prime Minister's Office) participated in by Mr. Abe, Prime Minister and relevant ministers

(3) Field training exercise on inter-prefectural evacuation, indoor evacuation, etc.

(i) Following the site area emergency and general emergency, with supports from private transportation companies, etc., residents in the Precautionary Action Zone (PAZ) were evacuated within the prefecture. In addition, indoor evacuation was conducted for residents in the Urgent Protective Action Planning Zone (UPZ) to promote the understanding concerning the meaning of such evacuation.

(ii) Emergency monitoring was conducted based on the Emergency Monitoring Implementation Plan.

(iii) Assuming a radioactive material release, based on the operational intervention level standards, after certain standards were exceeded, the urgent distribution of stable iodine agents, temporary relocation outside

the prefecture and inspection of evacuation and relocation areas, etc. were conducted for residents in some parts of the UPZ.

Evacuation exercise for persons who need special assistance (Matsue city, Shimane Prefecture)

Residents' Seminar (Sakaiminato City, Tottori Prefecture)

4-3 Post-exercise Initiatives

Following the 2019 Comprehensive Nuclear Emergency Response Exercise, the Cabinet Office identified areas for improvement based on views expressed by experts and responses to a questionnaire distributed to local citizens who participated in the drill. These are summarized in the Report on the Findings from the 2019 Comprehensive Nuclear Emergency Response Exercise in March 2020.
(Reference: https://www8.cao.go.jp/genshiryoku_bousai/kunren/r1sg.html）

Based on the lessons learned from this exercise, the government will strive to continuously improve the nuclear emergency preparedness system, etc., by enhancing the contents of future exercises and improving various plans and manuals, etc. The government will also utilize lessons in deliberations aimed at summarizing the "Emergency responses in Shimane Region" at the Local Nuclear Disaster Management Councils and others.

APPENDIX

TABLE OF CONTENTS: APPENDIX

1. Overview of Japan's National Land

2. Disasters in Japan

3. Laws and Systems

4. Organizations

6. Disaster Management Facilities and Equipment

7. Trends in Numbers of Workers in Disaster Management

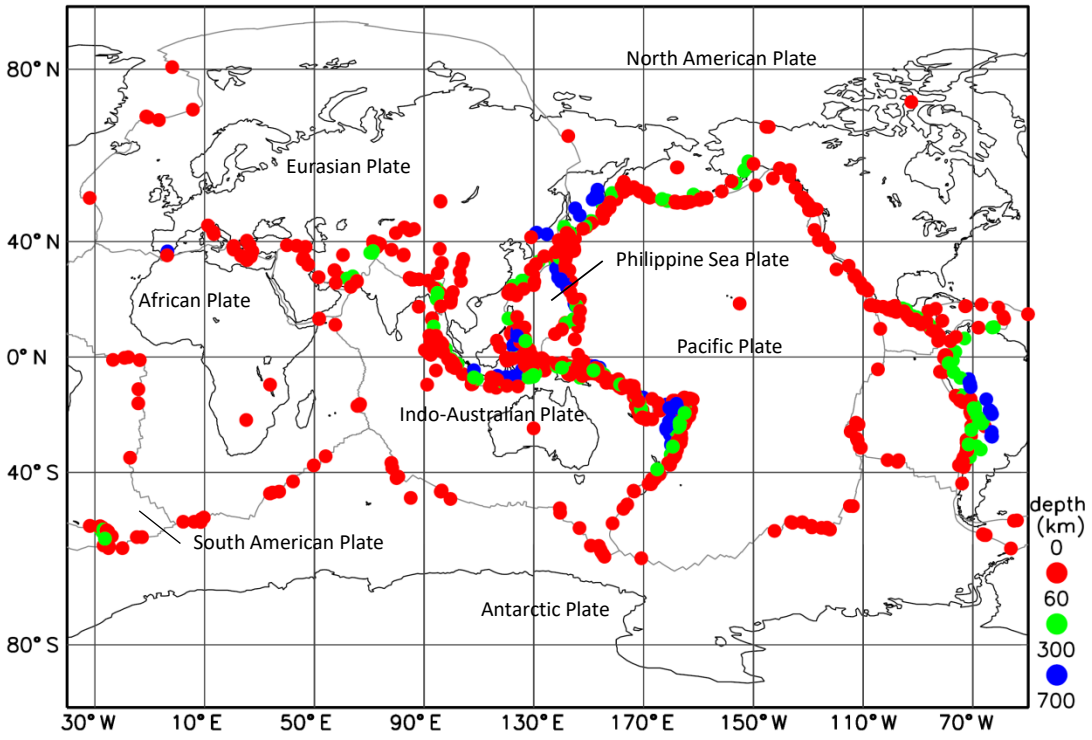
8. Various Policies and Measures

9. Japan's International Cooperation

10. Others

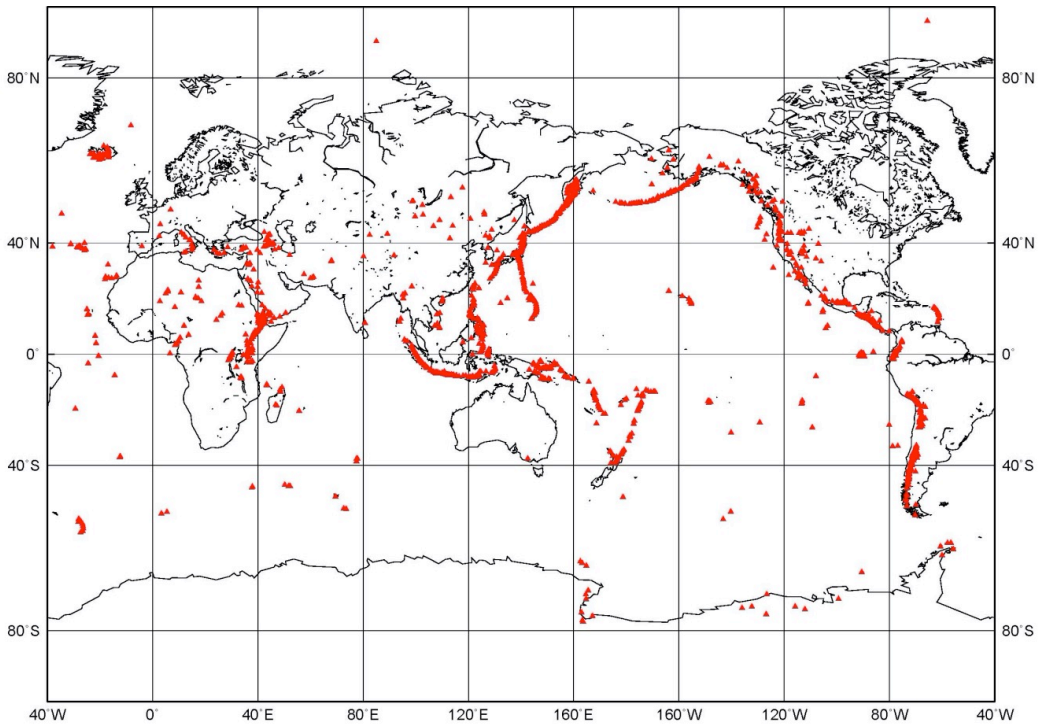
1. Overview of Japan's National Land

Fig. A-1 **Worldwide Hypocenter Distribution (for Magnitude 6 and Higher Earthquakes) and Plate Boundaries**



Note: 2010–2019
Source: Formulated by the Japan Meteorological Agency based on earthquake data from the U.S. Geological Survey

Fig. A-2 **Distribution of Volcanoes Worldwide**

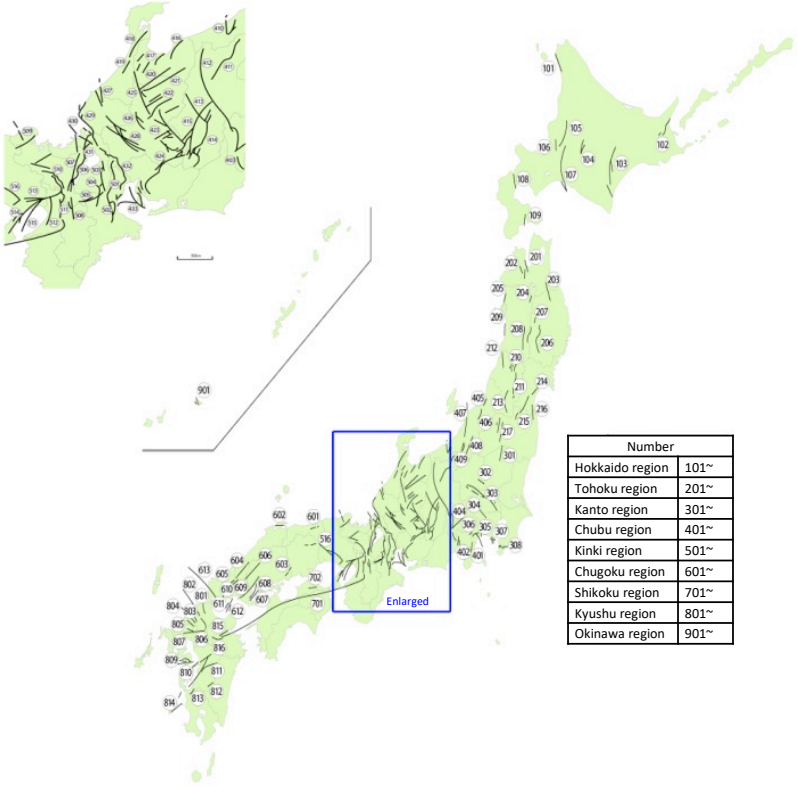


Source: Japan Meteorological Agency

Fig. A-3 **Subduction Zone Earthquake Areas and Major Active Faults in Japan**

Subduction Zone Earthquake Areas

Major Active Faults



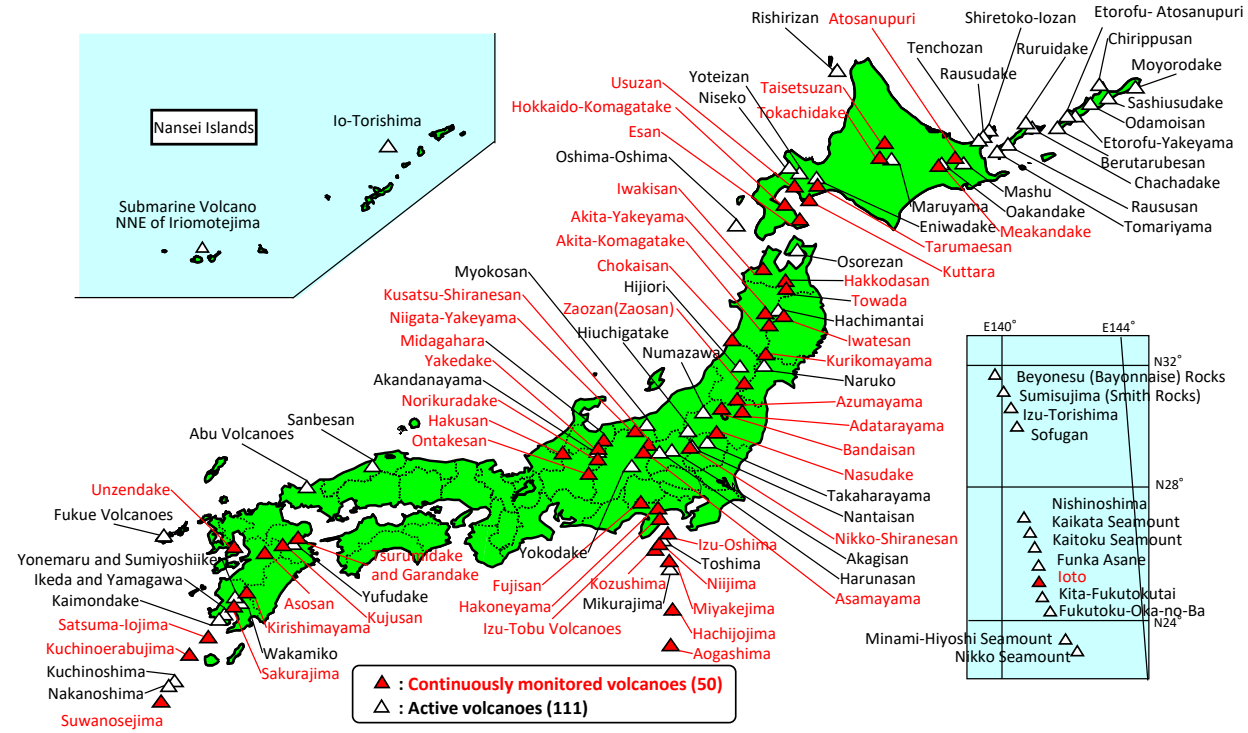
Number	
Hokkaido region	101~
Tohoku region	201~
Kanto region	301~
Chubu region	401~
Kinki region	501~
Chugoku region	601~
Shikoku region	701~
Kyushu region	801~
Okinawa region	901~

Source: Headquarters for Earthquake Research Promotion

No.	Name of Fault	No.	Name of Fault
101	Sarobetsu fault zone	424	Byoubuyama Enasan fault zone & Sanageyama fault zone
102	Shibetsu fault zone	425	Shoukawa fault zone
103	Tokachi-heiya fault zone	426	Nagaragawa-joryu fault zone
104	Furano fault zone	427	Fukui-heiya-toen fault zone
105	Mashike-sanchi-toen fault zone · Numata-Sunagawa fault zone	428	Noubi fault zone
106	Toubetsu fault	429	Yanagase Sekigahara fault zone
107	Ishikari-teichi-toen fault zone	430	Nosaka Shufukuji fault zone
108	Kuromatsunai-teichi fault zone	431	Kohoku-sanchi fault zone
109	Hakodate-heiya-seien fault zone	432	Yoro-Kuwana-Yokkaichi
201	Aomori-wan-seigan fault zone	433	Isewan fault zone
202	Tsugaru-sanchi-seien fault zone	501	Suzuka-toen fault zone
203	Oritsume fault	502	Nunobiki-sanchi-toen fault zone
204	Hanawa-higashi fault zone	503	Suzuka-seien fault zone
205	Noshiro fault zone	504	Tongu fault
206	Kitakami-teichi-seien fault zone	505	Kizugawa fault zone
207	Shizukuishi-bonchi-seien - Mahiru-sanchi-toen fault zone	506	Biwako-seigan fault zone
208	Yokote-bonchi-toen fault zone	507	Mikata Hanaore fault zone
209	Kitayuri fault	508	Sourthern fault zone of Kyoto-bonchi-Nara-bonchi (Nara-bonchi-toen fault zone)
210	Shinjo-bonchi fault zone	509	Yamada fault zone
211	Yamagata-bonchi fault zone	510	Mitoke Kyoto Nishiyama fault zone
212	Shonai-heiya-toen fault zone	511	Ikoma fault zone
213	Nagai-bonchi-seien fault zone	512	Uemachi fault zone
214	Nagamachi-Rifu Line fault zone	513	Arima-Takatsuki fault zone
215	Fukushima-bonchi-seien fault zone	514	Rokko Awajishima fault zone
216	Futaba fault	515	Osaka-wan fault zone
217	Aizu-bonchi-seien-toen fault zone	516	Yamasaki fault zone
301	Sekiya fault	601	Shikano-Yoshioka fault
302	Okubo fault	602	Shinji (Kashima) fault
303	Fukaya Fault Zone and the Ayasegawa Fault (Kanto-heiya hokuseien fault zone and Motoarakawa fault zone)	603	Chojagahara-Yoshii fault
304	Tachikawa fault zone	604	Yasaka fault
305	Isehara fault	605	Jifuku fault
306	Shiozawa fault zone, Hirayama-Matsuda-kita fault zone and Kouzu-Matsuda fault zone (Kannawa Kouzu-Matsuda fault zone)	606	Tsutsuga fault
307	Miura-hanto fault group	607	Hiroshima-wan-Iwakuni-oki fault zone
308	Kamogawa-teichi fault zone	608	Akinada fault zone
401	Kitaizu fault zone	609	Iwakuni-Itsukaichi fault zone
402	Fujikawa-kako fault zone	610	Oharako fault
403	Minobu fault	611	Ogori fault
404	Sone-kyuryo fault zone	612	Suounada fault zone
405	Kushigata-sanmyaku fault zone	613	Kikugawa fault zone
406	Tsukioka fault zone	701	Chuo-kozosen fault zone (Kongo-sanchi-toen – Iyonada)
407	Nagaoka-heiya-seien fault zone	702	Nagao fault zone
408	Muikamachi fault zone	801	Fukuchiyama fault zone
409	Tokamachi fault zone	802	Nishiyama fault zone
410	Takada-heiya fault zone	803	Umi fault
411	Nagano-bonchi-seien fault zone (Shinanogawa fault zone)	804	Kego fault zone
412	Itoigawa-Shizuoka-kozosen fault zone	805	Hinata-toge-Okasagi-toge fault zone
413	Sakaitoge Kamiya fault zone	806	Minoh fault zone
414	Inadani fault zone	807	Saga-heiya-hokuen fault zone
415	Kiso-sanmyaku-seien fault zone	809	Unzen fault group
416	Uozu fault zone	810	Futagawa-Hinagu fault zone
417	Tonami-heiya fault zone · Kurehayama fault zone	811	Midorikawa fault zone
418	Ouchigata fault zone	812	Hitoyoshi-bonchi-nanen fault
419	Morimoto Togashi fault zone	813	Izumi fault zone
420	Ushikubi fault zone	814	Koshiki fault zone
421	Atotsugawa fault zone	815	Hijiu fault zone
422	Takayama Oppara fault zone	816	Haneyama－Kuenohirayama fault zone
423	Atera fault zone	901	Miyakojima fault zone

Source: Headquarters for Earthquake Research Promotion

Fig. A-4 Distribution of Active Volcanoes in Japan



Source: Formulated by the Cabinet Office from the Japan Meteorological Agency website (As of March 2018)

2. Disasters in Japan

Fig. A-5 Major Earthquake Damage 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
Mid Niigata Prefecture Earthquake	(M6.8)	October 23, 2004	68
Iwate–Miyagi Nairiku Earthquake	(M7.2)	June 14, 2008	23
Great East Japan Earthquake	* (Mw9.0)	March 11, 2011	22,288
The 2016 Kumamoto Earthquake	(M6.5) (M7.3)	April 14, 2016 April 16	273
The 2018 Hokkaido Eastern Iburi Earthquake	(M6.7)	September 6, 2018	43

*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 Southern Hyogo Prefecture Earthquake (Great Hanshin-Awaji Earthquake) is the current figure as of May 19, 2006. 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 5,515.
4. The number of fatalities (including disaster-related fatalities) and missing persons from the 2011 Tohoku Earthquake and Tsunami (Great East Japan Earthquake) is the current figure as of March 1, 2020.
5. The details given for the 2016 Kumamoto Earthquake is the current figure as of April 12, 2019 (including disaster-related fatalities).

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, Major Disaster Management Headquarters materials

Fig. A-6 Major Natural Disasters in Japan Since 1945

Date	Disaster	Main Affected Areas	Number of Fatalities 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 Kathleen	North of Tokai	1,930
June 28, 1948	Fukui Earthquake (M7.1)	Around the Fukui Plains	3,769
September 15-17, 1948	Typhoon Ione	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 (5115)	Nationwide (Especially in Yamaguchi)	943
March 4, 1952	Tokachi-oki Earthquake (M8.2)	Southern Hokkaido, Northern Tohoku	33
June 25-29, 1953	Heavy 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 MARIE (5415)	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 IDA (5822)	East of Kinki (Especially in Shizuoka)	1,269
September 26-27, 1959	Typhoon VERA (5915)	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	Heavy snowfall	Hokuriku, Sanin, Yamagata, Shiga, Gifu	231
June 16, 1964	Niigata Earthquake (M7.5)	Niigata, Akita, Yamagata	26
September 10-18, 1965	Typhoons SHIRLEY (6523), TRIX (6524), VIRGINIA (6525)	Nationwide (Especially in Tokushima, Hyogo, Fukui)	181
September 23-25, 1966	Typhoons HELEN (6624), IDA (6626)	Chubu, Kanto, Tohoku (Especially in Shizuoka, Yamanashi)	317
July to August 1967	Torrential Rains	West of Chubu, Southern Tohoku	256
May 16, 1968	Tokachi-oki Earthquake (M7.9)	Southern Hokkaido and Tohoku Area centering around Aomori	52
July 3-15, 1972	Typhoons PHYLLIS (7206), RITA (7207), TESS (7209) 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 FRAN (7617) and Torrential Rains	Nationwide (Especially in Kagawa, Okayama)	171
January 1977	Snow Disasters	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 TIP (7920)	Nationwide (Especially Tokai, Kanto, Tohoku)	115
December 1980 - March 1981	Snow Disasters	Tohoku, Hokuriku	152
July to August 1982	Torrential Rains and Typhoon BESS (8210)	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 – June 3, 1995	Mt. 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	1995 Southern Hyogo Prefecture Earthquake (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 (M6.5)	Tokyo	1
October 20-21, 2004	Typhoon TOKAGE (0423)	Nationwide	98
October 23, 2004	Mid Niigata Prefecture Earthquake (M6.8)	Niigata	68
December 2005 - March 2006	Heavy Snowfall	Japan Sea Coast centering around Hokuriku Area	152
July 16, 2007	Niigataken Chuetsu-oki Earthquake (M6.8)	Niigata	15
June 14, 2008	Iwate-Miyagi Nairiku Earthquake (M7.2)	Tohoku (Especially in Miyagi, Iwate)	23
December 2010 - March 2011	Snow disaster	From Northern Japan through into West Japan on the Japan Sea Coast	131
March 11, 2011	2011 Tohoku Earthquake and Tsunami (Great East Japan Earthquake) (Mw9.0)	Eastern Japan (Especially in Miyagi, Iwate, Fukushima)	22,288
August 30 - September 5, 2011	Typhoon TALAS (1112)	Kinki, Shikoku	98

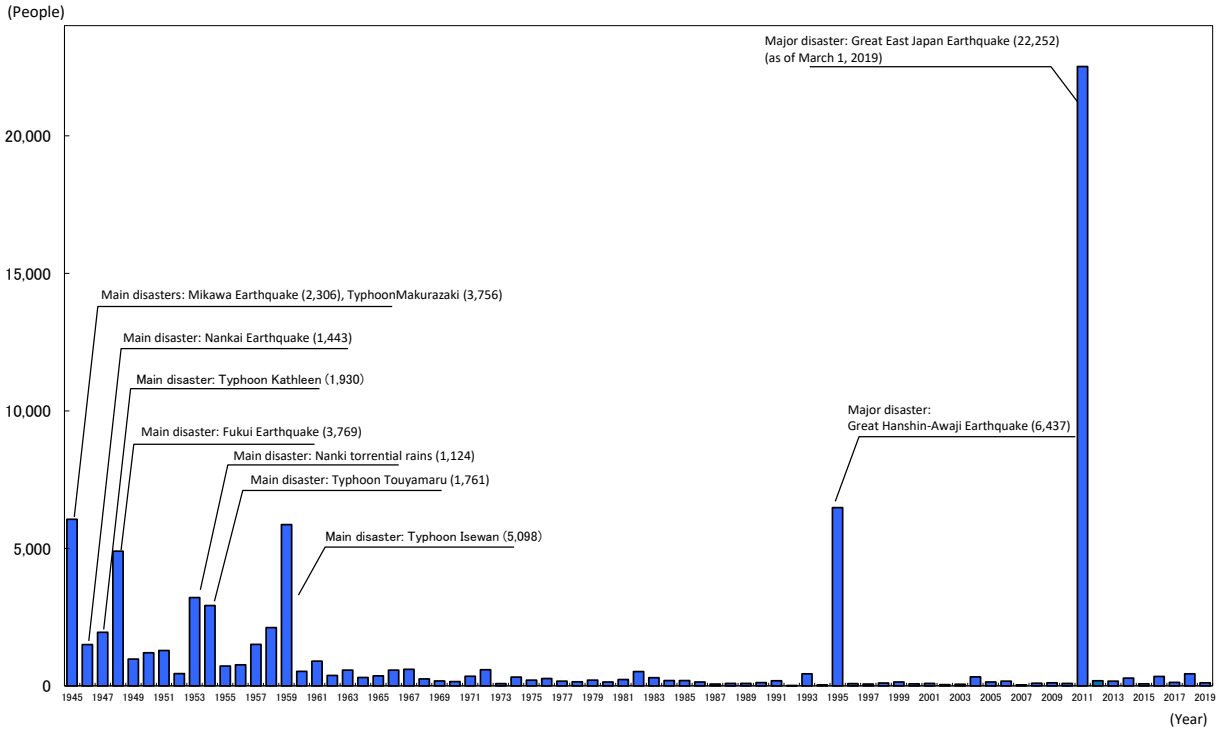
Date	Disaster	Main Affected Areas	Number of Fatalities and Missing
November 2011 - March 2012	Heavy Snow in 2011	From Northern Japan through into West Japan on the Japan Sea Coast	133
November 2012 - March 2013	Heavy Snow in 2012	From Northern Japan through into West Japan on the Japan Sea Coast	104
November 2013 - May 2014	Heavy Snow in 2013	From Northern Japan through into Kanto-Koshinetsu Area (Especially in Yamanashi)	95
August 20, 2014	Torrential Rains of August 2014 (Hiroshima Sediment Disaster)	Hiroshima	77
September 27, 2014	2014 Eruption of Mt. Ontake	Nagano, Gifu	63
April 14 and 16, 2014	The 2016 Kumamoto Earthquake (M7.3)	Kyushu Area (Especially in Kumamoto)	273
June 28 - July 8, 2018	The Heavy Rain Event of July 2018	Nationwide (Especially in Hiroshima, Okayama, Ehime)	271
September 6, 2018	The 2018 Hokkaido Eastern Iburi Earthquake (M6.7)	Hokkaido	43
October 10 – 13, 2019	Typhoon Hagibis (1919)	Kanto, Tohoku Area	94

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 Basic Act on Disaster Management.
2. The number of fatalities and missing persons from the Southern Hyogo Prefecture Earthquake (Great Hanshin-Awaji Earthquake) is the current figure as of May 19, 2006. 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 5,515.
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 number of fatalities (including disaster-related fatalities) and missing persons resulting from the 2011 Tohoku Earthquake and Tsunami (Great East Japan Earthquake) is the current figure as of March 1, 2020 (including disaster-related fatalities).
5. Disasters caused by 2019 Typhoon Hagibis, which affected wide areas chiefly in eastern Japan are as of April 10, 2020

Source: Formulated 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, Major Disaster Management Headquarters materials, and Hyogo Prefecture materials

Fig. A-7 Number of Fatalities and Missing Persons Due to Natural Disasters



Year	People	Year	People	Year	People	Year	People	Year	People
1945	6,062	1962	381	1979	208	1996	84	2013	173
1946	1,504	1963	575	1980	148	1997	71	2014	283
1947	1,950	1964	307	1981	232	1998	109	2015	77
1948	4,897	1965	367	1982	524	1999	141	2016	344
1949	975	1966	578	1983	301	2000	78	2017	129
1950	1,210	1967	607	1984	199	2001	90	2018	444
1951	1,291	1968	259	1985	199	2002	48	2019	114
1952	449	1969	183	1986	148	2003	62		
1953	3,212	1970	163	1987	69	2004	327		
1954	2,926	1971	350	1988	93	2005	148		
1955	727	1972	587	1989	96	2006	177		
1956	765	1973	85	1990	123	2007	39		
1957	1,515	1974	324	1991	190	2008	101		
1958	2,120	1975	213	1992	19	2009	115		
1959	5,868	1976	273	1993	438	2010	89		
1960	528	1977	174	1994	39	2011	22,515		
1961	902	1978	153	1995	6,482	2012	190		

Note: Of the fatalities in 1995, the deaths from the Southern Hyogo Prefecture Earthquake (Great Hanshin-Awaji Earthquake) include 919 so-called "related deaths" (Hyogo Prefecture).
The fatalities and missing persons in 2019 are based on flash bulletins from the Cabinet Office.

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 formulated by the Cabinet Office based on Fire and Disaster Management Agency materials.

Fig. A-8 Breakdown of the Number of Fatalities and Missing Persons Due to Natural Disasters

(Unit: persons)

Year	Storm/Flood	Earthquake/ Tsunami	Volcano	Snow	Other	Total
1993	183	234	1	9	11	438
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	43	1	0	98	6	148
2006	87	0	0	88	2	177
2007	14	16	0	5	4	39
2008	22	24	0	48	7	101
2009	76	1	0	35	3	115
2010	31	0	0	57	1	89
2011	136	22,288	0	125	2	22,551
2012	52	0	0	138	0	190
2013	75	0	0	92	6	173
2014	112	0	63	108	0	283
2015	22	0	0	49	0	77
2016	38	228	0	6	0	344
2017	60	0	0	68	1	129
2018	285	49	1	103	6	444
2019	114	0	0	0	0	114

Notes: This table shows the number of fatalities and missing persons between Jan. 1 and Dec. 31.
Fatalities and missing persons in 2019 are based on flash bulletins from the Cabinet Office.
(The earthquake/tsunami disaster figures for 2011 include 22,288 fatalities (including disaster-related fatalities) and missing persons from the 2011 Tohoku Earthquake and Tsunami (Great East Japan Earthquake) (March 1, 2020).)

Source: Formulated by the Cabinet Office based on the Fire and Disaster Management Agency report "Status of Regional Disaster Management Administration"

Fig. A-9 Recent Major Natural Disasters (Since the Great Hanshin-Awaji Earthquake)

(Total: As of April 10, 2020)

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, 1995)	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 Extreme Disaster Management Headquarters[*1] ・Establishment of Major Disaster Management Headquarters ・Site inspection by Prime Minister ・Dispatchment of government investigation team ・Invocation of Disaster Relief Act ・Invocation of Special Measures Act for Specified Disaster ・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.	22,288	6,233	121,996	282,941	1,628	・Establishment of Extreme Disaster Management Headquarters ・Establishment of On-site Extreme Disaster Management Headquarters ・Site inspection by Prime Minister ・Dispatchment of government investigation team ・Site inspection by Minister of State for Disaster Management ・Invocation of Disaster Relief Act ・Invocation of Act on Support for Reconstructing Livelihoods of the Affected due to Disaster ・Invocation of Special Measures Act for Specified Disaster ・Designation as an 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 Major Disaster Management Headquarters ・Site inspection by Prime Minister ・Dispatchment of government investigation team ・Invocation of Disaster Relief Act ・Invocation of Act on Support for Reconstructing Livelihoods of the Affected due to Disaster ・Designation as an 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 ・Site inspection by Prime Minister ・Invocation of Disaster Relief Act ・Invocation of Act on Support for Reconstructing Livelihoods of the Affected due to Disaster ・Designation as an extremely severe disaster
Typhoon TOKAGE (0423) (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, Izushi 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 ・Dispatchment of government investigation team ・Invocation of Disaster Relief Act ・Invocation of Act on Support for Reconstructing Livelihoods of the Affected due to Disaster ・Designation as an extremely severe disaster
2004 Mid Niigata Prefecture 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 ・Site inspection by Prime Minister ・Dispatchment of government investigation team ・Invocation of Disaster Relief Act ・Invocation of Act on Support for Reconstructing Livelihoods of the Affected due to Disaster ・Designation as an extremely severe disaster
Fukuoka-ken-Seihouoki 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	—	・Site inspection by Prime Minister ・Dispatchment of government investigation team ・Invocation of Disaster Relief Act ・Invocation of Act on Support for Reconstructing Livelihoods of the Affected due to Disaster ・Invocation of Remote Islands Development Act
Typhoon NABI (0514) (September 4-8, 2005)	Record-breaking rains fell, mainly in the Kyushu region, and sediment disasters caused many human casualties.	29	177	1,217	3,896	3,551	・Dispatchment of government investigation team ・Invocation of Disaster Relief Act ・Invocation of Act on Support for Reconstructing Livelihoods of the Affected due to Disaster ・Designation as an extremely severe disaster
2006 Heavy Snows (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.	33	64	313	1,457	1,971	・Dispatchment of government investigation team ・Invocation of Disaster Relief Act ・Invocation of Act on Support for Reconstructing Livelihoods of the Affected due to Disaster ・Designation as an extremely severe disaster
Typhoon SHANSHAN (0613) (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	446	121	518	251	・Dispatchment of government investigation team ・Invocation of Disaster Relief Act ・Invocation of Act on Support for Reconstructing Livelihoods of the Affected due to Disaster ・Designation as an 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	—	・Dispatchment of government investigation team ・Invocation of Disaster Relief Act ・Invocation of Act on Support for Reconstructing Livelihoods of the Affected due to Disaster

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	—	・Site inspection by Prime Minister ・Dispatchment of government investigation team ・Invocation of Disaster Relief Act ・Invocation of Act on Support for Reconstructing Livelihoods of the Affected due to Disaster ・Designation as an extremely severe disaster
2007 Heavy Rains from Typhoon MAN-YI (0704) and Seasonal Rain Front (July 5-31, 2007)	The typhoon made landfall in Japan in July with the strongest intensity in 57 years from 1951 to 2007. Record rainfalls in various regions.	7	75	33	33	434	・Dispatchment of government investigation team ・Invocation of Disaster Relief Act ・Designation as an extremely severe disaster
2007 Niigataken Chuetsu-oki 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	5,710	—	・Site inspection by Prime Minister ・Dispatchment of government investigation team ・Invocation of Disaster Relief Act ・Invocation of Act on Support for Reconstructing Livelihoods of the Affected due to Disaster ・Invocation of Special Measures Act for Specified Disaster ・Designation as an extremely severe disaster
2008 Iwate-Miyagi Nairiku 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	—	・Site inspection by Prime Minister ・Dispatchment of government investigation team ・Invocation of Disaster Relief Act ・Invocation of Act on Support for Reconstructing Livelihoods of the Affected due to Disaster ・Designation as an 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 affected areas of inland Iwate and Miyagi Prefectures.	1	210	1	0	—	・Dispatchment of government investigation team
Heavy Rains from July 28 (July 28-29, 2008)	Localized heavy rains in the Hokuriku and Kinki regions. Human casualties along the Toga River in Kobe City.	6	13	6	16	585	・Invocation of Disaster Relief Act ・Invocation of Act on Support for Reconstructing Livelihoods of the Affected due to Disaster ・Designation as an 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	・Dispatchment of government investigation team ・Invocation of Disaster Relief Act ・Invocation of Act on Support for Reconstructing Livelihoods of the Affected due to Disaster
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.	36	59	52	102	2,139	・Site inspection by Prime Minister ・Dispatchment of government investigation team ・Invocation of Disaster Relief Act ・Invocation of Act on Support for Reconstructing Livelihoods of the Affected due to Disaster ・Designation as an extremely severe disaster
Typhoon ETAU (0909) (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	974	・Site inspection by Prime Minister ・Dispatchment of government investigation team ・Invocation of Disaster Relief Act ・Invocation of Act on Support for Reconstructing Livelihoods of the Affected due to Disaster ・Designation as an 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	—	
Typhoon MELOR (0918) (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	139	9	86	571	・Designation as an 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 an 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.	22	21	43	91	1,844	・Site inspection by Prime Minister ・Site inspection by Minister of State for Disaster Management ・Invocation of Disaster Relief Act ・Invocation of Act on Support for Reconstructing Livelihoods of the Affected due to Disaster ・Designation as an 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	443	116	・Site inspection by Minister of State for Disaster Management ・Invocation of Disaster Relief Act ・Invocation of Act on Support for Reconstructing Livelihoods of the Affected due to Disaster ・Designation as an extremely severe disaster
Heavy Snow in 2010 (November 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.	131	1,537	9	14	6	・Cabinet meeting ・Site inspection by Minister of State for Disaster Management ・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	
Mt. Kirishima (Shinmoedake) Eruption (January 26 - September 7, 2011)	Following a small eruption on January 19, a medium-sized eruption occurred at Shinmoedake on January 26 and the volcanic alert level was raised to 3 (Do not approach the volcano). Eruptions continued repeatedly thereafter until early September, with air waves and cinders breaking windows and causing other damage. In addition, 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	52	0	0	—	・Cabinet meeting (twice) ・Site 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
Typhoon MA-ON (1106) (July 12-24, 2011)	The typhoon made landfall on the southern part of Tokushima Prefecture around 11:00 p.m. on July 19, maintaining its strong intensity, with maximum winds of 40m/s, and its large scale. Record heavy rains were recorded in Western Japan, with rainfall of more than 1,000 mm recorded in some parts of the Shikoku region since the rains began.	3	54	0	1	28	・Designation as an 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	74	1,000	1,082	・Dispatchment of government investigation team (twice) ・Site inspection by Minister of State for Disaster Management ・Invocation of Disaster Relief Act ・Invocation of Act on Support for Reconstructing Livelihoods of the Affected due to Disaster ・Designation as an extremely severe disaster
Typhoon TALAS (1112) (August 30 - September 5, 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	113	379	3,159	5,500	・Establishment of Major Disaster Management Headquarters ・Site inspection by Prime Minister ・Dispatchment of government investigation team (twice) ・Site inspection by Minister of State for Disaster Management ・Invocation of Disaster Relief Act ・Invocation of Act on Support for Reconstructing Livelihoods of the Affected due to Disaster ・Designation as an extremely severe disaster (national)
Typhoon ROKE (1115) (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.	20	425	34	1,524	2,270	・Invocation of Disaster Relief Act ・Invocation of Act on Support for Reconstructing Livelihoods of the Affected due to Disaster ・Designation as an extremely severe disaster
Heavy Snow in 2011 (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 (twice) ・Site inspection 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	61	103	234	—	・Dispatchment of government investigation team ・Site inspection by Minister of State for Disaster Management ・Invocation of Disaster Relief Act ・Invocation of Act on Support for Reconstructing Livelihoods of the Affected due to Disaster
Typhoon GUCHOL (1204) (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 track 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	85	1	3	49	・Designation as an 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)	・Dispatchment of government investigation team ・Invocation of Disaster Relief Act ・Invocation of Act on Support for Reconstructing Livelihoods of the Affected due to Disaster ・Designation as an extremely severe disaster
July 2012 Northern Kyushu 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.	33	34	276 (*3)	2,306 (*3)	2,574 (*3)	・Site inspection by Prime Minister ・Dispatchment of government investigation team (twice) ・Invocation of Disaster Relief Act ・Invocation of Act on Support for Reconstructing Livelihoods of the Affected due to Disaster ・Designation as an extremely severe disaster
Heavy Snow from November2012 (November 2012 - March 2013)	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.	104	1,517	5	7	2	・Cabinet meeting held ・Dispatchment of government investigation team ・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	
Earthquake epicentered Near Awajishima Island (April 13, 2013)	Maximum seismic intensity of Lower 6.	0	34	8	97	—	・Designation as an extremely severe disaster
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 LEEPI (1304) and SOULIK (1307) approached Japan, causing heavy rains in various regions.	17	50	73	222	1,845	・Site inspection by Prime Minister ・Dispatchment of government investigation team (seven times) ・Invocation of Disaster Relief Act ・Invocation of Act on Support for Reconstructing Livelihoods of the Affected due to Disaster ・Designation as an 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	9	53	243	・Invocation of Disaster Relief Act ・Invocation of Act on Support for Reconstructing Livelihoods of the Affected due to Disaster ・Designation as an 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	・Dispatchment of government investigation team (twice) ・Invocation of Disaster Relief Act ・Invocation of Act on Support for Reconstructing Livelihoods of the Affected due to Disaster
Heavy Rains from Typhoon MAN-YI (1318) (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.	6	136	40	967	2,453	・Dispatchment of government investigation team (five times) ・Invocation of Disaster Relief Act ・Invocation of Act on Support for Reconstructing Livelihoods of the Affected due to Disaster ・Designation as an extremely severe disaster
Typhoons WIPHA (1326) & FRANCISCO (1327) (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.	45	140	65	63	2,011	・Site inspection by Prime Minister ・Dispatchment of government investigation team ・Invocation of Disaster Relief Act ・Invocation of Act on Support for Reconstructing Livelihoods of the Affected due to Disaster ・Designation as an extremely severe disaster
Heavy Snow from 2013 (November 2013 - 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 Major Disaster Management Headquarters ・Site inspection by Prime Minister ・Dispatchment of government investigation team (five times) ・Invocation of Disaster Relief Act
Typhoon NEOGURI (1408) (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	70	14	12	409	・Dispatchment of government investigation team (three times) ・Invocation of Disaster Relief Act ・Invocation of Act on Support for Reconstructing Livelihoods of the Affected due to Disaster
Torrential Rains of August 2014							
Typhoons NAKRI (1412) & HALONG (1411) (July 30 - August 11, 2014)	<Typhoon NAKRI (1412)> ・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 HALONG (1411)> 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.	5	93	22	374	1,529	・Dispatchment of government investigation team (twice) ・Invocation of Disaster Relief Act ・Invocation of Act on Support for Reconstructing Livelihoods of the Affected due to Disaster ・Designation as an 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 Rains from August 15, 2014 (August 15-26, 2014) *Excludes Hiroshima Sediment Disaster 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	38	332	2,240	・Dispatchment of government investigation team (twice) ・Invocation of Disaster Relief Act ・Invocation of Act on Support for Reconstructing Livelihoods of the Affected due to Disaster ・Designation as an extremely severe disaster
Hiroshima Sediment 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.	77	68	179	217	1,086	・Establishment of Major Disaster Management Headquarters ・Establishment of On-site Major Disaster Management Headquarters ・Site inspection by Prime Minister ・Dispatchment of government investigation team (three times) ・Invocation of Disaster Relief Act ・Invocation of Act on Support for Reconstructing Livelihoods of the Affected due to Disaster ・Designation as an 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 (Do not approach the volcano) was issued. ・Entry within 4 km of the crater was 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 Major Disaster Management Headquarters ・Dispatchment of government investigation 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	81	133	—	・Site inspection by Prime Minister ・Dispatchment of government investigation team (twice) ・Invocation of Disaster Relief Act ・Invocation of Act on Support for Reconstructing Livelihoods of the Affected due to Disaster ・Designation as an extremely severe disaster
Heavy Snow in 2014 (November 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	・Dispatchment of government investigation team ・Invocation of Disaster Relief Act
Kuchinoerabu-jima Eruption [Volcanic Alert Level 5] (May 29, 2015)	・An explosive eruption occurred at Shindake at 9:59 am on May 29. This eruption triggered a volcanic cloud of black-gray smoke that rose 9,000m above the crater rim and a pyroclastic flow that reached the northwestern coast (Mukaehama district). ・At 10:07 am, the JMA raised the Volcanic Alert Level from 3 to 5 (evacuate). ・The municipal ferry, Ferry-Taiyo, and other vessels were used to evacuate all those on the island at the time of the eruption to Yakushima (all individuals were confirmed to be safe)	0	1	To be confirmed			・Installation of government on-site communications office (Yakushima Town, Kagoshima) ・Site inspection by Prime Minister ・Dispatchment of government investigation team ・Invocation of Disaster Relief Act
Eruption of Mt. Hakone [Volcanic Alert Level 3] (June 30, 2015)	・A very small amount of volcanic ash was observed inside the crater, which was thought to have been the result of a very small eruption, so the JMA raised the volcanic alert level from 2 to 3 (Do not approach the volcano) at 12:30 on June 30 ・At the same time, Hakone-machi imposed a ban on entering the area within around 1km of the crater and issued an evacuation instruction for parts of the Ubako, Kamiyuba, Shimoyuba, and Hakone Sounkyo Bessochi areas, as well as evacuating residents, etc. from those areas	0	0	0	0	0	・Deployment of a Cabinet Office advance information-gathering team
Typhoon NANGKA (1511) (July 16-18, 2015)	The typhoon and warm, moist air heading toward the typhoon caused increased rainfall, primarily over West and East Japan. The Kinki region in particular saw the highest rainfall in 24 hours since records began, with heavy rain in excess of the usual rainfall for the entire month of July in an ordinary year. This caused river flooding, damage to public civil engineering works, and suspension of transport services, mainly in West Japan.	2	57	5	10	85	・Appeal to the public by the Minister of State for Disaster Management

Name of Disaster	Major Events	Human Casualties (persons)		Houses Damaged (houses)			Remarks
		Fatalities/ Missing Persons	Injured	Completely Destroyed	Half Destroyed	Above-floor Flooding	
Volcanic activity at Sakurajima [Volcanic Alert Level 4] (August 15, 2015)	・At around 07:00 on August 15, a series of volcanic earthquakes centered on the island occurred. Rapid crustal movement indicative of inflation of the volcanic edifice was also observed. ・At 10:15 that day, the JMA raised the volcanic alert level from 3 to 4 (Prepare to evacuate) (caution required in Arimura-cho and Furusato-cho, within 3km of the Showa crater and the Minamidake summit crater). ・At 16:50 that day, Kagoshima City issued evacuation advisories to the residents of the Arimura district of Arimura-cho, the Furusato district of Furusato-cho (areas within 3km of the crater), and the Shioyagamoto district of Kurokami-cho. ・At 18:10 that day, evacuation of all residents (77 people from 51 households) in the areas subject to evacuation was completed.	0	0	0	0	0	・Site inspection by Parliamentary Vice Minister ・Deployment of a Cabinet Office liaison team
Typhoon GONI (1515) (August 22-26, 2015)	・The typhoon that made landfall near Arao City in Kumamoto Prefecture after 06:00 on the 25th moved northward to northern Kyushu, maintaining its strong intensity, and reached the Sea of Japan during the daylight hours of the 25th. ・A maximum instantaneous wind speed of 71.0m was observed at 21:16 on the 23rd on Ishigaki Island, Okinawa Prefecture. In addition, the typhoon and warm, moist air flowing in from the south resulted in heavy rain over the Ryukyu Islands, West Japan, and the Tokai region, with more than 500mm of rain falling on Mie Prefecture in a single day on the 25th.	1	147	12	138	53	・Designation as an extremely severe disaster
Torrential Rain of September 2015 in the Kanto and Tohoku Regions [Including Typhoon ETAU (1518)] (September 9-11, 2015)	・After making landfall near Nishio City, Aichi Prefecture at around 09:30 on September 9, 2015 Typhoon ETAU (1518) moved on to the Sea of Japan and transformed into an extra-tropical cyclone at 15:00 that day. ・As a result of Typhoon ETAU (1518) and weather fronts, heavy rain fell over a wide area from western to northern Japan. In particular, between the 9th and the 11th, a southerly wind flowing into the extra-tropical cyclone into which Typhoon ETAU (1518) transformed and, subsequently, a southeasterly wind from the vicinity of Typhoon KILO (1517) supplied flows of moist air that triggered a succession of line-shaped precipitation systems, causing record-breaking rainfall in the Kanto and Tohoku regions and prompting the issue of emergency heavy rain warnings for Tochigi, Ibaraki, and Miyagi prefectures.	20	82	81	7,090	2,523	・Minister of State for Disaster Management issues a list of requests to relevant ministries and agencies ・Deployment of a Cabinet Office advance information-gathering team ・Dispatchment of government investigation team ・Cabinet meeting (twice) ・Site inspection by Prime Minister (once) ・Site inspection by Minister of State for Disaster Management (twice) ・Invocation of Disaster Relief Act ・Invocation of Act on Support for Reconstructing Livelihoods of the Affected due to Disaster ・Designation as an extremely severe disaster
Typhoon DUJUAN (1521) (September 27-28, 2015)	・Typhoon DUJUAN (1521) approached the Ishigaki and Yonaguni island areas with violent intensity during the day on the 28th. ・On Yonaguni Island, a maximum instantaneous wind speed of 81.1m was observed at 15:41 on the 28th, the highest figure since statistics began to be compiled. A severe gale buffeted Yaeyama and the surrounding area, while the Sakishima Islands saw stormy seas with high swells and the Okinawa Island area was also battered by rough seas.	0	0	5	23	0	・Dispatchment of government investigation team ・Invocation of Disaster Relief Act
The 2016 Kumamoto Earthquake (April 14 and 16, 2016)	・At 09:26 p.m. on April 14, 2016 Maximum seismic intensity of 7 ・At 01:25 a.m. on April 16, 2016 Maximum seismic intensity of 7	273	2,809	8,667	34,719	0	・Establishment of Major Disaster Management Headquarters ・Establishment of On-site Major Disaster Management Headquarters ・Site inspection by Prime Minister (three times) ・Dispatchment of government investigation team ・Invocation of Disaster Relief Act ・Invocation of Act on Support for Reconstructing Livelihoods of the Affected due to Disaster ・Invocation of Special Measures Act for Specified Disaster ・Partial invocation of the Act on Reconstruction from Large-Scale Disasters ・Designation as an 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 Rains from Seasonal Rain Front Starting June 20, 2016 (June 20-25, 2016)	・Warm, moist air flowed in toward the seasonal rain front having stalled over Western to Eastern Japan and a low-pressure system above the seasonal rain front, creating extremely unstable atmospheric conditions. ・Rainfall from 00:00 on 19 onward exceeded 300 mm over a wide area of Kyushu, as well as Chugoku, Shikoku and part of the Izu Islands, while rain in some parts of Kumamoto, Oita and Miyazaki Prefectures exceeded 500 mm.	7	12	37	165	520	・Designation as an extremely severe disaster
Typhoon CHANTHU (1607) (August 16-18, 2016)	・Typhoon CHANTHU (1607) moved northward along the Pacific coast of the Kanto and Tohoku regions, making landfall near Cape Erimo at around 17:30 on August 17. It then continued up through Hokkaido and transformed into an extra-tropical cyclone near Sakhalin island at 03:00 on the 18th. ・The passage of the cold front of the extra-tropical cyclone that was formerly Typhoon CHANTHU (1607) caused localized driving rains in the Kanto region, with 83 mm per hour of rain recorded in Utsunomiya City, Tochigi Prefecture up to 03:14 on the 18th. ・The total rainfall between 00:00 on August 16 and 06:00 on August 18 exceeded 100 mm over an extensive area in the Kanto, Tohoku, and Hokkaido regions.	0	5	0	9	67	・Designation as an extremely severe disaster
Typhoons KOMPASU (1611) & MINDULLE (1609) (August 20-23, 2016)	・Typhoon KOMPASU (1611) formed as a tropical storm over the sea east of Japan at 09:00 on August 20 and approached the Tohoku region before making landfall near Kushiro City, Hokkaido after 23:00 on the 21st. It then continued up through Hokkaido and transformed into an extra-tropical cyclone over the Sea of Okhotsk at 03:00 on the 22nd. ・Typhoon MINDULLE (1609) made landfall near Tateyama City, Chiba Prefecture at around 12:30 on August 22 and continued up through the Kanto and Tohoku regions, making landfall once more on the central part of Hidaka District of Hokkaido Prefercture before 06:00 on the 23rd. It then continued up through Hokkaido before transforming into an extra-tropical cyclone over the Sea of Okhotsk at 12:00 on the 23rd. ・These typhoons and weather fronts caused heavy rain in eastern and northern Japan. Between 00:00 on August 20 and 24:00 on the 23rd, there was 448.5 mm of rainfall at Mt. Amagi in Izu City, Shizuoka Prefecture; 297.5 mm at Ome in Ome City, Tokyo; and 296.0 mm at Itokushibetsu in Shibetsu Town, Hokkaido. Hokkaido experienced particularly heavy rain, receiving double the average rainfall for August.	2	76	6	19	665	・Dispatchment of government investigation team ・Designation as an extremely severe disaster
Typhoon LIONROCK (1610) (August 26-31, 2016)	・Typhoon LIONROCK (1610) approached the Kanto region in the morning of August 30 and made landfall near Ofunato City, Iwate Prefecture around 17:30 on the 30th, accompanied by a storm area. It then accelerated on a peculiar course that saw it pass through the Tohoku region and enter the Sea of Japan, and it transformed into an extra-tropical cyclone on the 31st. ・This was the first time that a typhoon had made landfall on the Pacific coast of the Tohoku region since the Japan Meteorological Agency began recording statistics in 1951.	29	14	518	2,281	279	・Installation of government on-site communications office ・Appeal to the public by the Minister of State for Disaster Management ・Site inspection by Prime Minister (twice) ・Dispatchment of government investigation team (twice) ・Invocation of Disaster Relief Act ・Invocation of Act on Support for Reconstructing Livelihoods of the Affected due to Disaster ・Designation as an extremely severe disaster
Typhoon MALAKAS (1616) (September 16-20, 2016)	・With strong intensity, Typhoon MALAKAS (1616) made landfall on the Osumi Peninsula, Kagoshima Prefecture after 00:00 on September 20 and then headed northeast across the waters off the coast of Shikoku before making landfall once more near Tanabe City, Wakayama Prefecture around 13:30 the same day. After making landfall yet again after 17:00 that day near Tokoname City, Aichi Prefecture, it transformed into an extra-tropical cyclone at 21:00 the same day off the coast of the Tokai region.	1	47	8	65	509	・Designation as an extremely severe disaster
2016 Earthquake centered in the central Tottori Prefecture (October 21, 2016)	Maximum seismic intensity of Lower 6	0	32	18	312	—	・Dispatchment of government investigation team ・Invocation of Disaster Relief Act ・Invocation of Act on Support for Reconstructing Livelihoods of the Affected due to Disaster ・Designation as an 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	
Earthquake centered in the northern Ibaraki Prefecture (December 28, 2016)	Maximum seismic intensity of Lower 6	0	2	0	1	—	—
March 27, 2017Avalanche in Nasu, Tochigi Prefecture on (March 27, 2017)	An avalanche hit the Nasu Onsen Family Ski Resort, affecting high-school students were involved during a mountain climbing workshop.	8	40	—	—	—	—
Heavy rains from Seasonal Rain Front starting June 30, 2017and Typhoon NANMADOL (1703) (including Northern Kyushu Heavy Rain) (June 30 - July 10, 2017)	Localized intense rain caused by a seasonal rain front and Typhoon NANMADOL (1703) fell mainly in northern Kyushu. Especially from July 5 to 6, record heavy rain hit northern Kyushu due to warm and very moist air flowing in toward the rain front stalling in the vicinity of the Tsushima Straits.	44	39	338	1,101	223	・Cabinet meeting (three times) ・Site inspection by Prime Minister (once) ・Deployment of a Cabinet Office advance information gathering team ・Dispatchment of government investigation team (twice) ・Installation of government on-site communications office ・Invocation of Disaster Relief Act ・Invocation of Act on Support for Reconstructing Livelihoods of the Affected due to Disaster ・Designation as an extremely severe disaster
Heavy Rains from Seasonal Rain Front Starting July 22, 2017 (July 22 - 26, 2017)	Warm and moist air flowed in towards the rain front stalling over Tohoku and Hokuriku regions; stimulating it and causing heavy rain, concentrated in these regions, from July 22.	0	0	3	44	618	・Invocation of Disaster Relief Act ・Invocation of Act on Support for Reconstructing Livelihoods of the Affected due to Disaster ・Designation as an extremely severe disaster
Typhoon TALIM (1718) (September 13 - 18, 2017)	Typhoon TALIM (1718), heading north near Miyako Island from September 13 to 14, crossed the Satsuma Peninsula, Kagoshima Prefecture around 11:30 on 17th and made landfall on Tarumizu City, Kagoshima Prefercture around 12:00 the same day. It continued to move north along the Japanese islands with a storm area and transformed into an extra-tropical cyclone at 03:00 on 18th around Sado Island. The typhoon and active rain front caused driving rains from Western to Northern Japan.	5	73	5	615	1,553	・Invocation of Disaster Relief Act ・Invocation of Act on Support for Reconstructing Livelihoods of the Affected due to Disaster ・Designation as an extremely severe disaster
Typhoon LAN (1721) (October 21 - 23, 2017)	Typhoon LAN (1721) moved northward over the sea south of Japan during October 21-22 and made landfall around Kakegawa City in Shizuoka Prefecture around 03:00 on the 23rd with its strong intensity and its very large scale. After crossing the Kanto region with a storm area. It transformed into an extra-tropical cyclone around the sea east of Japan at 09:00 on 23rd. This brought heavy rain over much of Western and Eastern Japan and the Tohoku region; due to well-developed rain clouds surrounding the typhoon and the rain front stalling near Honshu.	8	245	13	485	2,794	・Dispatchment of government investigation team ・Invocation of Disaster Relief Act ・Invocation of Act on Support for Reconstructing Livelihoods of the Affected due to Disaster ・Designation as an extremely severe disaster
Heavy Snow from 2017 (November 2017 - March 2018)	Due to the effects of a strong winter air-pressure pattern, heavy snowfalls were observed in some areas on the Japan Sea side. Especially large amounts of well-developed snow clouds flowed in from the Japan Sea side from early to mid-February. In Fukui, Fukui Prefecture, the daily maximum snow depth exceeded 140 cm for the first time in 37 years. The Hokuriku region observed heavy snowfalls overall, with some areas recording snow exceeding six times the average.	116	1,539	9	18	13	・Dispatchment of government investigation team ・Invocation of Disaster Relief Act
Eruption of Kusatsu-Shiranesan (January 23, 2018)	・An eruption occurred at 10:02 a.m., January 23. Volcanic rocks travelled farther than 1 km from the crater near Kagami-ike, Motoshiranesan. ・At 11:05 a.m., the volcanic alert level was raised from 1 to 2 (Do not approach the crater). ・At 11:50 a.m., the volcanic alert level was raised from 2 to 3 (Do not approach the volcano) (caution required within a 2 km radius from the crater near Kagami-ike).	1	11	0	0	0	—
Earthquake centered in the western Shimane Prefecture (April 9, 2018)	Maximum seismic intensity of Upper 5	0	9	16	58	0	・Invocation of Act on Support for Reconstructing Livelihoods of the Affected due to Disaster
Sediment Disaster in Nakatsu, Oita Prefecture (April 14, 2018)	A landslide in Yabakeimachi, Nakatsu City	6	0	4	0	0	—

Name of Disaster	Major Events	Human Casualties (persons)		Houses Damaged (houses)			Remarks
		Fatalities/ Missing Persons	Injured	Completely Destroyed	Half Destroyed	Above-floor Flooding	
Earthquake centered in the northern Osaka Prefecture (June 18, 2018)	Maximum seismic intensity of Lower 6	6	462	21	483	0	・Deployment of a Cabinet Office advance information gathering team ・Cabinet meeting (once) ・Site inspection by Prime Minister (once) ・Invocation of Disaster Relief Act ・Invocation of Act on Support for Reconstructing Livelihoods of the Affected due to Disaster
The Heavy Rain Events of July 2018 (June 28 – July 8, 2018)	Due to the effects of the rain front and Typhoon PRAPIROON (1807), warm and highly humid air was continuously supplied into the vicinity of Japan, resulting in record rainfalls in western Japan and other areas. The rains caused some serious disasters, including river overflows, floods, and landslides, leaving more than 200 people dead or missing. The lifelines were also affected, with water and electricity outages occurring in various areas across Japan, while rail and road transportation was also disrupted.	271	449	6,783	11,342	6,982	・Establishment of Major Disaster Management Headquarters ・Cabinet meeting (once) ・Deployment of a Cabinet Office advance information gathering team ・Dispatchment of government investigation team ・Site inspection by Prime Minister (four times) ・Site inspection by Minister of State for Disaster Management (three times) ・Invocation of Disaster Relief Act ・Invocation of Act on Support for Reconstructing Livelihoods of the Affected due to Disaster ・Invocation of Special Measures Act for Specified Disaster ・Designation as an extremely severe disaster
Volcanic activity at Kuchinoerabu-jima [Volcanic Alert Level 4] (August 15, 2018)	From around August 8, many volcanic earthquakes and large amounts of volcanic gases were observed. From around midnight on August 15, an increasing number of volcanic earthquakes were observed at deeper spots. In the small hours of the same day, an earthquake with a maximum magnitude of 1.9 (preliminary) was observed. At 10:30 a.m., the volcanic alert level was raised to 4 (prepare to evacuate).	—	—	—	—	—	—
Typhoon JEBI (1821) (September 3 - 5, 2018)	With very strong intensity, Typhoon JEBI (1821) made landfall on the southern part of Tokushima Prefecture before noon on September 4. It then made landfall again around Kobe City, Hyogo Prefecture before 2 p.m. and continued up through the Kinki region while accelerating. At 9 a.m. on the 5th, it transformed into an extra-tropical cyclone off the coast of the Russian Primorsky Krai. During the approach and passage of the typhoon, very intense winds and rains hit western to northern Japan. The Shikoku and Kinki regions experienced particularly strong winds and rains, with some areas observing record high waves.	14	980	68	833	244	・Cabinet meeting (once) ・Dispatchment of government investigation team ・Designation as an extremely severe disaster
The 2018 Hokkaido Eastern Iburi Earthquake (September 6, 2018)	Maximum seismic intensity of 7 A major power outage occurred across the prefecture.	43	782	469	1,660	—	・Deployment of a Cabinet Office advance information gathering team ・Cabinet meeting (nine times) ・Installation of government on-site communications office ・Dispatchment of government investigation team ・Site inspection by Prime Minister (once) ・Site inspection by Minister of State for Disaster Management (once) ・Invocation of Disaster Relief Act ・Invocation of Act on Support for Reconstructing Livelihoods of the Affected due to Disaster ・Designation as an extremely severe disaster
Typhoon TRAMI (1824) (September 28 – October 1, 2018)	From September 28 to dawn on the 30th, Typhoon TRAMI (1824) approached the Okinawa region with very strong intensity. It made landfall near Tanabe City, Wakayama Prefecture around 8 p.m. on the 30th while rapidly accelerating. After crossing eastern and northern Japan, it transformed into an extra-tropical cyclone over the sea east of Japan at 9 a.m. on October 1.	4	231	62	404	326	・Designation as an extremely severe disaster ・Invocation of Act on Support for Reconstructing Livelihoods of the Affected due to Disaster
Earthquake centered in the Kumamoto region of Kumamoto Prefecture (January 3, 2019)	Maximum seismic intensity of Lower 6	1	3	0	0	—	—
Earthquake centered in the Central-Eastern Iburi region of Hokkaido (February 21, 2019)	Maximum seismic intensity of Lower 6	0	6	0	0	—	—

Name of Disaster	Major Events	Human Casualties (persons)		Houses Damaged (houses)			Remarks
		Fatalities/ Missing Persons	Injured	Completely Destroyed	Half Destroyed	Above-floor Flooding	
Earthquake centered offshore of Yamagata Prefecture (June 18, 2019)	Maximum seismic intensity of Upper 6	0	43	0	35	—	・Cabinet meeting (two times) ・Dispatchment of government investigation team
Heavy Rain since Late June (June 28 -July 5, 2019)	Since late June, seasonal rain front was stalling in western and around eastern Japan and warm moist air flowing toward the front has increased its activity. The total precipitation from June 28 to July 8 reached 1,089.5 mm in Ebino, Ebino City of Miyazaki Prefecture, exceeded 500 mm in Kagoshima, Miyazaki, and Kumamoto Prefectures. Resulting in the record-breaking heavy rainfalls.	2	5	11	9	92	・Cabinet meeting (three times) ・Deployment of a Cabinet Office advance information gathering team ・Designation as an extremely severe disaster
Heavy rains from Seasonal Rain Front and 2019 Typhoon Danas (1905) (July 17 – 22, 2019)	Warm and humid air around Typhoon Danas (1905) and the North Pacific Subtropical High brought heavy localized rainfall in western Japan from 20 to 21. From the night of 19 to the afternoon of 20, Goto and Tsushima in Nagasaki Prefecture experienced the record-breaking heaviest rain in decades, and at 10:05 pm on 20, an emergency heavy rain warning was issued (all warnings were cancelled by 4:10 pm on the same day). In addition, developed rain clouds stalled over Saga and Fukuoka Prefectures on the early morning of 21, resulting in record-breaking heavy rain in some areas, exceeding the July average rainfall in 24 hours. Typhoon Danas transformed into an extra-tropical cyclone at 9:00 p.m. On 21.	1	6	0	2	216	・Cabinet meeting (once) ・Dispatchment of government investigation team ・Designation as an extremely severe disaster
Typhoon Krosa (1910) (August 12 – 16, 2019)	Typhoon Krosa (1910) made landfall near Kure City in Hiroshima Prefecture around 3:00 p.m. on 15 and brought heavy rain with strong winds over the wide range of western and eastern Japan on the Pacific side, with total rainfall exceeding 800 mm in some places. Though it transformed into an extra-tropical cyclone in western Hokkaido at 9 p.m. on 16, it approached Hokkaido with its strength maintained, and very intense rainfalls with strong wind hit Hokkaido and other areas until the dawn of 17.	2	58	1	0	2	・Cabinet meeting (two times) ・Designation as an extremely severe disaster
Heavy rainfall related to Seasonal Rain Front in August 2019 (August 26 – 29, 2019)	The front and humid air resulted in record-breaking heavy rainfall, with total rainfall exceeding 600 mm in northern Kyushu and other areas since August 26. In particular, as the threat of serious disasters significantly increased, with record-breaking heavy rainfalls of at least100 mm per hour recorded at dawn on August 28, an emergency heavy rain warning was issued for Saga, Fukuoka and Nagasaki prefectures at 5:50 a.m. on 28.	4	2	95	882	905	・Cabinet meeting (three times) ・Deployment of a Cabinet Office advance information gathering team ・Dispatchment of government investigation team ・Site inspection by Minister of State for Disaster Management ・Invocation of Disaster Relief Act ・Invocation of Act on Support for Reconstructing Livelihoods of the Affected due to Disaster ・Designation as an extremely severe disaster
Typhoon Faxai (1915) (September 7 – 9, 2019)	From July 7 to 8, the typhoon moved northward from the ocean surrounding the Ogasawara Islands to the Izu Islands, passed near the Miura Peninsula before 3:00 a.m. on 9, and made powerful landfall near Chiba City before 5:00 a.m. As the typhoon approached and passed Japan, fierce wind and rain hit the Izu Islands, the southern Kanto region, and others. The storm was a record-breaking one, with many points having the highest maximum wind speeds and the highest maximum instantaneous wind speeds ever recorded in Japan. In particular, the maximum wind velocity of 35.9 m and the maximum instantaneous wind speed of 57.5 m were observed in Chiba City.	3	150	391	4,204	121	・Deployment of a Cabinet Office advance information gathering team ・Site inspection by Minister of State for Disaster Management (three times) ・Invocation of Disaster Relief Act ・Invocation of Act on Support for Reconstructing Livelihoods of the Affected due to Disaster ・Designation as an extremely severe disaster
Typhoon Hagibis (1919) (October 10 – 13, 2019)	Before 7 p.m. on 12, the large typhoon with strong power made landfall on the Izu Peninsula. It passed through the Kanto region and blew out to the east sea of the Tohoku region before dawn on 13. The typhoon caused record rainfall over a wide area in Shizuoka and Niigata Prefectures, as well as in the Kanto-Koshin and the Tohoku regions, due to the typhoon's developed rain clouds and moist air around it. Atmospheric conditions became extremely unstable as the typhoon approached, and gusts of wind, believed to be tornadoes, were reported in Ichihara City, Chiba Prefecture.	94	376	3,273	28,306	7,666	・Establishment of Major Disaster Management Headquarters ・Cabinet meeting (two times) ・Deployment of a Cabinet Office Investigation Team ・Dispatchment of government investigation team ・Site inspection by Prime Minister (two times) ・Site inspection by Minister of State for Disaster Management (six times) ・Invocation of Disaster Relief Act ・Invocation of Act on Support for Reconstructing Livelihoods of the Affected due to Disaster ・Specified disaster designation ・Designation as an extremely severe disaster ・Major disaster designation

*1 Established by a Cabinet meeting decision, and therefore not based on the Basic Act on Disaster Management.
*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.
Source: Cabinet Office, Fire and Disaster Management Agency Materials, Major Disaster Management Headquarters materials

Fig. A-10 Establishment of Extreme Disaster Management Headquarters and Major Disaster Management Headquarters

As of March 31, 2020

	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	Typhoons SHIRLEY (6523), TRIX (6524), and VIRGINIA (6525) Major Disaster Management Headquarters	Sep. 17 - Dec. 17, 1965	Minister of State
4	Typhoons HELEN (6624) and IDA (6626) 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	Typhoon FRAN (7617) 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	Typhoon TIP (7920) 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. 19 - 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	Typhoon TOKAGE (0423) 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	Typhoon TALAS (1112) 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 - Nov. 9, 2015	Minister of State for Disaster Management
32	2016 Emergency Response Headquarters for the Earthquake Centered in the Kumamoto Region of Kumamoto Prefecture	Apr. 14, 2016 - Nov. 30, 2018	Minister of State for Disaster Management
33	Emergency Response Headquarters for the Heavy Rain in July 2018	Jul. 8 - Nov. 30, 2018	Minister of State for Disaster Management
34	Typhoon Hagibis (1919) Major Disaster Management Headquarters	Oct. 13, 2019 – Mar. 31, 2020	Minister of State for Disaster Management

Notes: The above are Extreme Disaster Management Headquarters and Major Disaster Management Headquarters based on the Basic Act on Disaster Management (Act No. 223 of 1961).

*1 Established within the Cabinet Office based on a Cabinet meeting resolution, not based on the Basic Act on Disaster Management.

*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-11 Dispatchment of Government Investigation Teams (Since the Great Hanshin-Awaji Earthquake)

As of March 31, 2020

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 Typhoon BART (9918) 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
	2003Tokachi-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
	Typhoon MEARI (0421)	Oct. 1	Mie	Minister of State for Disaster Management
	Typhoon MA-ON (0422)	Oct. 14	Shizuoka	State Minister of the Cabinet Office
	Typhoon TOKAGE (0423)	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
	Typhoon NABI (0514)	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
	Typhoon SHANSHAN (0613)	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 MAN-YI (0704) and Seasonal Rain Front	Jul. 13	Kumamoto	State-Minister of the Cabinet Office
	2007 Niigataken Chuetsu-oki Earthquake	Jul. 16	Niigata	Minister of State for Disaster Management
2008	2008 Iwate-Miyagi Nairiku 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
	Typhoon ETAU (0909)	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
	Typhoon TALAS (1112)	Sep. 4-7	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 Snow in2012	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 MAN-YI (1318)	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 WIPHA (1326)	Oct. 19	Oshimacho (Tokyo)	Minister of State for Disaster Management
2014	Heavy Snow in 2013	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. 10	Saitama	State-Minister of the Cabinet Office
		Mar. 15	Nagano, Gunma	State-Minister of the Cabinet Office
	Typhoon NEOGURI (1408) 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
	Typhoons NAKRI (1412) & HALONG (1411)	Aug. 11-13	Tokushima, Kochi	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 Snow in 2014	Dec. 9	Tokushima	Minister of State for Disaster Management
2015	Eruption of Kuchinoerabu-jima	May 29-30	Kagoshima	State-Minister of the Cabinet Office
	Torrential Rain of September 2015 in the Kanto and Tohoku Regions	Sep. 11	Ibaraki, Tochigi	State-Minister of the Cabinet Office
	Typhoon DUJUAN (1521)	Sep. 30-Oct. 1	Okinawa	Parliamentary Vice-Minister of Cabinet Office
2016	The 2016 Kumamoto Earthquake	Apr. 15	Kumamoto	State-Minister of the Cabinet Office
	Typhoons KOMPASU (1611) & MINDULLE (1609)	Aug. 28-29	Hokkaido	Parliamentary Vice-Minister of Cabinet Office
	Typhoon LIONROCK (1610)	Aug. 31-Sep. 1	Iwate	Parliamentary Vice-Minister of Cabinet Office
		Sep. 5	Hokkaido	Minister of State for Disaster Management
	Earthquake centered in the central Tottori Prefecture	Oct. 29	Tottori	State-Minister of the Cabinet Office
2017	Heavy Rains from Seasonal Rain Front Starting June 30, 2017 and Typhoon NANMADOL (1703)	Jul. 7	Fukuoka	State-Minister of the Cabinet Office
		Jul. 9	Oita, Fukuoka	Minister of State for Disaster Management
	Typhoon LAN (1721)	Oct. 27	Osaka, Wakayama	Minister of State for Disaster Management
2018	Heavy Snow in 2017	Feb. 24	Fukui	Minister of State for Disaster Management
	The Heavy Rain Event of July 2018	Jul. 9	Okayama, Hiroshima	Minister of State for Disaster Management
	Typhoon JEBI (1821)	Sep. 11	Hyogo Osaka	Minister of State for Disaster Management
	The 2018 Hokkaido Eastern Iburi Earthquake	Sep. 19	Hokkaido	Minister of State for Disaster Management

Year	Name of Disaster	Deployment Dates	Prefecture Surveyed	Team Leader
2019	Earthquake centered offshore of Yamagata Prefecture	Jul. 1	Niigata, Yamagata	Minister of State for Disaster Management
	Heavy Rains from Seasonal Rain Front and Typhoon Danas (1905)	Jul. 24 - 25	Nagasaki, Kagoshima	Minister of State for Disaster Management
	Heavy Rain Event of August 2019 related to the rain front	Aug. 31	Saga	Minister of State for Disaster Management
	Typhoon Hagibis (1919)	Oct. 14	Fukushima	Minister of State for Disaster Management

Source: Cabinet Office

Fig. A-12 Application of the Disaster Relief Act (Since the Great Hanshin-Awaji Earthquake)

As of February 1, 2020

Year	Name of Disaster	Date of Invocation	Prefecture	No. of Municipalities to which the Act was applied
1995	1995 Hyogo-ken-Nanbu Earthquake (Great Hanshin-Awaji Earthquake)	Jan. 17	Hyogo	20
			Osaka	5
	Niigata-ken-Hokubu Earthquake	Apr. 1	Niigata	1
	Heavy Rain Starting on July 3	Jul. 5	Ehime	1
	July 1995 Seasonal Rain Front Torrential Rains	Jul. 11	Niigata	2
		Jul. 11, Jul. 12	Nagano	2
	Heavy Rain Starting on August 10	Aug. 10	Niigata	1
1996	Typhoon VIOLET (9617)	Sep. 22	Saitama	1
		Sep. 22	Chiba	2
1997	July 1997 Seasonal Rain Front Torrential Rains	Jul. 10	Kagoshima	1
	Typhoon OLIWA (9719)	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, Aug. 30	Tochigi	4
		Aug. 28	Saitama	1
		Aug. 3	Shizuoka	1
	Typhoon STELLA (9805)	Sep. 16	Saitama	1
	Typhoon VICKI (9807)	Sep. 22	Fukui	1
			Hyogo	1
			Nara	1
	Heavy Rains of September 23–25, 1998	Sep. 25	Kochi	6
	Typhoon ZEB (9810)	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 Typhoon BART (9918) 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	Jun. 26	Tokyo	1
	2000 Niijima and Kozushima Is. Earthquake	Jul. 1, Jul. 15	Tokyo	2
	Typhoon KIROGI (0003)	Jul. 8	Saitama	1
	Heavy Rains from 2000 Autumn Rain Front and Typhoon SAOMAI (0014)	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
	Typhoon NARI (0116)	Sep. 8, Sep. 11	Okinawa	2
2002	Typhoon CHATAAN (026)	Jul. 10	Iwate	1
		Jul. 11	Gifu	1
2003	July Seasonal Rain Front Torrential Rains	Jul. 19	Fukuoka	5
		Jul. 20	Kumamoto	1
	Northern Miyagi Earthquake	Jul. 26	Miyagi	5
	Typhoon ETAU (0310)	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
	Typhoon NAMTHEUN (0410), Typhoon MALOU (0411), and Related Heavy Rains	Jul. 31	Tokushima	2

Year	Name of Disaster	Date of Invocation	Prefecture	No. of Municipalities to which the Act was applied
2004	Typhoon MEGI (0415) and Heavy Rains from Rain Front	Aug. 17	Ehime	1
			Kochi	1
	Typhoon CHABA (0416)	Aug. 30	Okayama	9
			Kagawa	13
			Ehime	1
			Miyazaki	2
	Typhoon SONGDA (0418)	Sep. 7	Hiroshima	2
	Typhoon MEARI (0421)	Sep. 29	Mie	5
			Ehime	4
			Hyogo	2
	Typhoon MA-ON (0422)	Oct. 9	Shizuoka	1
	Typhoon TOKAGE (0423)	Oct. 2	Miyazaki	1
			Tokushima	4
			Kagawa	9
			Hyogo	18
			Gifu	1
			Kyoto	7
	2004 Mid Niigata Prefecture Earthquake	Oct. 23	Niigata	54
2005	2005 Fukuoka-ken-Seihou-oki Earthquake	Mar. 20	Fukuoka	1
	Typhoon NABI (0514)	Sep. 4	Tokyo	2
		Sep. 6	Yamaguchi	2
			Kochi	1
			Miyazaki	13
		Sep. 4	Kagoshima	1
	2006 Heavy Snowfall	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
	Typhoon SHANSHAN (0613)	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 MAN-YI (0704) and Seasonal Rain Front	Jul. 6	Kumamoto	1
	2007 Niigataken Chuetsu-oki Earthquake	Jul. 16	Niigata	10
	Typhoon USAGI (0705)	Aug. 2	Miyazaki	1
	2007 Heavy Rains from Typhoon NARI (0711) and Rain Front	Sep. 17	Akita	2
2008	Low-Pressure System from February 23 to 24	Feb. 24	Toyama	1
	2008 Iwate-Miyagi Nairiku 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
	Typhoon ETAU (0909)	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 Snow 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 to which the Act was applied
2011	2011 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
	Typhoon TALAS (1112)	Sep. 2	Mie	3
			Nara	10
			Wakayama	5
			Okayama	1
		Sep. 3	Tottori	2
	Typhoon ROKE (1115)	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
	Typhoon SANBA (1216)	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
		Feb. 26	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
	Typhoon MAN-YI (1318)	Sep. 16	Saitama	1
			Kyoto	2
	Typhoon DANAS (1324)	Oct. 7	Kagoshima	1
	Typhoon WIPHA (1326)	Oct. 16	Tokyo	Aforementioned
			Chiba	1

Year	Name of Disaster	Date of Invocation	Prefecture	No. of Municipalities to which the Act was applied
2014	Heavy Winter Snowfall	Feb. 15	Nagano	4
			Gunma	1
			Yamanashi	16
		Feb. 17	Gunma	7
			Saitama	7
		Feb. 18	Gunma	1
			Yamanashi	3
		Feb. 21	Yamanashi	2
	Heavy Rains from Typhoon NEOGURI (1408)	Jul. 9	Nagano	1
			Yamagata	1
	Typhoon NAKRI (1412)	Aug. 3	Kochi	1
	Typhoon HALONG (1411)	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 Snow Starting December 5	Dec. 8	Tokushima	3
2015	Eruption of Kuchinoerabu-jima	May 29	Kagoshima	1
	Torrential Rain of September 2015 in the Kanto and Tohoku Regions	Sep. 9	Ibaraki	10
			Tochigi	8
		Sep. 10	Miyagi	8
	Typhoon DUJUAN (1521)	Sep. 28	Okinawa	1
2016	2016 Kumamoto Earthquake	Apr. 14	Kumamoto	45
	Typhoon LIONROCK (1610)	Aug. 30	Hokkaido	20
			Iwate	12
	2016 Earthquake centered in the central Tottori Prefecture	Oct. 21	Tottori	4
	2016 Conflagration in Itoigawa City, Niigata Prefecture	Dec. 22	Niigata	1
2017	July 2017 Northern Kyushu Heavy Rain	Jul. 5	Fukuoka	3
		Jul. 5	Oita	2
	Heavy Rain Starting on July 22, 2017	Jul. 22	Akita	1
	Typhoon TALIM (1718)	Sep. 17	Oita	2
	Typhoon LAN (1721)	Oct. 22	Mie	2
		Oct. 22	Kyoto	1
		Oct. 21	Wakayama	1
2018	Heavy Snow Starting February 4, 2018	Feb. 6	Fukui	8
		Feb. 13	Fukui	1
	Heavy Snowfall in FY2017	Feb. 14	Niigata	5
	2018 Earthquake centered in the northern Osaka Prefecture	Jun. 18	Osaka	13
	The Heavy Rain Event of July 2018	Jul. 5	Kyoto	9
			Hyogo	6
			Okayama	19
			Hiroshima	15
			Ehime	7
			Fukuoka	2
		Jul. 6	Gifu	17
			Hyogo	5
			Tottori	10
			Shimane	2
			Okayama	2
			Yamaguchi	1
			Kochi	3
		Jul. 7	Hyogo	4
			Kochi	1
		Jul. 8	Gifu	4
			Kochi	3
	Heavy Rain Starting on August 30, 2018	Aug. 31	Yamagata	7
	The 2018 Hokkaido Eastern Iburi Earthquake	Sep. 6	Hokkaido	179

Year	Name of Disaster	Date of Invocation	Prefecture	No. of Municipalities to which the Act was applied
2019	Heavy Rain Event of August 2019 related to the rain front	Aug. 28	Saga	20
	Disasters caused by Typhoon FAXAI (1915)	Sep. 8	Tokyo	1
	Electrical blackout due to the influence of 2019 Typhoon FAXAI (1915)	Sep. 9	Chiba	41
	Disasters caused by Typhoon HAGIBIS (1919)	Oct. 12	Iwate	14
			Miyagi	34
			Sendai City	1
			Fukushima	55
			Ibaraki	30
			Tochigi	21
			Gunma	30
			Saitama	48
			Tokyo	28
			Kanagawa	17
			Kawasaki City	1
			Sagamihara City	1
			Niigata	3
			Yamanashi	20
			Nagano	43
			Shizuoka	2
		—	(Tokyo)	Aforementioned (1)
			(Chiba)	Aforementioned (41)

Source: Cabinet Office

Fig. A-13 Designations of Extremely Severe Disasters in the Past Five Years

Title of Legislation	Disaster Name	Main Affected Areas	Main Applicable Measures								Other Applicable Measures
			Art. 3, 4	Art. 5	Art. 6	Art. 7	Art. 12	Art. 16	Art. 17	Art. 19	Art. 24	
Cabinet Order on the Extremely Severe Disaster Designation and Identification of Essential Response Measures for Torrential Rains and Rainstorms from June 2 to July 26, 2015	Seasonal Rain Front/Typhoon CHAN-HOM (1509)/ Typhoon ANGKA (1511)/ Typhoon HALOLA (1512)	Kumamoto Pref.	●	○							○ *1	
Cabinet Order on the Extremely Severe Disaster Designation and Identification of Essential Response Measures for the Districts of Odai Town, Taki-gun and Kihoku Town, Kitamuro-gun, Mie Prefecture Due to Rainstorms on August 24 and 26, 2015	Typhoon GONI (1515)	Mie Pref.		●							●	
Cabinet Order on the Extremely Severe Disaster Designation and Identification of Essential Response Measures for Rainstorms and Torrential Rains from September 7 to 11, 2015	Typhoon ETAU (1518), etc.	Miyagi, Fukushima, Ibaraki, and Tochigi Pref.	●	○	○		●				○ *1	
Cabinet Order on the Extremely Severe Disaster Designation and Identification of Essential Response Measures for Specified Regions in 2015	2015 Regional Disasters	—	●	●							●	
Cabinet Order on the Extremely Severe Disaster Designation and Identification of Essential Response Measures for the 2016 Kumamoto Earthquake	The 2016 Kumamoto Earthquake	Kumamoto Pref., etc.	○	○	○		○	○	○	○	○	○
Cabinet Order on the Extremely Severe Disaster Designation and Identification of Essential Response Measures for Torrential Rains from June 6 to July 15, 2016	Seasonal Rain Front	Kumamoto and Miyazaki Pref.	●	○							○ *1	
Cabinet Order on the Extremely Severe Disaster Designation and Identification of Essential Response Measures for Rainstorms and Torrential Rains from August 16 to September 1, 2016	Typhoon CHANTHU (1607)/ Typhoon MINDULLE (1609)/ Typhoon LIONROCK (1610)/ Typhoon KOMPASU (1611), etc.	Hokkaido and Iwate Pref.	○	○	○	○ *2	●	○	○	○	○	
Cabinet Order on the Extremely Severe Disaster Designation and Identification of Essential Response Measures for Rainstorms and Torrential Rains from September 17 to 21, 2016	Typhoon MALAKAS (1616)	Miyazaki and Kagoshima Pref.	●	○	○						○ *1	
Cabinet Order on the Extremely Severe Disaster Designation and Identification of Essential Response Measures for Specified Regions in 2016	2016 Regional Disasters	—	●	●							●	
Cabinet Order on the Extremely Severe Disaster Designation and Identification of Essential Response Measures for Torrential Rains and Rainstorms on June 7 - July 27, 2017	Seasonal Rain Front (Northern Kyushu Heavy Rain, etc.)/ Typhoon NANMADOL (1703)	Fukuoka and Oita Pref.	●	○	○		●				○ *1	
Cabinet Order on the Extremely Severe Disaster Designation and Identification of Essential Response Measures for Rainstorms and Torrential Rains on September 15 - 19, 2017	Typhoon TALIM (1718)	Kyoto, Ehime, and Oita Pref.	●	○							○ * 1	
Cabinet Order on the Extremely Severe Disaster Designation and Identification of Essential Response Measures for Rainstorms on October 21 - 23, 2017	Typhoon LAN (1721)	Niigata and Mie Pref., Kinki region	●	○	○						○ * 1	○
Cabinet Order on the Extremely Severe Disaster Designation and Identification of Essential Response Measures for Specified Regions in 2017	2017 Regional Disasters	—	●	●							●	
Cabinet Order on the Extremely Severe Disaster Designation and Identification of Essential Response Measures for Torrential Rains and Rainstorms from May 20 to July 10, 2018	Seasonal Rain Front (The Heavy Rain Event of July 2018, etc.)/ Typhoon MALIKSI (1805)/ Typhoon GAEMI (1806)/ Typhoon PRAPIROON (1807)/ Typhoon MARIA (1808)	Okayama, Hiroshima and Ehime 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. 12	Art. 16	Art. 17	Art. 19	Art. 24	
Cabinet Order on the Extremely Severe Disaster Designation and Identification of Essential Response Measures for the Districts of Awashimaura Village, Iwafune-gun, Niigata Prefecture Due to Rainstorms and Torrential Rains from August 20 to September 5, 2018	Typhoons SOULIK (1819), CIMARON (1820), and JEBI (1821)	Wakayama, Nara, Osaka, Nagano and Niigata Pref.	●	●	●						●	●
Cabinet Order on the Extremely Severe Disaster Designation and Identification of Essential Response Measures for the 2018 Hokkaido Eastern Iburi Earthquake	The 2018 Hokkaido Eastern Iburi Earthquake	Hokkaido	○	○	○		●	○	○	○	○	○
Cabinet Order on the Extremely Severe Disaster Designation and Identification of Essential Response Measures for Rainstorms from September 28 to October 1, 2018	Typhoon TRAMI (1824)	Tottori, Miyazaki and Kagoshima Pref.	●	○	○						○ *1	
Cabinet Order on the Extremely Severe Disaster Designation and Identification of Essential Response Measures for Specified Regions in 2018	2018 Regional Disasters	—	●	●	●						●	●
Cabinet Order on the Extremely Severe Disaster Designation and Identification of Essential Response Measures for Torrential Rains and Rainstorms from June 6 to July 24, 2019	Seasonal Rain Front/ Typhoon SEPAT (1903) and DANAS (1905)	Kagoshima and Kumamoto Pref.		○							○	
Cabinet Order on the Extremely Severe Disaster Designation and Identification of Essential Response Measures for due to Rainstorms and Torrential Rains from August 13 to September 24, 2018	Heavy Rains from Rain Front and Typhoons KROSA (1910), LINGLING (1913), FAXAI (1915), and TAPAH (1917)	Saga and Chiba Pref.	●	○	○		●				○ *1	
Cabinet Order on the Extremely Severe Disaster Designation and Identification of Essential Response Measures for due to Rainstorms and Torrential Rains from October 11 to 26, 2019	Typhoons HAGIBIS (1919), NEOGURI (1920) and BUALOI (1921)	Iwate, Miyagi, Fukushima, Ibaraki, Tochigi, Gunma, Saitama, Chiba, Tokyo, Kanagawa, Niigata, Yamanashi, Nagano and Shizuoka Pref.	○	○	○		○	○	○	○	○	○
Cabinet Order on the Extremely Severe Disaster Designation and Identification of Essential Response Measures for Specified Regions in 2019	2019 Regional Disasters	—	●	●							●	

*1 Public works facilities were considered as regional disaster
*2 Limited to portions concerning item 3
[Legend]
○: Indicates a national disaster (Region is not specified, the disaster itself is specified).
●: Indicates a regional disaster (Disaster is specified at the municipal level.).
The applicable measures are the measures listed below prescribed in the Act on Special Financial Support to Deal with Extremely Severe Disasters.

[Main applicable measures]
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 (iii): Special financial support for disaster recovery projects for plant and animal aquaculture facilities
Art. 12: Special provision concerning disaster-related credit guarantees under the Small and Medium-sized Enterprise Credit Insurance Act
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]
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. 11-2: Subsidies for disaster recovery projects for forests
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, motherless 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

Source: Cabinet Office

Fig. A-14 Response of Government Ministries and Agencies to Major Disasters Since 2019

14-1 Earthquake centered offshore of Yamagata Prefecture a seismic intensity [seismic intensity Upper 6]

(1) Damage

At around 10:22 p.m. on June 18, 2019, a magnitude 6.7 earthquake centered offshore of Yamagata Prefecture occurred. The earthquake registered a seismic intensity of Upper 6 in Murakami City, Niigata Prefecture and Lower 6 in Tsuruoka City, Yamagata Prefecture. As of February 2, 2020, casualties of this earthquake included 9 seriously injured and 34 lightly injured, while damage to homes included 35 half-destroyed and 1,619 partially damaged.

The quake caused considerable damage to tiled roofs in Murakami City, Niigata Prefecture and Tsuruoka City, Yamagata Prefecture, which were close to the epicenter and at 10:24 p.m. the same day, a tsunami warning was issued for some parts of Yamagata, Niigata and Ishikawa Prefectures and an 11 cm tsunami was recorded at Nezugaseki, Tsuruoka City, Yamagata Prefecture and an 8 cm tsunami at Akita in Akita Prefecture, Niigata in Niigata Prefecture and at Wajima Port in Ishikawa Prefecture.

(2) Response from Government Ministries and Agencies

Immediately after the earthquake, the government summoned an Emergency Meeting Team at the Cabinet Intensive Information Center. Following instructions of Mr. Abe, Prime Minister, the government held a ministerial meeting the next day to in order to ascertain the extent of the damage and share and confirm the government's response. Subsequently, a government investigation team led by Mr. Yamamoto, then Minister of State for Disaster Management was dispatched to Niigata and Yamagata Prefectures to directly assess damage to Yamakita Junior High School in Murakami City and the Nezugaseki Port in Tsuruoka City, as well as the problems faced by the affected areas and implement disaster response measures.

With the start of the rainy and typhoon seasons as well as a full tourism season, the government took measures to provide financial support to the affected municipalities to repair the roofs of houses and other structures damaged by disaster, countermeasures following reputational damage to the tourism industry after harmful rumors, restoration of roads, ports and harbors, fishing ports and school facilities, support for small- and medium-sized companies and small-scale businesses and financial support for related local governments.

14-2 Heavy Rain Event of August 2019 related to the rain front

(1) Damage

The front and humid air resulted in record-breaking heavy rainfall, exceeding 600 mm in northern Kyushu and elsewhere since August 26. In particular, as the threat of serious disasters intensified, with record-breaking heavy rainfall of at least 100 mm per hour recorded at dawn on August 28, an emergency heavy rain warning was issued for Saga, Fukuoka and Nagasaki prefectures at 5:50 a.m. the same day.

As of February 4, 2020, casualties of this heavy rainfall included 4 fatalities and 1 seriously injured person, while damage to homes included 95 completely destroyed, 882 half-destroyed and 905 inundations above floor level. In addition, this heavy rainfall caused oil to spill from an iron factory (in Omachi Town), damaging houses and others and flooding the Rokkaku River and Ushizu River areas.

(2) Response from Government Ministries and Agencies

Under the direction of Mr. Abe, Prime Minister, the government immediately took various emergency disaster control measures, including convening an Emergency Meeting Team and holding a Cabinet meeting and an Inter-Agency Disaster Management Meeting as well as deploying a Cabinet Office advance information-gathering team to the Saga Prefectural Office to support local offices in their disaster response measures and work with the affected local governments to implement disaster response measures.

In the affected areas, units of the Self-Defense Forces, in response to a request from the Saga Prefectural Governor, supported the daily lives of those affected, such as bathing and food service assistance, set up oil fences and set up and collected oil absorption mats in response to oil spills from ironworks, installed and collected oil absorption mats by boat at the mouth of the Rokkaku River to prevent oil spills into the Ariake Sea and the Ministry of Land, Infrastructure, Transport and Tourism (MLIT) mobilized drainage pump vehicles and others from regional development bureaus across Japan to drain water from the Rokkaku River to cope with flooding damage.

In addition, given that many people, mainly in Saga Prefecture, were forced to live in evacuation centers, we implemented a “push-mode goods support” program to procure and transport goods without awaiting requests

from the affected areas and proceeded to improve the living environment at the evacuation centers by procuring and shipping vital daily necessities such as beverages and food.

Due to this heavy rain, the Disaster Relief Act was invoked in respect of 10 cities and 10 towns while the Act on Support for Reconstructing Livelihoods of the Affected due to Disaster was invoked in respect of 2 cities and 1 town in Saga Prefecture.

[Invocation of the Disaster Relief Act]
[Saga Prefecture] Saga City, Karatsu City, Tosu City, Taku City, Imari City, Takeo City, Kashima City, Ogi City, Ureshino City, Kanzaki City, Yoshinogari Town in Kanzaki-gun, Kiyama Town in Miyaki-gun, Kamimine Town in Miyaki-gun, Miyaki Town in Miyaki-gun, Genkai Town in Higashi Matsuura-gun, Arita Town in Nishimatsuura-gun, Omachi Town in Kishima-gun, Kouhoku Town in Kishima-gun, Shiraishi Town in Kishima-gun, Tara Town in Fujitsu-gun (Date of invocation: August 28)

[Invocation of the Act on Support for Reconstructing Livelihoods of the Affected due to Disaster]
[Saga Prefecture] Saga City, Takeo City, and Omachi Town in Kishima-gun (Date of occurrence: August 28)

The status of the extremely severe disaster designation for this disaster is as follows:

Disasters caused by rainstorms and torrential rains from August 13 to September 24, 2019 (*Heavy rains from fronts starting from August to September 2019 (including rainstorms from Typhoons Krosa, Lingling, Faxai, and Tapah)).

Announcement of potential designation on September 6 and 20, approved by the Cabinet on October 11

Partial revisions of the Cabinet Order approved by the Cabinet on March 13, 2020(*)

Area	Applicable Measures
Nationwide	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 Inclusion of funds for the redemption of principal and interest related to small disaster bonds in the standard budget request
<u>Niimi City, Okayama Prefecture</u> Taku City and Omachi Town, Saga Prefecture Tsushima City, Nagasaki Prefecture	Special financial support for disaster recovery projects for public works facilities Inclusion of funds for the redemption of principal and interest related to small disaster bonds in the standard budget request
Kyonan Town, Chiba Prefecture Takeo City and Omachi Town, Saga Prefecture	Special provision concerning disaster-related credit guarantees under the Small and Medium-sized Enterprise Credit Insurance Act

(Areas added by the Cabinet Order for partial revisions (*) are underlined)

14-3 Typhoon Faxai (1915)

(1) Damage

From September 7 to 8, Typhoon Faxai (1915) moved northward from the ocean surrounding the Ogasawara Islands to the Izu Islands, Typhoon Faxai passed near the Miura Peninsula before 3:00 a.m. on September 9 and made powerful landfall near Chiba City before 5:00 a.m. Subsequently, the typhoon blew out offshore of Ibaraki Prefecture on the morning of the same day, but as the typhoon approached and passed Japan, fierce wind and rain hit the Izu Islands, the southern Kanto region and elsewhere. The storm was record-breaking, with many points recording the highest ever maximum wind speeds and maximum instantaneous wind speeds recorded in Japan. In particular, a maximum wind velocity of 35.9 m and maximum instantaneous wind speed of 57.5 m were observed in Chiba City.

In this typhoon, as of December 23, 2019, earthquake victims included 3 fatalities and 13 seriously injured as well as 391 completely destroyed, 4,204 half-destroyed and 72,279 partially destroyed homes. Power outages and water cuts occurred one after another, mainly in Chiba Prefecture, comprising a peak of around 930,000 power outages in households and 140,000 water cuts (maximum) and significantly damaging lifelines, including prolonged restoration work due to the time required to assess damage and dispose of fallen trees at the scene.

(2) Response from Government Ministries and Agencies

On September 6, before the typhoon made landfall, an Inter-Agency Disaster Alert Meeting was held to ensure evacuation/warning arrangements by the government and on September 8, the Japan Meteorological Agency (JMA) held a special press conference to strongly urge people to take action to protect their own lives and those of their loved ones. Since September 9, the national government dispatched liaison officers to the Chiba Prefectural Government and municipalities to establish a liaison system and on 10, in the presence of Mr. Yamamoto, then Minister of State for Disaster Management, an Inter-Agency Disaster Management Meeting was held (15 meetings were held in total since then). In addition, the same day, a Cabinet Office investigation team was dispatched to Chiba Prefecture and Mr. Takeda, Minister of State for Disaster Management visited Chiba Prefecture and Tokyo Metropolitan Government (on 12: Chiba Prefecture Government Office, Katori City and Tako Town; on 15: Oshima and Niijima in Tokyo; on 16: Tateyama City, Kyonan Town and Kimitsu City in Chiba Prefecture) and Ms. Imai, Parliamentary Vice-Minister of Cabinet Officevisited Chiba Prefecture (on 19: Chiba Prefecture Government Office, Kimitsu City and Futtsu City; on 27: Tateyama City and Sodegaura City) to directly confirm damage and identify needs in affected areas. The entire government assisted the victims.

Given that many people were forced to live in shelters due to power outages and suspension of water supply, etc., the Cabinet approved the use of about 1.32 billion yen in reserve funds on September 17, assisted the victims by procuring and shipping water, food, cardboard beds and other supplies necessary for the living environment and the lives of evacuees in shelters. In addition, the Japanese government made concerted efforts to assist victims; the Self-Defense Forces units provided water and bathing assistance, the Japan Coast Guard used patrol vessels and craft for bathing and water supply assistance and the Japan Tourism Agency met requests from lodging organizations in Chiba Prefecture to provide bathing and cooking assistance.

Besides, in response to Typhoon Faxai (1915), support staff were deployed to affected municipalities based on a “staff allocation system to support local governments in affected areas”, which started operation in March 2018 and saw around 310 staff in the General Adviser Team sent from 9 prefectures and municipalities to nine affected municipalities to support the operations of the disaster management headquarters in the affected areas. In addition, supporting counterparts to 9 affected municipalities were determined and a total of approximately 3,500 support employees were deployed from 16 prefectures and municipalities for building investigation to issue Disaster-Affected Certificates and shelter management.

This typhoon damaged the roofs of quite a few homes and many were also flooded due to rainfall with immediate strong winds, significantly disrupting the daily lives of local people. This was an opportunity to expand the scope of the emergency repair system under the Disaster Relief Law, reflecting the need to ensure stability in the lives of the affected. Specifically, based on the percentage of damage to roofs and walls, etc. of a house (the damage percentage), destroyed houses were formerly classified into four categories: “completely destroyed,” “largely destroyed,” “half-destroyed,” and "less than half-destroyed." This time, “less than half-destroyed” was subdivided into two categories and destruction was subdivided into five categories: where the damage percentage was 10% or more and less than 20%, namely close to half-destroyed, it was redefined as “partial destruction” (quasi-half-destroyed) (the standard amount is 300,000 yen or less) and five new categories of emergency repairs were included. This system, which came into effect on August 28, 2019 and has been supported since heavy rainfall associated with the front in Saga Prefecture in August the same year, covered damage caused by the series of disasters from Typhoons Faxai (1915) to Hagibis (1919) (including the heavy rainfall from October 24 to 26) as well as other disasters to which the Disaster Relief Act was applied.

On February 19, the Japan Meteorological Agency named Typhoon Faxai (1915) in 2019 “2019 Boso Peninsula Typhoon” as a natural disaster that caused remarkable damage.

Due to the typhoon disaster, the Disaster Relief Act was invoked in respect of 2 prefectures and 42 municipalities, while the Act on Support for Reconstructing Livelihoods of the Affected due to Disaster was invoked in respect of 4 prefectures and 101 municipalities.

[Invocation of the Disaster Relief Act]

[Chiba Prefecture] Chuo-ku, Hanamigawa-ku, Inage-ku, Wakaba-ku, and Midori-ku in Chiba City; Choshi City, Tateyama City, Kisarazu City, Mobara City, Narita City, Sakura City, Togane City, Asahi City, Katsuura City, Ichihara City, Kamogawa City, Kimitsu City, Futtsu City, Yotsukaido City, Sodegaura City, Yachimata City, Inzai City, Tomisato City, Minamiboso City, Sosa City, Katori City, Sammu City, Isumi City, Oamishirasato City, Shisui Town in Inba-gun, Sakae Town in Inba-gun, Kozaki Town in Katori-gun, Tako Town in Katori-gun, Tonosho Town in Katori-gun, Kujukuri Town in Sanbu-gun, Shibayama Town in Sanbu-gun, Yokoshibahikari Town in Sanbu-gun, Ichinomiya Town in Chosei-gun, Mutsuzawa Town in Chosei-gun, Chosei Village in Chosei-gun, Shirako Town in Chosei-gun, Nagara Town in Chosei-gun, Chonan Town in Chosei-gun, Otaki Town in Isumi-gun, and Kyonan Town in Awa-gun (Date of Invocation: September 9)

[Tokyo Metropolis] Tosho Oshima Town (Date of invocation: September 8)

[Invocation of the Act on Support for Reconstructing Livelihoods of the Affected due to Disaster]
[Ibaraki Prefecture] All areas in the prefecture (Date of occurrence: September 9)
[Chiba Prefecture] All areas in the prefecture (Date of occurrence: September 9)
[Tokyo Metropolis] Oshima Town and Niijima Village (Date of occurrence: September 8)
[Kanagawa Prefecture] Yokohama City (Date of occurrence: September 9)
(*1) Ibaraki Prefecture experienced a series of disasters from Typhoons Faxai (1915) to Hagibis (1919)
(*2) Chiba Prefecture experienced a series of disasters from Typhoons Faxai (1915) to heavy rain on October 25

The status of the extremely severe disaster designation for this disaster is as follows:

Disasters caused by rainstorms and torrential rains from August 13 to September 24, 2019 (*Heavy rains from fronts starting from August to September 2019 (including rainstorms from Typhoons Krosa (1910), Lingling (1913), Faxai (1915), and Tapah (1917))).

Announcement of potential designation on September 6 and 20, approved by the Cabinet on October 11

Partial revisions of the Cabinet Order approved by the Cabinet on March 13, 2020(*)

Area	Applicable Measures
Nationwide	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 Inclusion of funds for the redemption of principal and interest related to small disaster bonds in the standard budget request
Niimi City, Okayama Prefecture Taku City and Omachi Town, Saga Prefecture Tsushima City, Nagasaki Prefecture	Special financial support for disaster recovery projects for public works facilities Inclusion of funds for the redemption of principal and interest related to small disaster bonds in the standard budget request
Kyonan Town, Chiba Prefecture Takeo City and Omachi Town, Saga Prefecture	Special provision concerning disaster-related credit guarantees under the Small and Medium-sized Enterprise Credit Insurance Act

(Areas added by the Cabinet Order for partial revisions (*) are underlined)

14-4 Typhoon Hagibis (1919)

(1) Damage

After making landfall on the Izu Peninsula before 7 p.m. on October 12 with great intensity, Typhoon Hagibis traversed the Kanto region and the East Sea in the Tohoku region before dawn on 13. The rain clouds having developed in the typhoon and the moist air around it caused record rainfall over a wide area in Shizuoka and Niigata Prefectures, as well as in the Kanto-Koshin and Tohoku regions (The total rainfall from 10 to 13 reached 1,000 mm in Hakone Town, Kanagawa Prefecture and exceeded 500 mm at 17 locations, mainly in eastern Japan). This record rainfall meant emergency heavy rain warnings were issued at 3:30 p.m. on 12 for seven prefectures (Shizuoka, Kanagawa, Tokyo, Saitama, Gunma, Yamanashi and Nagano), at 7:50 p.m. on 12 for five prefectures (Ibaraki, Tochigi, Niigata, Fukushima and Miyagi) and at 0:40 a.m. on 13 for Iwate.

Casualties of this typhoon included 94 fatalities/missing and 42 seriously injured as well as damage to houses, including 3,273 completely destroyed, 28,306 half-destroyed, 35.437 partially damaged, and 7,666 with above-floor flooding as of April 10, 2020. In addition, a series of power outages and water cuts occurred in the Kanto-Koshinetsu region, Tohoku region and elsewhere, comprising a maximum of 520,000 power outages in households and about 168,000 water cuts and significantly damaging lifelines.

Many rivers burst: 14 points at seven government-administered rivers of six riverine systems and 128 points in 20 prefectural government-administered rivers of 67 riverine systems. For Nagano City in Nagano Prefecture, the levee breach in the Chikuma River of the Shinano River System resulted in considerable damage and the bridge abutment on the left bank of the Chikuma River bridge on the Ueda Dentetsu Bessho Line, which runs over the Chikuma River, fell over, and in the Abukuma River of the Abukuma River System, sediment and flood inundation occurred in the watershed, and large amounts of sediment flooded the river channel in a slow-gradient section of the Gofukudani River and other tributary rivers and caused wide-spread damages to many houses.

(2) Response from Government Ministries and Agencies

The government held a series of Inter-Agency Disaster Alert Meetings on October 8, 2019, before the typhoon approached and on 11 before the typhoon hit Japan to prepare for emergencies. At the same time, Mr. Takeda, Minister of State for Disaster Management appealed for early evacuation and securing safety. In addition, on 11, the

government held a Ministerial Meeting and Mr. Abe, Prime Minister reaffirmed instructions to make sufficient preparations as well as fully collect information on damage with a sense of tension and to spare no effort in implementing measures to ensure public safety and security. On 13, immediately after the typhoon had passed, the government established the "Major Disaster Management Headquarters for Typhoon Hagibis in 2019," which held a total of 18 meetings and on 14, the "Team to Support the Daily Lives of Affected People", comprising administrative vice-minister-class officials of ministries and agencies to determine the extent of damage, the overall coordination of response measures and provide life support activities, etc. based on the problems and needs in the affected areas. On 13, the Cabinet dispatched an investigative team to 6 Prefecture Government Offices in Fukushima, Nagano, Saitama, Miyagi, Tochigi and Ibaraki Prefectures. Government ministries and agencies also dispatched employees to the affected areas to directly coordinate with the heads and executives of local governments for quick decision-making and cross-ministry support. Besides, the government implemented emergency disaster response measures after directly confirming the extent of damage: the deployment of a government investigation team led by Mr. Takeda, Minister of State for Disaster Management (14: Fukushima Prefecture), the visit by Mr. Abe, Prime Minister and Mr. Takeda, Minister of State for Disaster Management to the affected sites (17: Fukushima and Miyagi Prefectures and 20: Nagano Prefecture)(*). Furthermore, on October 18, the government made all possible efforts to promote emergency disaster control measures, e.g. designating Typhoon Hagibis in 2019 a Specified Disaster and taking special measures to protect rights of the affected.

* Mr. Takeda, Minister of State for Disaster Management visited Nagano Prefecture on October 13, Ibaraki, Tochigi and Fukushima Prefectures on 21, Kanagawa Prefecture on 24, Chiba Prefecture on 26 and Iwate Prefecture on 28, Shizuoka Prefecture on November 9 while Ms. Imai, Parliamentary Vice-Minister of Cabinet Office visited Chiba Prefecture on October 13, Chiba Prefecture on 14, Nagano Prefecture on 20, Ibaraki, Tochigi and Fukushima Prefectures on 21 and Chiba Prefecture on 26.

The police, Fire and Disaster Management Agency, SDF and the Ministry of Land, Infrastructure, Transport and Tourism (MLIT) dispatched units from across Japan to the affected areas immediately after the disasters to conduct rescue and search operations as well as efforts to prevent secondary damage and provide life support. The scale was as follows: the Police Disaster Response Unit conducted around 4,400 operations; the Emergency Fire Rescue Team a total of around 3,000; the Self-Defense Forces mustered around 79,000 personnel and the Technical Emergency Control Force (TEC-FORCE), a total of around 31,000.

In response to Typhoon Hagibis, support staff were deployed to affected municipalities under the "staff allocation system to support local governments in affected areas": a total of approximately 570 staff in the General Adviser Team were sent from 10 prefectures and municipalities to 10 affected municipalities to support operations of the Disaster Management Headquarters. In addition, supporting counterparts to 27 affected municipalities were determined and a total of approximately 9,300 support employees were deployed from 34 prefectures and municipalities for building investigation to issue Disaster-Affected Certificates and shelter management.

At the 10th meeting of the Major Disaster Management Headquarters held on October 20, Mr. Abe, Prime Minister instructed the government to develop a package to restore the lives and livelihoods of those affected. In responding to his instructions, the government set out measures to meet the needs of disaster victims such as housing reconstruction, support for small- and medium-sized businesses and agricultural, forestry and fishery industries, disaster recovery and smooth disposal of disaster waste and on November 8, the Cabinet approved the use of approximately ¥131.6 billion in reserve funds so that disaster-affected local governments could tackle the issue without worrying about financial resources. On October 29, the Cabinet approved the designation of Typhoon Hagibis as an emergency disaster under the "Act on Reconstruction from Large-Scale Disasters." It was the second designation since the 2016 Kumamoto Earthquake. Disaster recovery projects on six roads, which were requested by the affected local governments, promptly started under their direct representative authority.

Furthermore, on January 30, 2019, the (1st) supplementary budget for FY2019 general account was enacted, which included a budget of approximately 2,308.6 billion yen needed for post-disaster recovery and reconstruction and ensuring safety and security.

On February 19, the Japan Meteorological Agency named Typhoon Hagibis in 2019 as the "2019 Eastern Japan Typhoon."

Due to the typhoon disaster, the Disaster Relief Act was invoked in respect of 390 municipalities in 14 prefectures while the Act on Support for Reconstructing Livelihoods of the Affected due to Disaster was invoked in respect of 359 municipalities (*) in 14 prefectures.

[Invocation of the Disaster Relief Act]

[Iwate Prefecture] Miyako City, Ofunato City, Kuji City, Ichinoseki City, Rikuzentakata City, Kamaishi City, Sumita Town in Kesen-gun, Otsuchi Town in Kamihei-gun, Yamada Town in Shimohei-gun, Iwaizumi Town in Shimohei-gun, Tanohata Village in Shimohei-gun, Fudai Village in Shimohei-gun, Noda Village in Kunohe-gun, and Hirono Town in Kunohe-gun(Date of invocation: October 12)

[Miyagi Prefecture] Sendai City, Ishinomaki City, Shiogama City, Kesennuma City, Shiraishi City, Natori City, Kakuda City, Tagajo City, Iwanuma City, Tome City, Kurihara City, Higashimatsushima City, Osaki City, Tomiya City, Zao Town in Katta-gun, Shichikashuku Town in Katta-gun, Ogawara Town in Shibata-gun, Murata Town in Shibata-gun, Shibata Town in Shibata-gun, Kawasaki Town in Shibata-gun, Marumori Town in Igu-gun, Watari Town in Watari-gun, Yamamoto Town in Watari-gun, Matsushima Town in Miyagi-gun, Shichigahama Town in Miyagi-gun, Rifu Town in Miyagi-gun, Taiwa Town in Kurokawa-gun, Osato Town in Kurokawa-gun, Ohira Village in Kurokawa-gun, Shikama Town in Kami-gun, Kami Town in Kami-gun, Wakuya Town in Toda-gun, Misato Town in Toda-gun, Onagawa Town in Oshika-gun, Minamisanriku Town in Motoyoshi-gun (Date of invocation: October 12)

[Fukushima Prefecture] Fukushima City, Aizu-Wakamatsu City, Koriyama City, Iwaki City, Shirakawa City, Sukagawa City, Kitakata City, Soma City, Nihonmatsu City, Tamura City, Minamisoma City, Date City, Motomiya City, Kori Town in Date-gun, Kunimi Town in Date-gun, Kawamata Town in Date-gun, Otama Village in Adachi-gun, Kagamiishi Town in Iwase-gun, Ten-ei Village in Iwase-gun, Shimogo Town in Minamiaizu-gun, Hinoemata Village in Minamiaizu-gun, Tadami Town in Minamiaizu-gun, Minamiaizu Town in Minamiaizu-gun, Bandai Town in Yama-gun, Inawashiro Town in Yama-gun, Aizubange Town in Kawanuma-gun, Yanaizu Town in Kawanuma-gun, Mishima Town in Onuma-gun, Kaneyama Town in Onuma-gun, Aizumisato Town in Onuma-gun, Nishigo village in Nishishirakawa-gun, Izumizaki Village in Nishishirakawa-gun, Nakajima Village in Nishishirakawa-gun, Yabuki Town in Nishishirakawa-gun, Tanagura Town in Higashishirakawa-gun, Yamatsuri Town in Higashishirakawa-gun, Hanawa Town in Higashishirakawa-gun, Samegawa Village in Higashishirakawa-gun, Ishikawa Town in Ishikawa-gun, Tamakawa Village in Ishikawa-gun, Hirata Village in Ishikawa-gun, Asakawa Town in Ishikawa-gun, Furudono Town in Ishikawa-gun, Miharu Town in Tamura-gun, Ono Town in Tamura-gun, Hirono Town in Futaba-gun, Naraha Town in Futaba-gun, Tomioka Town in Futaba-gun, Kawauchi Village in Futaba-gun, Okuma Town in Futaba-gun, Futaba Town in Futaba-gun, Namie Town in Futaba-gun, Katsurao Village in Futaba-gun, Shinchi Town in Soma-gun, and Iitate Village in Soma-gun. (Date of invocation: October 12)

[Ibaraki Prefecture] Mito City, Hitachi City, Tsuchiura City, Furukawa City, Ishioka City, Yuki City, Shimotsuma City, Joso City, Hitachiota City, Takahagi City, Kitaibaraki City, Kasama City, Tsukuba City, Hitachinaka City, Moriya City, Hitachiomiya City, Naka City, Chikusei City, Bando City, Kasumigaura City, Sakuragawa City, Kamisu City, Hokota City, Tsukubamirai City, Ibaraki Town in Higashiibaraki-gun, Oarai Town in Higashiibaraki-gun, Shirosato Town in Higashiibaraki-gun, Daigo Town in Kuji-gun, Yachiyo Town in Yuki-gun, Sakai Town in Sashima-gun (Date of invocation: October 12)

[Tochigi Prefecture] Utsunomiya City, Ashikaga City, Tochigi City, Sano City, Kanuma City, Nikko City, Ohtawara City, Yaita City, Nasushiobara City, Sakura City, Shimotsuke City, Kaminokawa Town in Kawachi-gun, Motegi Town in Haga-gun, Ichikai Town in Haga-gun, Mibu Town in Shimotsuga-gun, Nasukarasuyama City, Oyama City, Shioya Town in Shioya-gun, Takanezawa Town in Shioya-gun, Nasu Town in Nasu-gun, Nakagawa Town in Nasu-gun (Date of invocation: October 12)

[Gunma Prefecture] Maebashi City, Takasaki City, Kiryu City, Isesaki City, Ota City, Numata City, Tatebayashi City, Shibukawa City, Fujioka City, Tomioka City, Annaka City, Midori City, Shinto Village in Kitagunma-gun, Yoshioka Town Kitagunma-gun, Ueno Village in Tano-gun, Kanna Town in Tano-gun, Shimonita Town in Kanra-gun, Nanmoku Village in Kanra-gun, Kanra Town in Kanra-gun, Nakanojo Town in Agatsuma-gun, Naganohara Town in Agatsuma-gun, Tsumagoi Village in Agatsuma-gun, Kusatsu Town in Agatsuma-gun, Takayama Village in Agatsuma-gun, Higashiagatsuma Town in Agatsuma-gun, Minakami Town in Tone-gun, Tamamura Town in Sawa-gun, Chiyoda Town in Oura-gun, Oizumi Town in Oura-gun, Ora Town in Oura-gun (Date of invocation: October 12)

[Saitama Prefecture] Saitama City, Kawagoe City, Kumagaya City, Kawaguchi City, Gyoda City, Chichibu City, Tokorozawa City, Hanno City, Honjo City, Higashimatsuyama City, Kasukabe City, Sayama City, Fukaya City, Ageo City, Koshigaya City, Warabi City, Toda City, Iruma City, Asaka City, Fujimino City, Shiki City, Wako City, Niiza City, Okegawa City, Yashio City, Fujimi City, Sakado City, Tsurugashima City, Hidaka City, Miyoshi Town in Iruma-gun, Moroyama Town in Iruma-gun, Ogose Town in Iruma-gun, Namekawa Town in Hiki-gun, Arashiyama Town in Hiki-gun, Ogawa Town in Hiki-gun, Kawajima Town in Hiki-gun, Yoshimi Town in Hiki-gun, Hatoyama Town in Hiki-gun, Tokigawa Town in Hiki-gun, Yokose Town in Chichibu-gun, Minano Town in Chichibu-gun, Nagatoro Town in Chichibu-gun, Ogano Town in Chichibu-gun, Higashichichibu

Village in Chichibu-gun, Misato Town in Kodama-gun, Kamikawa Town in Kodama-gun, Kamisato Town in Kodama-gun, Yorii Town in Osato-gun (Date of invocation: October 12)

[Tokyo Metropolis] Sumida-ku, Ota-ku, Setagaya-ku, Toshima-ku, Kita-ku, Itabashi-ku, Nerima-ku, Hachioji City, Tachikawa City, Ome City, Fuchu City, Akishima City, Chofu City, Machida City, Koganei City, Hino City, Fussa City, Komae City, Higashiyamato City, Musashimurayama City, Tama City, Inagi City, Hamura City, Akiruno City, Mizuho Town in Nishitama-gun, Hinode Town in Nishitama-gun, Hinohara Village in Nishitama-gun, Okutama Town in Nishitama-gun (Date of invocation: October 12)

[Kanagawa Prefecture] Kawasaki City, Sagamihara City, Hiratsuka City, Odawara City, Chigasaki City, Hadano City, Atsugi City, Isehara City, Ebina City, Zama City, Minamiashigara City, Samukawa Town in Koza-gun, Oi Town in Ashigarakami-gun, Matsuda Town in Ashigarakami-gun, Yamakita Town in Ashigarakami-gun, Hakone Town in Ashigarashimo-gun, Yugawara Town in Ashigarashimo-gun, Aikawa Town in Aiko-gun, and Kiyokawa Village in Aiko-gun (Date of invocation: October 12)

[Niigata Prefecture] Joetsu City, Itoigawa City, and Myoko City (Date of invocation: October 12)

[Yamanashi Prefecture] Fujiyoshida City, Tsuru City, Yamanashi City, Otsuki City, Nirasaki City, Minami-Alps City, Hokuto City, Fuefuki City, Uenohara City, Ichikawamisato Town in Nishiyatsushiro-gun, Hayakawa Town in Minamikoma-gun, Minobu Town in Minamikoma-gun, Nanbu Town in Minamikoma-gun , Fujikawa Town in Minamikoma-gun ,Doshi Village in Minamitsuru-gun, Narusawa Village in Minamitsuru-gun, , Fujikawaguchiko Town in Minamitsuru-gun, Kosuge Village in Kitatsuru-gun and Tabayama Village in Kitatsuru-gun (Date of invocation: October 12)

[Nagano Prefecture] Nagano City, Matsumoto City, Ueda City, Okaya City, Suwa City, Suzaka City, Komoro City, Ina City, Nakano City, Iiyama City, Chino City, Shiojiri City, Saku City, Chikuma City, Tomi City, Azumino City, Koumi Town in Minamisaku-gun, Kawakami Village in Minamisaku-gun, Nanmoku Village in Minamisaku-gun, Minamiaiki Village in Minamisaku-gun, Kitiaiki Village in Minamisaku-gun, Sakuho Town in Minamisaku-gun, Karuizawa Town in Kitasaku-gun, Miyota Town in Kitasaku-gun, Tateshina Town in Kitasaku-gun, Aoki Village in Chiisagata-gun, Nagawa Town in Chiisagata-gun, Fujimi Town in Suwa-gun, Hara Village in Suwa-gun, Tatsuno Town in Kamiina-gun, Miyata Village in Kamiina-gun, Kiso Town in Kiso-gun, Omi Village in Higashichikuma-gun, Ikusaka Village in Higashichikuma-gun, Chikuhoku Village in Higashichikuma-gun, Sakaki Town in Hanishina-gun, Obuse Town in Kamitakai-gun, Takayama Village in Kamitakai-gun, Yamanouchi Town in Shimotakai-gun, Kijimadaira Village in Shimotakai-gun, Nozawaonsen Village in Shimotakai-gun, Iizuna Town in Kamiminochi-gun, and Sakae village in Shimominochi-gun (Date of invocation: October 12)

[Shizuoka Prefecture] Izunokuni City, Kannami Town in Tagata-gun (Date of invocation: October 12)

(*) In the municipalities of Chiba Prefecture and Tokyo Metropolis* where the Disaster Relief Act was applied in Typhoon Faxai, the Disaster Relief Act is also applied to Typhoon Hagibis as the lives and bodies of many people were threatened or might be harmed due to the disaster caused by Typhoon Hagibis in 2019 and are in need of continuous rescue.

[Chiba Prefecture] Chuo-ku, Hanamigawa-ku, Inage-ku, Wakaba-ku, and Midori-ku in Chiba City; Choshi City, Tateyama City, Kisarazu City, Mobara City, Narita City, Sakura City, Togane City, Asahi City, Katsuura City, Ichihara City, Kamogawa City, Kimitsu City, Futtsu City, Yotsukaido City, Sodegaura City, Yachimata City, Inzai City, Tomisato City, Minamiboso City, Sosa City, Katori City, Sammu City, Isumi City, Oamishirasato City, Shisui Town in Inba-gun, Sakae Town in Inba-gun, Kozaki Town in Katori-gun, Tako Town in Katori-gun, Tonosho Town in Katori-gun, Kujukuri Town in Sanbu-gun, Shibayama Town in Sanbu-gun, Yokoshibahikari Town in Sanbu-gun, Ichinomiya Town in Chosei-gun, Mutsuzawa Town in Chosei-gun, Chosei Village in Chosei-gun, Shirako Town in Chosei-gun, Nagara Town in Chosei-gun, Chonan Town in Chosei-gun, Otaki Town in Isumi-gun, and Kyonan Town in Awa-gun

[Tokyo Metropolis] Tosho Oshima Town

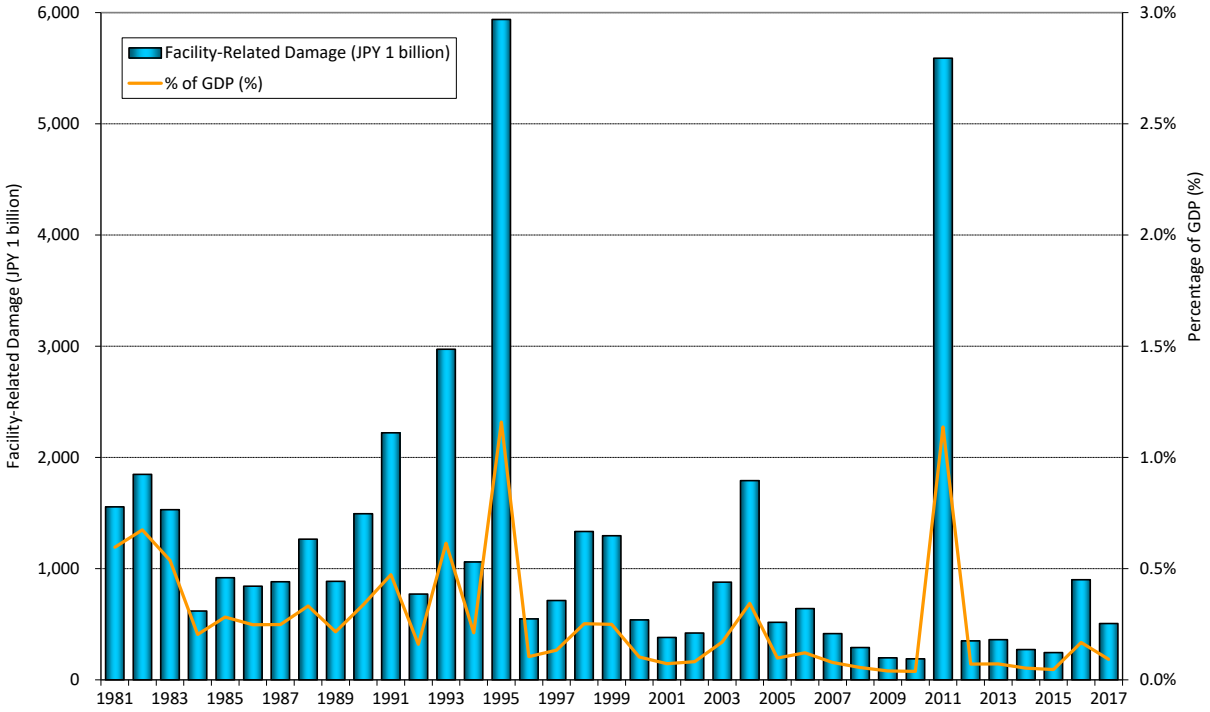
[Invocation of the Act on Support for Reconstructing Livelihoods of the Affected due to Disaster]
[Iwate Prefecture] Yamada Town, Miyako City, Kamaishi City, and Kuji City (Date of occurrence: October 12)
[Miyagi Prefecture] All areas in the prefecture (Date of occurrence: October 12)
[Fukushima Prefecture] All areas in the prefecture (Date of occurrence: October 12)
[Ibaraki Prefecture] All areas in the prefecture (Date of occurrence: October 12) (*1)
[Tochigi Prefecture] Utsunomiya City, Ashikaga City, Tochigi City, Sano City, Kanuma City, Oyama City, Nasukarasuyama City, Motegi Town (Date of occurrence: October 12)
[Gunma Prefecture] Tomioka City and Tsumagoi Village (Date of occurrence: October 12)
[Saitama Prefecture] All areas in the prefecture (Date of occurrence: October 12)
[Chiba Prefecture] All areas in the prefecture (Date of occurrence: September 9) (*2)
[Tokyo Metropolis] Akiruno City, Hinode Town, Hinohara Village, Ota-ku, Hachioji City and Setagaya-ku (Date of occurrence: October 12)
[Kanagawa Prefecture] Kawasaki City and Sagamihara City (Date of occurrence: October 12)
[Niigata Prefecture] Aga Town (Date of occurrence: October 12)
[Yamanashi Prefecture] Uenohara City (Date of occurrence: October 12)
[Nagano Prefecture] All areas in the prefecture (Date of occurrence: October 12)
[Shizuoka Prefecture] Izunokuni City, Kannami Town in Tagata-gun, and Izu City (Date of occurrence: October 12)
(*1) Ibaraki Prefecture experienced a series of disasters from Typhoons Faxai to Hagibis
(*2) Chiba Prefecture experienced a series of disasters from Typhoons Faxai to heavy rain on October 25

The status of the extremely severe disaster designation for this disaster is as follows:
Disasters caused by rainstorms and torrential rains from October 11 to 26, 2019 (*Disasters causing rain storms from Typhoons Hagibis, Neoguri, and Bualoi).
Announcement of potential designation on October 18 and 21, approved by the Cabinet on October 29
Additional announcement of potential designation on November 19
Partial revisions of the Cabinet Order approved by the Cabinet on November 29, 2019 (*1) and April 30, 2020 (*2)

Area	Applicable Measures
Nationwide	Special financial support for disaster recovery projects for public works facilities 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 Subsidies for waterlogging removal projects conducted by land improvement districts, etc. Special provision concerning disaster-related credit guarantees under the Small and Medium-sized Enterprise Credit Insurance Act (The cabinet order for partial revision (*2) extends the special provision application period.) Subsidies for disaster recovery projects of facilities including business cooperatives Subsidies for disaster recovery projects for public social and educational facilities Subsidies for disaster recovery projects for private school facilities Special cases of cost coverage for projects implemented by municipalities to prevent infectious diseases Special cases of government loans based on the Act for the Welfare of Fatherless Families, motherless families and Widows Special cases of subsidies for public housing construction projects for victims Inclusion of funds for the redemption of principal and interest related to small disaster bonds in the standard budget request Special cases of paying job seeker benefits based on the Employment Insurance Act

(Applicable measures added by the Cabinet Order for partial revisions (*1) are underlined.)

Fig. A-15 Trends in Facility Damage and the Amount and as a Percentage of Gross Domestic Product (GDP)



Note: Gross domestic product (GDP) figures up to 1993 are based on the 2000 standard (SNA 1993), while those for 1994 onward are based on the 2011 standard (SNA 2008)

Source: Formulated by the Cabinet Office based on materials from various ministries and agencies

Fig. A-16 Facility Damage Due to Disasters in 2017, by Hazard

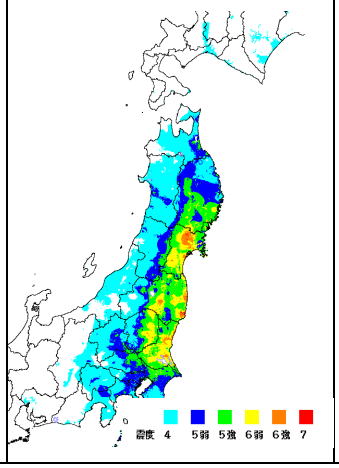
(Unit: JPY 1 million)

Facility type	Typhoon	Torrential rain	Earthquake	Heavy snowfall	Other	Total	Notes
Public works	403,887	39,371	52,729	0	16,919	512,907	Rivers, forestry conservation facilities, ports, etc.
Agriculture, forest, and fisheries industry	42,594	319,377	61,487	169	8,508	432,135	Farmland, agricultural facilities, forestry roads, fishing facilities, etc.
Educational facilities	6,938	18,999	9,449	68	442	35,895	School facilities, cultural heritages, etc.
Public welfare facilities	2,498	37,274	8,713	0	48	48,533	Social welfare facilities, waterworks facilities, etc.
Other facilities	8,6055	6,699	2,324	0	0	17,629	Nature parks, telegraph/telephone, urban facilities, etc.
Total	464,522	421,721	134,702	236	25,916	1,047,098	

Note: Totals may not agree due to rounding.

Source: Formulated by the Cabinet Office based on materials from various ministries and agencies

Fig. A-17 Comparison of the Great Hanshin-Awaji Earthquake, the Great East Japan Earthquake, and the Sumatra Earthquake

	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	M7.3	*Mw9.0	*Mw9.1
Earthquake type	Inland	Oceanic trench	Oceanic trench
Affected area	City center	Mainly agricultural, forestry, and fishery regions	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)	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: 19,729 Missing persons: 2,559 (as of March 1, 2020)	Fatalities: 126,732 Missing persons: 93,662 (as of March 30, 2005)
Homes damaged (totally destroyed)	104,906	121,995 (as of March 1, 2019)	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 in2011	—
Seismic intensity distribution map (showing seismic intensity of 4 and above)			—

* Mw: Moment magnitude

Note: The seismic intensity levels were revised in 1996 to newly add Lower 5, Upper 5, Lower 6, and Upper 6.

Source: Formulated by the Cabinet Office from Cabinet Office materials, Fire and Disaster Management Agency materials, and UNOCHA materials.

Fig. A-18 Damage Estimate for the Great East Japan Earthquake

June 24, 2011

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 Disaster Management Bureau of the Cabinet Office 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.

Source: Cabinet Office

Fig. A-19 Main Volcanic Eruptions and Volcanic Disasters in Japan

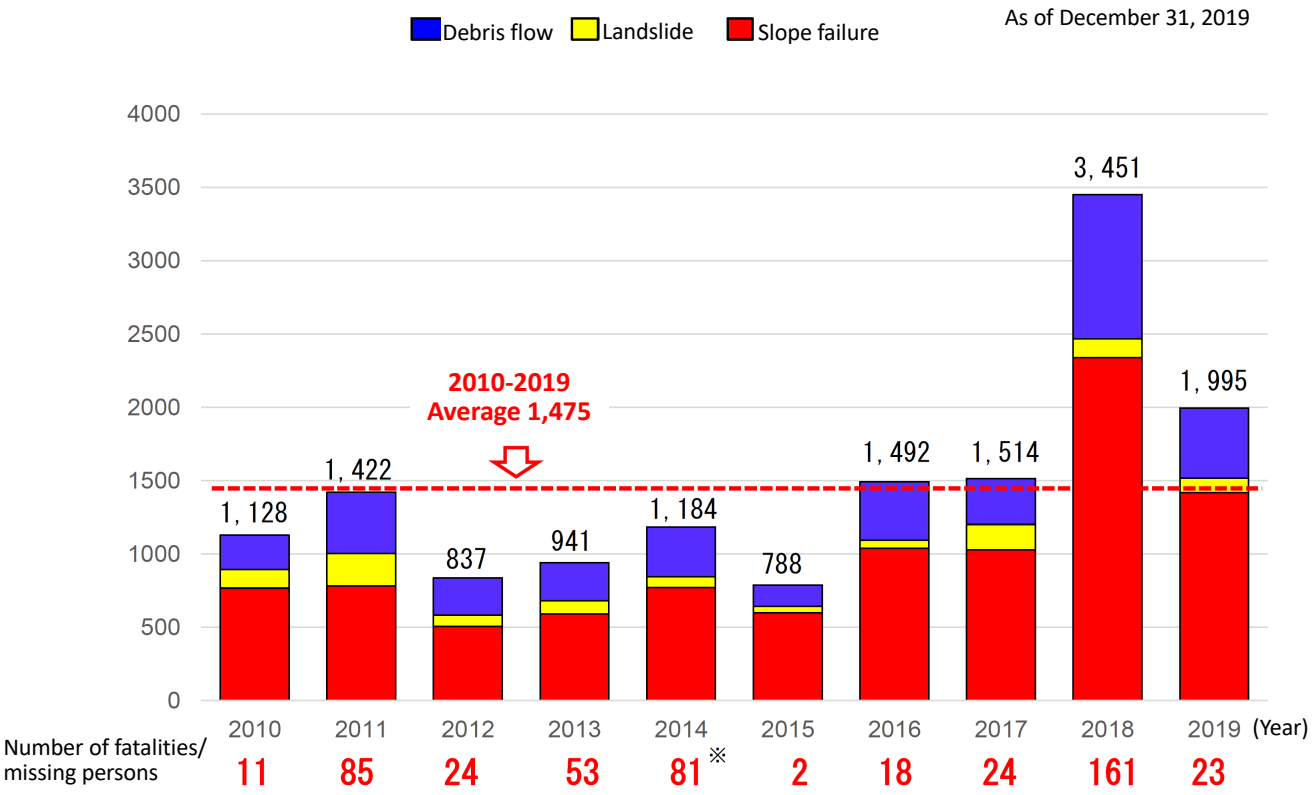
Year of Eruption	Name of Volcano	No. of Victims	Eruption and Damage Characteristics
1640	Hokkaido-Komagatake*	At least 700	Sector collapse, debris flow, tsunami, large amount of falling ash, pyroclastic flow
1663	Usuzan*	5	Nearby homes disappeared or were buried
1664	Unzendake	At least 30	Lava flow, flood of water from crater
1667	Tarumaesan*		Pyroclastic flow, large amount of falling ash/pumice
1694	Hokkaido-Komagatake		Eruption with earthquake/volcanic thunder, falling pumice stone, pyroclastic flow
1707	Fujisan *		"Great Hoei eruption," large amount of falling ash, landslide disaster after eruption
1721	Asamayama	15	Cinders
1739	Tarumaesan *		Pyroclastic flow, large amount of falling ash/pumice
1741	Oshima-Oshima	1,467	Sector collapse, large tsunami occurred due to debris avalanche
1769	Usuzan		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	Asamayama	1,151	"Great Tenmei eruption," pyroclastic flow, lava flow, 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	Unzendake	15,000	"Shimabara taihen, Higo meiwaku," tsunami on opposing shore due to collapse of Mt. Mayuyama
1822	Usuzan	50–103	Pyroclastic flow, former Abuta village totally destroyed
1853	Usuzan		Large amount of volcanic ash/pumice, formation of lava dome, pyroclastic flow
1856	Hokkaido-Komagatake	21–29	Falling pumice, pyroclastic flow
1888	Bandaisan*	461–477	5 towns and 11 villages buried in debris avalanche, debris flow (volcanic mud flow)
1900	Adatarayama	72	Cinders, sulfur mine at crater totally destroyed
1902	Izu-Torishima	125	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	Tokachidake	144	Larger 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
1952	Beyonesu (Bayonnaise) Rocks (Myojin-sho)	31	Pyroclastic surge
1943–45	Usuzan	1	Large amount of volcanic ash, cinders, formation of Showa-shinzan (new mountain)
1958	Asosan	12	Cinders
1991	Unzendake	43	Pyroclastic flow, debris flow
2014	Ontakesan	58	Cinders

*Indicates eruptions with apparent volume of ejecta of more than 1 km^3

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"

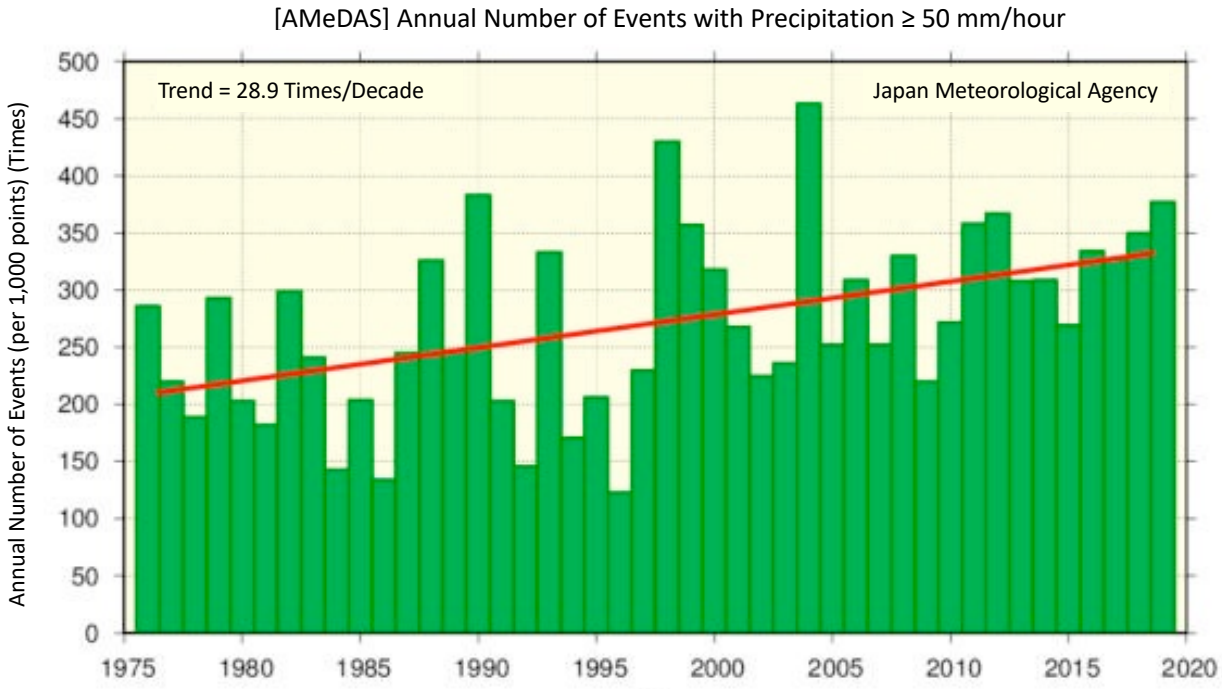
Source: Formulated by the Cabinet Office based on the National Catalogue of the Active Volcanoes in Japan (4th Edition) (edited by the Japan Meteorological Agency, 2013).

Fig. A-20 Number of Sediment Disasters



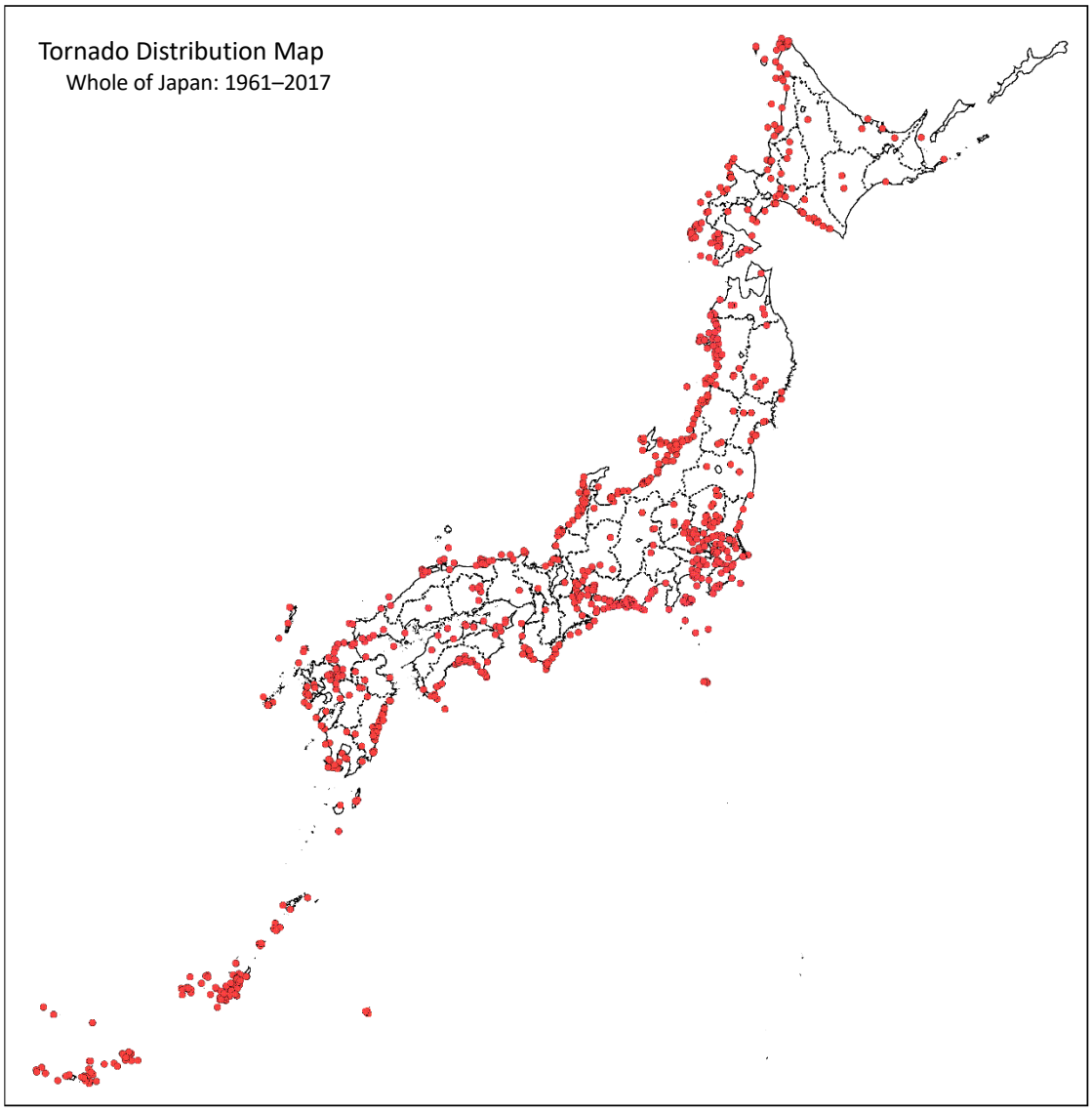
Source: Ministry of Land, Infrastructure, Transport and Tourism

Fig. A-21 Increase in the frequency of short-duration downpours



Source: Japan Meteorological Agency (website)

Fig. A-22 Number of Tornados



Source: Japan Meteorological Agency.

Fig. A-23 Major Natural Disasters in the World Since 1900

Year	Disaster Type	GLIDE number	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 Kathleen)		North of 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 MARIE (5415))		Japan	1,700
1959	Flood		China	2,000,000
1959	Typhoon (Typhoon VERA (5915))		Japan	5,100
1960	Flood		Bangladesh	10,000
1960	Earthquake		Southwestern Morocco	12,000
1960	Earthquake/Tsunami		Chile	6,000

Year	Disaster Type	GLIDE number	Country (Areas)	Fatalities/Missing Persons (approx.)
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 THELMA (9125)		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	Torrential Rain, Flood		India	2,000
1994	Typhoon, Flood		Six Southern Provinces of China	1,000
1994	Tropical Storm		Haiti	1,100
1995	Earthquake (Great Hanshin-Awaji Earthquake)		Japan	6,300
1995	Earthquake		Russia	1,800
1995	Flood		China	1,200
1996	Flood/Typhoon		Seven southern and five northern and northwestern provinces of China	2,800
1996	Typhoon/Flood		Viet Nam	1,000
1997	Earthquake	EQ-1997-000095-IRN	Eastern Iran	1,600
1997	Flood	FL-1997-000260-IND	India	1,400
1997	Flood	FL-1997-000265-SOM	Southern Somalia	2,000
1997	Typhoon LINDA (9726)	TC-1997-000007-VNM	Southern Viet Nam	3,700
1998	Earthquake	EQ-1998-000026-AFG	Northern Afghanistan	2,300
1998	Earthquake	EQ-1998-000152-AFG	Northern Afghanistan	4,700
1998	Flood/Landslide	FL-1998-000392-IND	Assam state, India	3,000
1998	Cyclone		India	2,900
1998	Flood	FL-1998-000203-BGD	Bangladesh	1,000
1998	Flood	FL-1998-000165-CHN	Coastal areas of the Yangtze River and other rivers in China	3,700
1998	Tsunami (Aitape Tsunami)	TS-1998-000220-PNG	Papua New Guinea	2,600
1998	Hurricane Mitch	TC-1998-000012-HND	Honduras, Nicaragua	17,000

Year	Disaster Type	GLIDE number	Country (Areas)	Fatalities/Missing Persons (approx.)
1999	Earthquake (Quindio Earthquake)	EQ-1999-000007-COL	Mid-western Colombia	1,200
1999	Earthquake (Izmit Earthquake)	EQ-1999-000008-TUR	Western Turkey	15,500
1999	Earthquake (Chi-Chi earthquake)	EQ-1999-000321-TWN	Taiwan	2,300
1999	Cyclone	ST-1999-000425-IND	India	9,500
2000	Flood		Venezuela	30,000
2001	Earthquake (Gujarat earthquake)	EQ-2001-000033-IND	India	20,000
2001	Earthquake	EQ-2001-000013-SLV	El Salvador	1,200
2003	Earthquake	EQ-2003-000074-DZA	Northern Algeria	2,300
2003	Earthquake (Bam earthquake)	EQ-2003-000630-IRN	Iran	26,800
2004	Flood	FL-2004-000028-HTI	Haiti	2,700
2004	Hurricane	TC-2004-000089-JAM	USA, Jamaica, Puerto Rico, Haiti	3,000
2004	Earthquake, Tsunami (2004 Indian Ocean Earthquake and Tsunami)	TS-2004-000147-LKA TS-2004-000147-IDN TS-2004-000147-MDV TS-2004-000147-IND TS-2004-000147-THA TS-2004-000147-MYS TS-2004-000147-MMR TS-2004-000147-SOM TS-2004-000147-BGD	Sri Lanka, Indonesia, Maldives, India, Thailand, Malaysia, Myanmar, Seychelles, Somalia, Tanzania, Bangladesh, Kenya	Over 226,000
2005	Flood/Landslide	FL-2005-000125-IND	India	1,200
2005	Hurricane Katrina	TC-2005-000144-USA	USA	1,800
2005	Rainstorm	ST-2005-000162-IND ST-2005-000162-BGD	India, Bangladesh	1,300
2005	Hurricane Stan/Flood	TC-2005-000171-GTM FL-2005-000171-SLV	Guatemala, El Salvador, Mexico	1,500
2005	Earthquake (Pakistan earthquake)	EQ-2005-000174-PAK EQ-2005-000174-IND	Pakistan and northern India	75,000
2006	Landslide	LS-2006-000024-PHL	Philippines	1,100
2006	Earthquake/Volcanic Eruption	VO-2006-000048-IDN	Merapi volcano, Indonesia	5,800
2006	Typhoon XANGSANE (0615)	TC-2006-000144-PHL	Luzon, Philippines	1,400
2007	Heavy Rain, Flood	FL-2007-000096-IND	India	1,100
2007	Cyclone Sidr	TC-2007-000208-BGD	Bangladesh	4,200
2008	Earthquake (Great Sichuan Earthquake)	EQ-2008-000062-CHN	China	87,500
2008	Cyclone Nargis	TC-2008-000057-MMR	Myanmar	138,400
2008	Flood	FL-2008-000089-IND	North-eastern India	1,100
2009	Earthquake (2009 Sumatra Earthquake)	EQ-2009-000273-IDN	Indonesia	1,200
2009	Flood	FL-2009-000217-IND	Southern India	1,200
2010	Earthquake (Haiti Earthquake)	EQ-2010-000009-HTI	Haiti	222,600
2010	Earthquake (Yushu Earthquake)	EQ-2010-000073-CHN	Qinghai, China	3,000
2010	Flood	FL-2010-000141-PA	North-western Pakistan	2,000
2010	Torrential Rain, Debris Flow	LS-2010-000156-CHN	Yangtze River Basin, China	1,800
2011	Earthquake, Tsunami (Great East Japan Earthquake)	EQ-2011-000028-JPN	Tohoku and Kanto regions, Japan	19,000
2011	Typhoon WASHI (1121)	TC-2011-000189-PH	Mindanao, Philippines	1,400
2012	Typhoon BOPHA (1224)	TC-2012-000197-PHL	Mindanao, Philippines	1,900
2013	Flood	FL-2013-000070-IND	Northern India	1,500
2013	Typhoon HAIYAN (1330)	TC-2013-000139-PHL	Leyte, Philippines	6,200
2015	Earthquake (Nepal Earthquake)	EQ-2015-000048-NPL	Nepal	9,000
2018	Earthquake, Tsunami	EQ-2018-000156-IDN	Sulawesi, Indonesia	3,400
2019	Flood	FL-2019-000084-IND	India	1,900

Source: Formulated by the Cabinet Office based on the OFDA/CRED International Disaster Database (EM-DAT) (www.emdat.be), Université Catholique de Louvain, Brussels (Belgium), and Chronological Scientific Tables

Note) GLIDE number (GLobal unique disaster IDEntifier number) was proposed by the Asian Disaster Reduction Center (ADRC) in 2001 to share disaster information between different databases by allocating a common and unique disaster number to each of various disasters in the world, and operated jointly by the Office for the Coordination of Humanitarian Affairs (OCHA, ReliefWeb) for use of numerous disaster-related organizations. The number does not cover all kinds of disasters because it is allocated for a disaster when the relevant organization decides to allocate as required according to respective criteria. If the use of GLIDE is more common in disaster-related organizations in the future, more information on disasters can be shared.

Fig. A-24 Top 10 Largest Earthquakes Since 1900

(As of February 19, 2020)

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 (2011 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	August 16, 1950	Tibet, Assam	8.6
	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
	April 1, 1946	Aleutian Islands, Alaska	8.6

*Mw: Moment magnitude

*The magnitude (Mw) of 2011 Great East Japan Earthquake is based on materials from JMA.

Source: US Geological Survey

Fig. A-25 Major Natural Disasters Since 2019

Date	Country	Disaster Type	Fatalities	Affected People	Direct Damages (USD 1,000)
Jan.-Feb. 2019	Pakistan	Drought	77	4,680,912	0
Jan.-Feb. 2019	North Korea	Drought	0	10,100,000	0
Jan.-Sep. 2019	Kenya	Drought	0	2,600,000	0
Jan. 1-Dec 31, 2019	South Africa	Drought	0	750,000	135,000
Jan. 4, 2019	Thailand	Tropical cyclone	7	720,885	0
Jan. 11-24, 2019	Algeria	Cold wave	8	125,025	0
Jan. 18-21, 2019	USA	Rainstorms	10	0	100,000
Jan. 27-Feb. 9, 2019	Australia	Flood	3	9,900	2,000,000
Feb.-Dec. 2019	Zimbabwe	Drought	0	7,600,000	0
Feb.-Oct. 2019	Somalia	Drought	0	1,500,000	0
Feb. 24-Apr. 10, 2019	Bolivia	Flood	60	335,540	0
Mar. 15, 2019	Mozambique	Rainstorms	603	1,501,500	2,000,000
Mar. 2, 2019	Afghanistan	Flood	63	129,100	0
Mar. 3-4, 2019	USA	Rainstorms	28	90	190,000
Mar. 4-10, 2019	Malawi	Flood	60	975,672	0
Mar. 12-28, 2019	USA	Flood	5	2,000	10,000,000
Mar. 14, 2019	Zimbabwe	Rainstorms	628	270,086	0
Mar. 16-18, 2019	Indonesia	Flood	206	59,540	103,000
Mar. 19-Apr. 10, 2019	Iran	Flood	70	10,001,076	2,500,000
Mar. 30-Apr. 3, 2019	Syria	Flood	2	235,000	0
Apr. 1-May 13, 2019	Paraguay	Flood	16	310,595	0
Apr. 12-15, 2019	USA	Rainstorms	8	177	925,000
Apr. 24-25, 2019	Comoros	Tropical cyclone	8	345,311	0
Apr. 25, 2019	Mozambique	Tropical cyclone	45	400,094	230,000
Apr. 26, 2019	Tanzania	Tropical cyclone	0	2,000,000	0
Apr. 27-May. 5, 2019	Canada	Flood	1	19,500	800,000
May-Dec. 2019	Namibia	Drought	0	289,644	0
May 2019	Paraguay	Flood	0	310,595	0
May 3, 2019	India	Tropical cyclone	50	20,000,000	1,810,000
Jun. 16-Jul. 1, 2019	China	Flood	300	4,500,000	6,200,000
Jun. 4-8, 2019	Uganda	Landslide	61	129,953	0

Date	Country	Disaster Type	Fatalities	Affected People	Direct Damages (USD 1,000)
Jun. 5-7, 2019	South Sudan	Flood	3	234,800	0
Jun. 17, 2019	China	Earthquake	13	244,220	1,300,000
Jun. 21-Jul. 1, 2019	Belgium	Heat wave	128	0	0
Jun. 24-Jul. 7, 2019	France	Heat wave	567	0	0
Jul.-Aug. 2019	Russia	Forest fire	0	0	106,000
Jul.-Sep. 6, 2019	Sudan	Flood	78	346,300	0
Jul. 3, 2019	China	Rainstorms	6	45,120	145,000
Jul. 5, 2019	USA	Earthquake	0	150	200,000
Jul. 7-28, 2019	Bangladesh	Flood	119	4,000,000	75,000
Jul. 8-29, 2019	Nepal	Flood	119	82,541	204,000
Jul. 14-Sep. 30, 2019	India	Flood	1,900	3,000,000	10,000,000
Jul. 15, 2019	China	Flood	17	360,000	0
Jul. 19-27, 2019	Belgium	Heat wave	400	0	0
Jul. 21-27, 2019	France	Heat wave	868	0	0
Jul. 22-27, 2019	Netherlands	Heat wave	400	0	0
Aug. 8-16, 2019	Myanmar	Flood	115	1,875	0
Aug. 10-12, 2019	China	Tropical cyclone	72	108,000	10,000,000
Aug. 19-20, 2019	China	Landslide	38	6,606	200,000
Aug. 23-29, 2019	Belgium	Heat wave	188	0	0
Aug. 27-29, 2019	Japan	Flood	1	302	100,000
Sep. 1-4, 2019	Bahamas	Tropical cyclone	370	15,000	7,000,000
Sep. 1-15, 2019	Niger	Flood	52	200,000	0
Sep. 4-6, 2019	USA	Tropical cyclone	9	0	1,200,000
Sep. 5-8, 2019	China	Tropical cyclone	0	0	131,000
Sep. 7-9, 2019	Japan	Tropical cyclone	3	120,150	9,100,000
Sep. 10-11, 2019	Laos	Flood	16	309,176	0
Sep. 11-20, 2019	Cambodia	Flood	12	435,000	0
Sep. 11, 2019	Thailand	Flood	19	158,000	0
Sep. 11-16, 2019	Spain	Flood	7	3,500	2,500,000
Sep. 18-24, 2019	USA	Tropical cyclone	5	1,000	3,500,000
Sep. 23-27, 2019	Sri Lanka	Flood	1	136,607	0
Sep. 26, 2019	Indonesia	Earthquake	31	247,418	0
Oct., 2019	Somalia	Flood	17	500,000	0
Oct. 1-13, 2019	Ethiopia	Flood	0	200,000	0
Oct. 2, 2019	China	Tropical cyclone	3	0	263,000
Oct. 2, 2019	Korea	Tropical cyclone	15	1,411	553,000
Oct. 10-Dec. 13, 2019	Kenya	Flood	132	144,000	0
Oct. 10-17, 2019	USA	Forest fire	3	603	25,000,000
Oct. 12-17, 2019	Japan	Tropical cyclone	99	390,470	17,000,000
Oct. 20-21, 2019	USA	Rainstorms	4	0	2,600,000
Oct. 26-31, 2019	USA	Forest fire	0	662	825,000
Oct. 31, 2019	Philippines	Earthquake	23	260,703	0
Oct. 31-Nov. 2, 2019	Canada	Rainstorms	1	0	275,000
Nov. 9-10, 2019	Bangladesh	Tropical cyclone	40	251,506	5,785
Nov. 9-10, 2019	India	Tropical cyclone	12	130,000	0
Nov. 19-26, 2019	Congo	Flood	43	399,894	0
Nov. 23-24, 2019	France	Rainstorms	5	625	315,000
Nov. 25, 2019	Djibouti	Flood	9	150,000	0
Nov. 25, 2019	Djibouti	Flood (flash flood)	0	250,000	0
Nov. 25-26, 2019	Congo	Flood	41	125,000	0
Nov. 29-Dec. 10, 2019	Sri Lanka	Flood	12	155,009	0
Dec. 2-3, 2019	Philippines	Tropical cyclone	4	1,993,898	109,151
Dec. 15, 2019	Philippines	Earthquake	10	108,582	0
Dec. 12-17, 2019	France	Rainstorms	2	613	100,000
Dec. 16-18, 2019	USA	Rainstorms	18	0	235,000

Date	Country	Disaster Type	Fatalities	Affected People	Direct Damages (USD 1,000)
Dec. 31, 2019-Jan. 3, 2020	Indonesia	Flood	66	501,000	1,200,000
Dec. 24-28, 2019	Philippines	Rainstorms	69	2,656,862	28,000
Dec., 2019	Lesotho	Drought	0	433,000	0
Dec., 2019	Eswatini	Drought	0	232,000	0

Source: Formulated by the Cabinet Office based on materials from EM-DAT: The International Disaster Database (Centre for Research on the Epidemiology of Disasters (CRED), Université Catholique de Louvain).

1) Mozambique Cyclone Idai (T C-2019-000021-MOZ)

On March 14 and 15, 2019, Cyclone Idai made landfall near Beira in Sofala Province in the central region of Mozambique with sustained winds of 160 km/h. The cyclone hit Sofala, Zambezia, Manica and Inhambane Provinces with heavy rainfall and strong winds. Mozambique's National Disaster Management Agency (INGC) said the cyclone displaced nearly 400,000 people, with many huddled in 139 shelters in the immediate aftermath of the disaster. EMDAT said the number of the dead is 603 and the number of victims is 1.5 million or more. After the disaster, the spread of infectious diseases was confirmed, and on April 25, Cyclone Kenneth made landfall, thereby further expanding the damage.

The Government of Japan, through the JICA, delivered emergency relief supplies through the JICA as well as dispatched the Japan Disaster Relief (JDR) Team and medical teams. Besides, in response to the Government of Mozambique's request to support the recovery plan, the GOJ has been implementing the “Project on Strengthening Resilience in Cyclone IDAI-Affected Areas” in the severely damaged city of Beira in Sofala Province for 3 years since September 6, 2019 to support the development of an action plan in the recovery plan for Beira with the aim of realizing "Build Back Better" and creating a disaster-resilient society.

2) India Flood (FL-2019-000084-IND)

India is prone to torrential rains and flooding from June to September every year under the influence of the southwest monsoon. The 2019 monsoon season saw more rainfall and a longer time, resulting in more damage than usual. It caused severe flood damage across 14 states including Maharashtra, West Bengal, Kerala, Madhya Pradesh, Gujarat, Bihar, Karnakata and Assam. EM-DAT shows that the 2019 monsoon season resulted in 1,900 fatalities and 3 million affected people and the economic damage rose to US$10 billion.

The Indian government said the 2019 monsoon season saw the highest rainfall in statistics since 1994, the highest total rainfall in August and September since 1983 and the second highest rainfall in September since 1917, among many other records.

3) Bahamas Hurricane Dorian (TC-2019-000099-BHS)

Category 5 Hurricane "Dorian" made landfall in Elbow Cay in the Abaco Islands of the Bahamas with the maximum wind speed of 295 km/h (185 mile/h) on September 1, 2019. The cyclone lingered over Abaco and Grand Bahama Islands for almost two days, causing severe damage. The Abaco Islands were the most severely affected. The hurricane caused not only human casualties but also damages to many structures including houses, communications, wells, roads and water supplies.

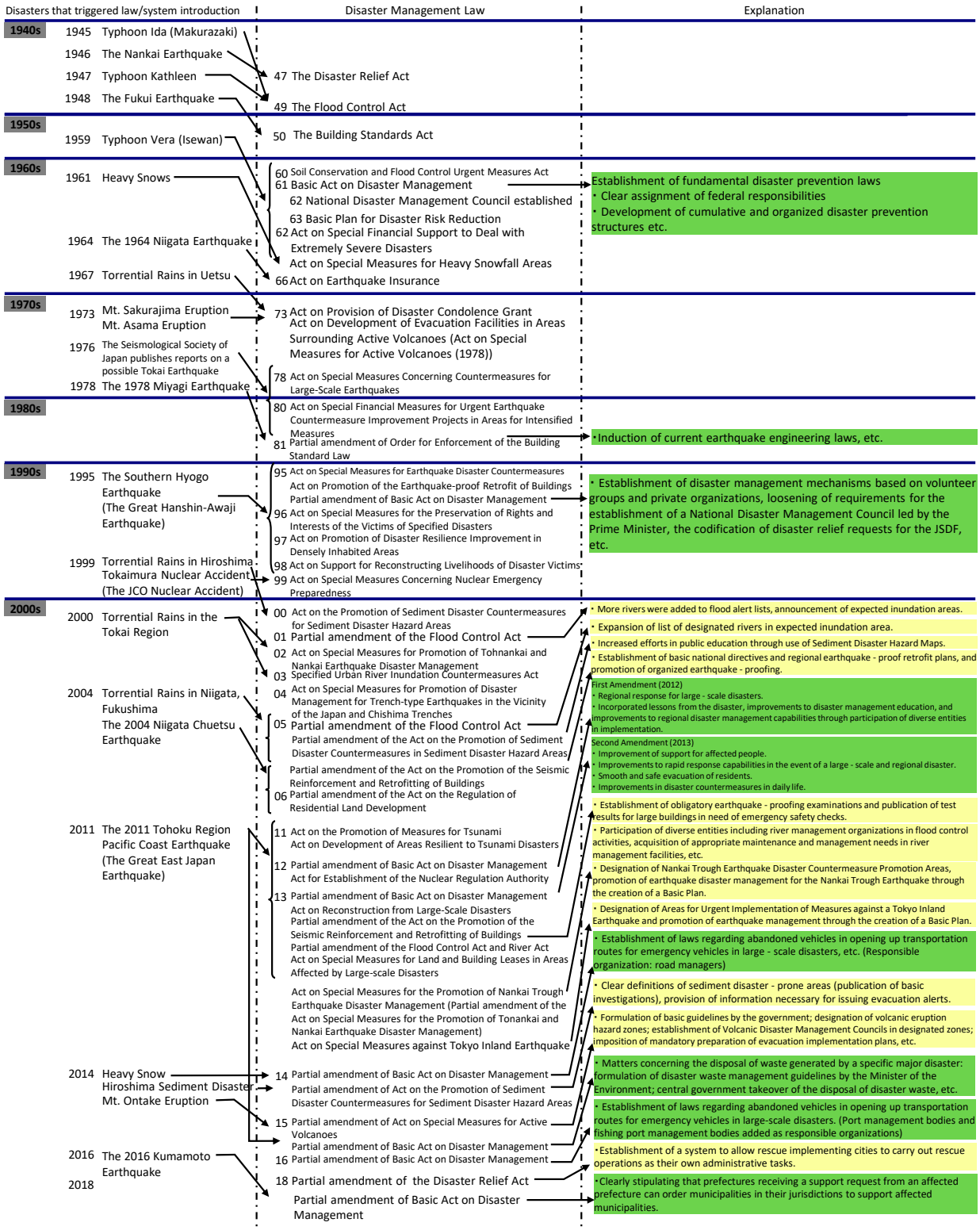
EM-DAT shows that the hurricane resulted in 370 fatalities and about 15,000 affected people and the economic damage rose to about US$7 billion.

Emergency relief operations were led by the National Disaster Management Agency and the Caribbean Disaster Emergency Management Agency (CDERA) and the United Nations Office for the Coordination of Humanitarian Affairs (OCHA) under the Government of the Bahamas.

The GOJ provided emergency relief goods (tents, blankets, etc.) for the damages caused by the disaster through JICA in response to a request from the Government of Indonesia.

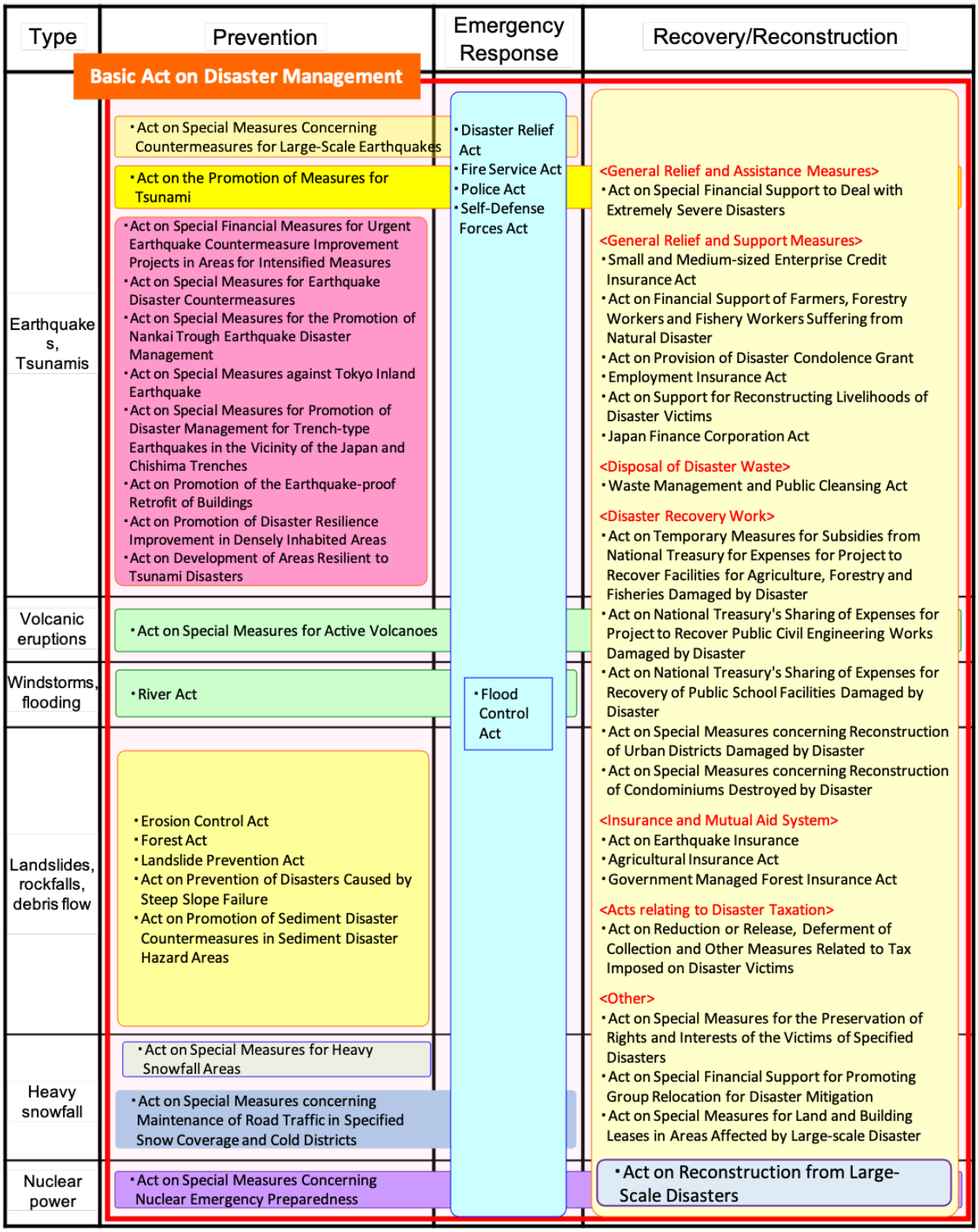
3. Laws and Systems

Fig. A-26 Evolution of Disaster Management Laws and Systems Since 1945



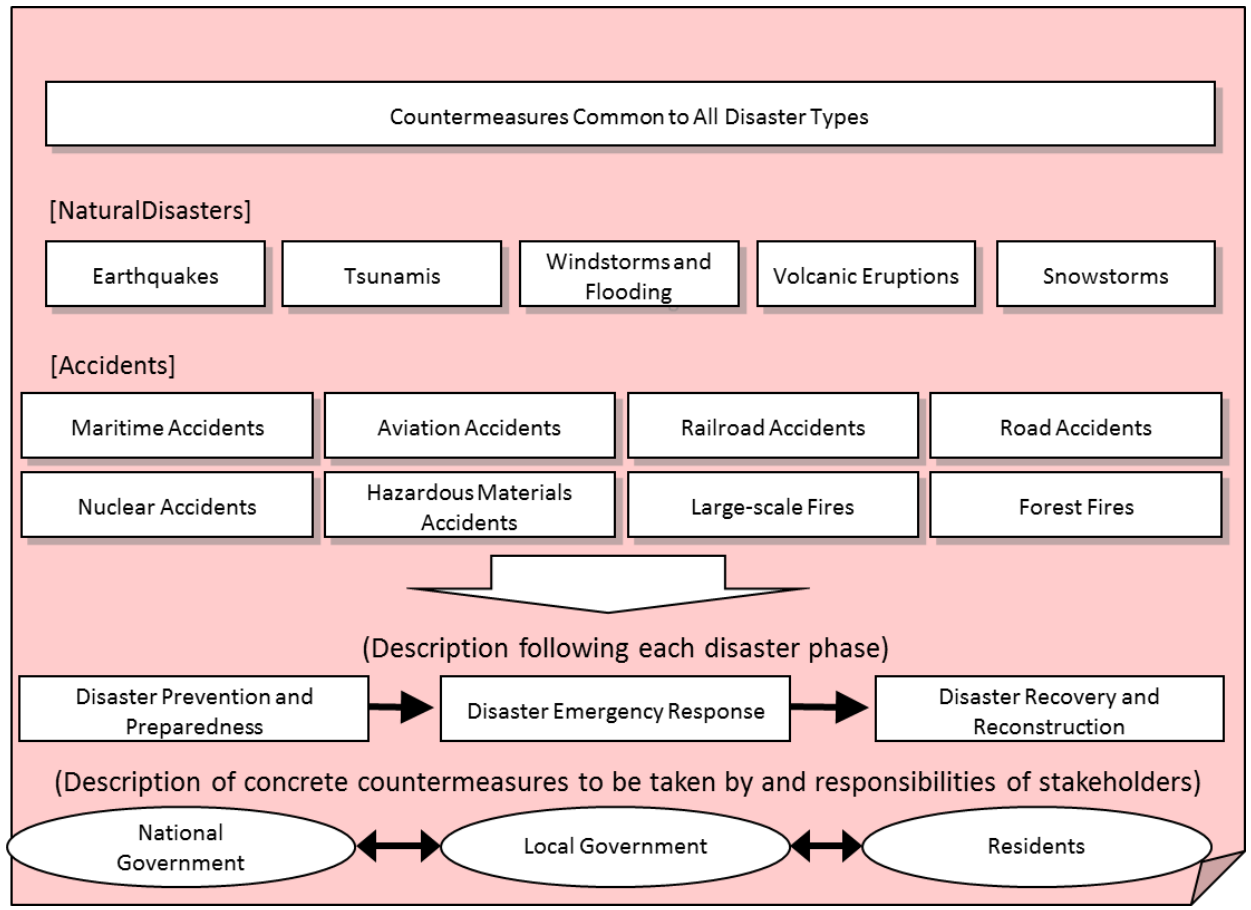
Source: Cabinet Office

Fig. A-27 Major Disaster Management Laws by Type of Disaster



Source: Cabinet Office

Fig. A-28 Structure of the Basic Plan for Disaster Risk Reduction



Source: Cabinet Office

Fig. A-29 Revisions to the Basic Plan for Disaster Risk Reduction

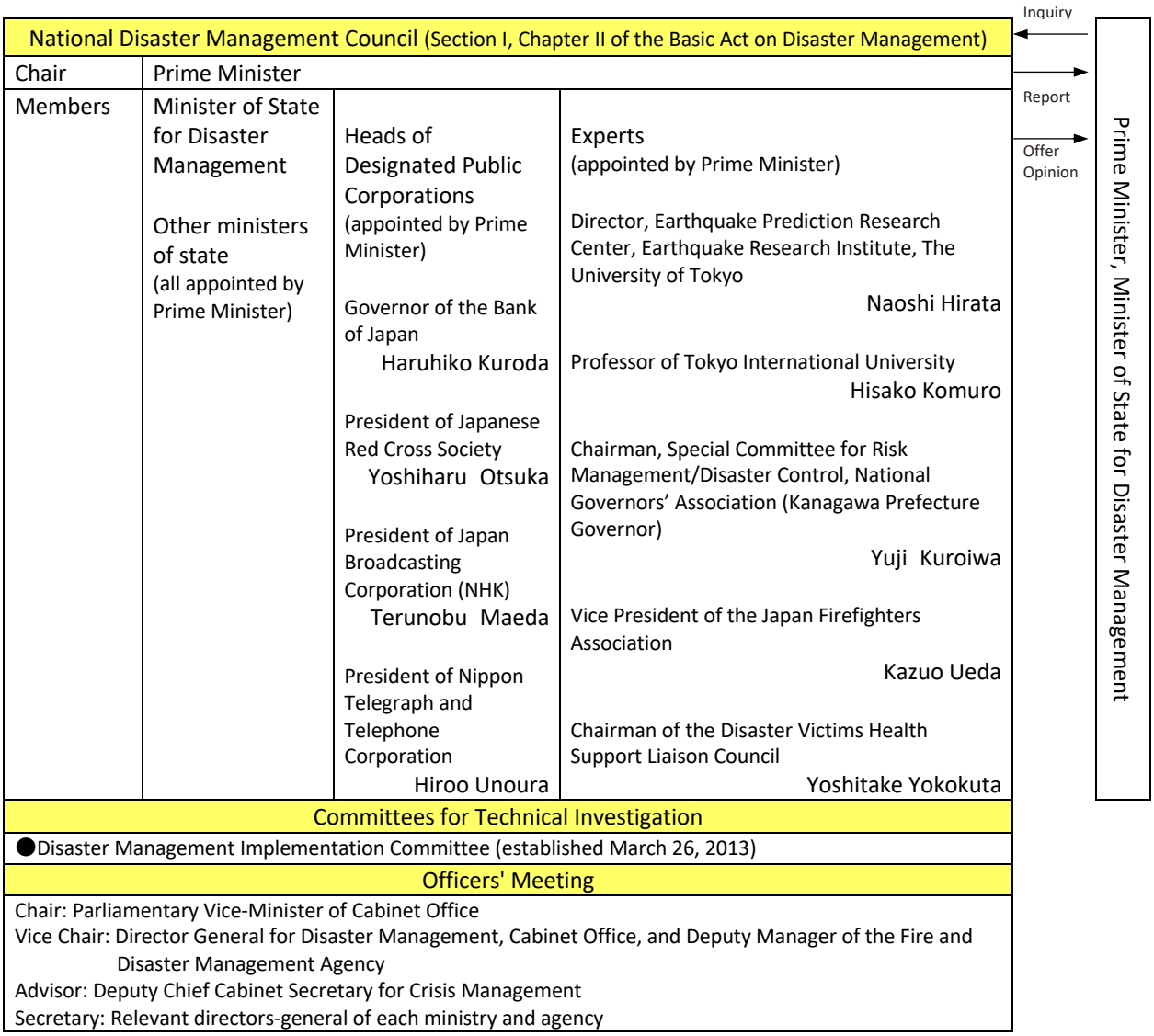
Revision Date	Outline of Revision	Background
June 1963	- The Basic Plan for Disaster Risk Reduction formulated based on the Basic Act on Disaster Management - Stipulations regarding various measures to prevent natural disasters, mitigate damage, and promote disaster reconstruction	Sep. 26, 1959: Typhoon VERA (5915) Nov. 15, 1961: Enactment of the Basic Act on Disaster Management
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: Southern Hyogo Prefecture Earthquake (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 national government reformation	National 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: Torrential 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 Plan for Disaster Risk Reduction, 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 Tohoku Earthquake and Tsunami (The Great East Japan Earthquake)
September 2012	Partial revision - Strengthening of countermeasures against large-scale regional disasters in light of revisions to the Basic Act on Disaster Management (First Revision), and the final report of the National 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 Amendment of the Basic Act on Disaster Management 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 Basic Act on Disaster Management (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 Amendment of the Basic Act on Disaster Management, enactment of the Act on Reconstruction from Large-Scale Disasters

Revision Date	Outline of Revision	Background
November 2014	Partial revision - Strengthening of countermeasures against abandoned and stranded vehicles following revision of the Basic Act on Disaster Management - 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 Amendment of the Basic Act on Disaster Management
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 plans for disaster risk reduction/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)"
July 2015	Partial revision -Revisions resulting from the strengthening of measures in light of lessons learned from the Hiroshima Sediment Disaster and the Mt. Ontake Eruption (each section)	Jan. 18, 2015: Partial Amendment of the Act on the Promotion of Sediment Disaster Countermeasures in Sediment Disaster Hazard Areas Mar. 26, 2015: Working Group for the Promotion of Volcano Disaster Prevention report Jun. 4, 2015: Working Group for Studying Comprehensive Countermeasures against Sediment Disasters report
February 2016	Partial revision -Revisions resulting from the strengthening of measures in light of the revision of laws, including the Act on Special Measures for Active Volcanoes, the Flood Control Act, the Sewerage Act, the Waste Management and Public Cleansing Act, and the Basic Act on Disaster Management (each section)	Dec. 10, 2015: Partial Amendment of the Act on Special Measures for Active Volcanoes
May 2016	Partial revision -Revisions resulting from the strengthening of measures in light of lessons learned from the Torrential Rain of September 2015 in the Kanto and Tohoku Regions (each section)	Mar. 31, 2016: Working Group on Study on Evacuation and Emergency Response Measures for Flood Disasters report
April 2017	Partial revision -Revisions resulting from the strengthening of measures in light of lessons learned from the 2016 Kumamoto Earthquake and Typhoon LIONROCK (1610) disaster (each section)	Dec. 20, 2016: Report of the Working Group for Studying Emergency Response and Livelihood Support Measures in Light of the 2016 Kumamoto Earthquake Dec. 26, 2016: Report of the Study Group on Guidelines for Producing a Handbook on Decision and Dissemination for Evacuation Recommendations
June 2018	Partial revision -Revisions resulting from the strengthening of measures in light of the revision of laws, including the Disaster Relief Act, the Road Act, and the Flood Control Act, etc. (each section) - Revisions resulting from the strengthening of measures in light of lessons learned from the 2017 July Northern Kyushu Heavy Rain and the heavy snow from January to February 2018 (each section)	Dec. 8, 2017: Report of the Study Group on Evacuation from the 2017 July Northern Kyushu Heavy Rain May 16, 2018: Interim Report on Measures to Secure Road Traffic in Heavy Snow June 15, 2018: Partial Amendment of the Disaster Relief Act
May 2019	Partial revision -Amendments to evacuation measures from flood and sediment disasters in light of the heavy rain event of July 2018 (each section)	Dec.26, 2018: Amendments to evacuation measures from flood and sediment disasters in light of the heavy rain event of July 2018 (report) Mar. 29, 2019 Revision of the guidelines on evacuation recommendations

Source: Cabinet Office

4. Organizations

Fig. A-30 Organization of the National Disaster Management Council



[Role]

- ○ Formulate a Basic Plan for Disaster Risk Reduction 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-31 Recent Meetings of the National Disaster Management Council (Since 2011)

FY2011	
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 Plan for Disaster Risk Reduction • Revisions to the National 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 • FY2012 Comprehensive Disaster Management Drill Framework
FY2012	
Sep. 6, 2012	• Revisions to the Basic Plan for Disaster Risk Reduction • Framework for Large-Scale Flood Measures in the Capital Region • New Promotion of Earthquake 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 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 • FY2013 Comprehensive Disaster Management Drill Framework
FY2013	
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 Plan for Disaster Risk Reduction • Final Report of the Working Group to Investigate Tokyo Inland Earthquake Measures and a National 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 • FY2014 Comprehensive Disaster Management Drill Framework
FY2014	
Nov. 28, 2014	• Revisions to the Basic Plan for Disaster Risk Reduction
Mar. 31, 2015	• Revisions to the Basic Plan for Disaster Risk Reduction • FY2015 Comprehensive Disaster Management Drill Framework • Earthquake Disaster Risk Reduction Strategy for a Tokyo Inland Earthquake
FY2015	
Jul. 7, 2015	• Revisions to the Basic Plan for Disaster Risk Reduction
Feb. 16, 2016	• Basic Guidelines on the Comprehensive Promotion of Measures for Active Volcanoes • Designation of volcanic eruption hazard areas • Revisions to the Basic Plan for Disaster Risk Reduction
FY2016	
May 31, 2016	• FY2016 Comprehensive Disaster Management Drill Framework • Revisions to the Basic Plan for Disaster Risk Reduction
FY2017	
Apr. 11, 2017	• Revisions to the Basic Plan for Disaster Risk Reduction • FY2017 Comprehensive Disaster Management Drill Framework
FY2018	
Jun. 29, 2018	• Revisions to the Basic Plan for Disaster Risk Reduction • Partial amendment of the Disaster Relief Act
FY2019	
May 31, 2019	• Revisions to the Basic Plan for Disaster Risk Reduction • Revisions to the Basic Plan for the Promotion of Nankai Trough Earthquake Disaster Risk Reduction Countermeasures • FY2019 Comprehensive Disaster Management Drill Framework • Promotion of Earthquake Research (third period)

Source: Cabinet Office

Fig. A-32 Status of the Establishment of National Disaster Management Council Committees for Technical Investigation

Source: Cabinet Office

Fig. A-33 Disaster Risk Management Budgets by Year

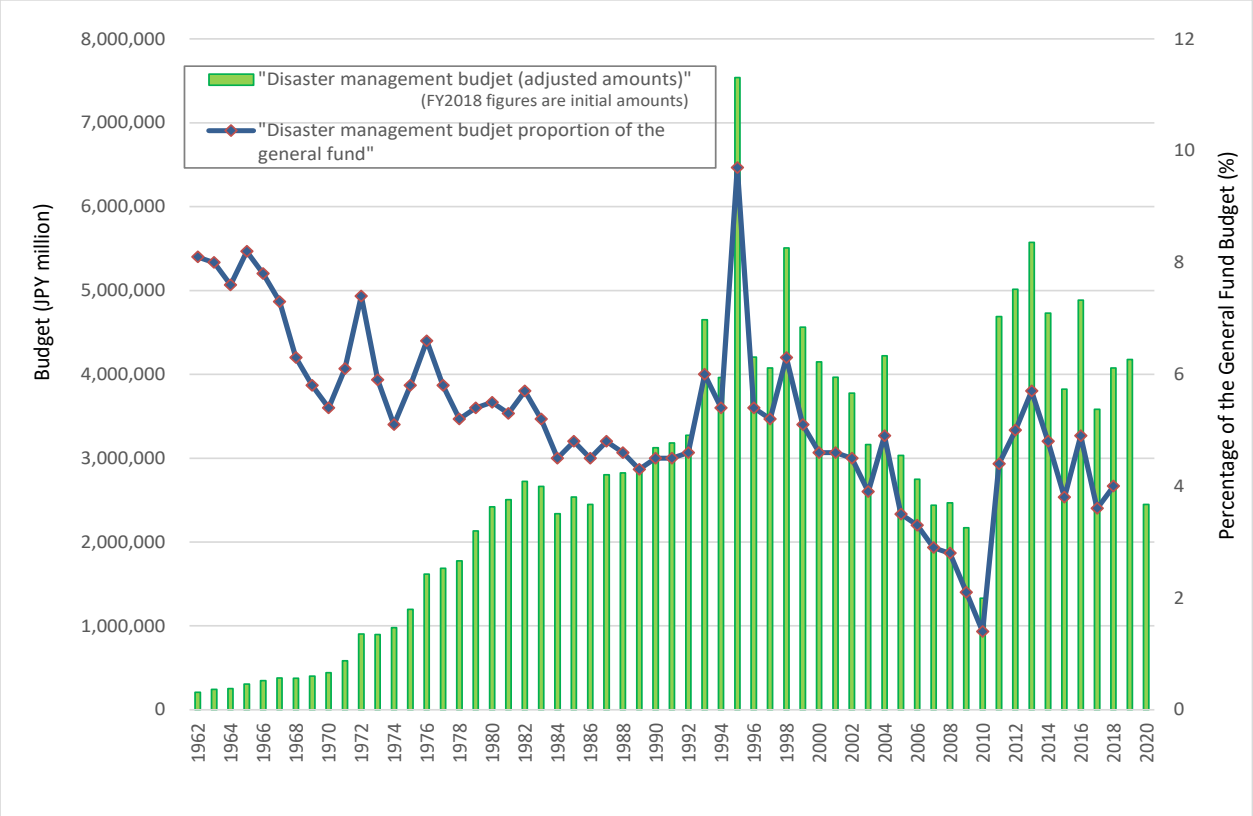
Fiscal Year	Science and Technology Research		Disaster Prevention		Land Conservation		Disaster Reconstruction		Total
	(JPY million)	Share (%)	(JPY million)	Share (%)	(JPY million)	Share (%)	(JPY million)	Share (%)	(JPY million)
1962	751	0.4	8,864	4.3	97,929	47.1	100,642	48.3	208,006
1963	1,021	0.4	8,906	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

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)
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
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	16,688	0.4	639,966	13.9	836,580	18.2	3,101,555	67.5	4,594,789
2015	14,961	0.4	713,477	18.6	155,475	4.1	2,954,355	77.0	3,838,268
2016	14,023	0.3	696,399	14.3	318,320	6.5	3,855,516	78.9	4,884,258
2017	10,123	0.3	790,361	22.1	267,629	7.5	2,515,384	70.2	3,583,497
2018	22,781	0.8	737,429	16.3	482,711	4.0	2,834,284	78.8	4,077,205
2019	14,390	0.3	814,471	19.5	512,324	12.3	2,839,061	67.9	4,180,246
2020	13,897	0.6	621,729	25.4	125,064	5.1	1,688,055	68.9	2,448,745

Notes:

1. These are adjusted budget (national expenditures) amounts. However, the FY2020 figures are preliminary figures reflecting the initial budget.
2. The reduced amount allocated to science and technology research in FY2007 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 FY2009 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 FY2010 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.

Source: Formulated by the Cabinet Office based on materials from various ministries and agencies



Source: Formulated by the Cabinet Office based on materials from various ministries and agencies

Fig. A-34 Earthquake Emergency Development Project Plans

(As of the end of FY2018; Unit: JPY million)

Category	FY1980 - FY2019		
	Planned Amount (a)	Implemented Amount (b)	Rate of Progress (b)/(a)
1 Evacuation sites	177,539	173,573	97.8%
2 Evacuation roads	93,983	86,485	92.0%
3 Firefighting facilities	141,238	128,727	91.1%
4 Emergency transport routes	951,107	909,748	95.7%
4-1 Emergency transport routes	840,671	804,323	95.7%
4-2 Emergency transport ports	59,631	57,851	97.0%
4-3 Emergency transport fishing ports	50,805	47,574	93.6%
5 Telecommunications facilities	17,514	16,545	94.5%
6 Public medical institutions	54,012	50,900	94.2%
7 Social welfare facilities	55,586	55,586	100.0%
8 Public elementary and junior high schools	442,781	428,827	96.8%
9 Tsunami countermeasures	272,080	199,006	73.1%
9-1 River management facilities	104,233	63,174	60.6%
9-2 Coastal preservation facilities	167,847	135,832	80.9%
10 Landslide prevention	540,734	537,456	99.4%
10-1 Erosion control facilities	102,887	114,128	110.9%
10-2 Security facilities	171,243	163,282	95.4%
10-3 Landslide facilities	84,622	80,900	95.6%
10-4 Steep slope facilities	160,352	161,630	100.8%
10-5 Ponds	21,630	17,516	81.0%
Total	2,746,574	2,586,853	94.2%

Notes:

1. The content of Earthquake Emergency Development Project Plans (FY1980-2019) is as of the end of FY2018.
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

Fig. A-35 Estimated Budgets of Five-Year Plans for Emergency Earthquake Disaster Management Project

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 fifth 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 fifth terms are shown in the table below.

(All prefectures, as of FY2017. 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)				Fifth Five-Year Plan (FY 2016-2020)			
	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) (i)	Planned Amt. (j)	Actual Amt. (k)	% Complete (k)/(j)	Project Scope (Unit) (l)	Planned Amt. (m)	Actual Amt. (n)	% Complete (n)/(m)
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%	1,456 ha	305,490	257,218	84.2%	1,058 ha	304,027	156,238	51.4%
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%	897 km	1,336,465	781,628	58.5%	603 km	829,188	374,517	45.2%
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%	20,052 sites	677,209	472,644	69.8%	18,358 sites	428,205	191,817	44.8%
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%	56 km	23,506	19,998	85.1%	29 km	23,848	11,537	48.4%
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%		2,773,563	2,443,339	88.1%		2,737,385	1,605,198	58.6%
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%	2,191 km	2,584,039	2,279,595	88.2%	2,186 km	2,619,036	1,550,385	59.2%
5-2. Emergency transport/traffic control facilities	23,900	21,017	87.9%	3,448 facilities	16,855	8,473	50.3%	2,439 facilities	9,242	6,844	74.0%	4,837 sites	15,464	12,214	79.0%	6,458 sites	21,870	8,348	38.2%
5-3. Emergency transport heliports	6,327	2,094	33.1%	1 site	550	387	70.4%	0 sites	0	0	—	2 sites	117	78	66.7%	0 sites	0	0	—
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%	77 sites	153,101	133,801	87.4%	46 sites	75,612	24,625	32.6%
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%	26 sites	20,843	17,652	84.7%	26 sites	20,868	7,009	33.6%
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%	471 km	255,017	208,175	81.6%	483 km	263,382	153,730	58.4%
7. Medical institutions	784,899	526,548	67.1%	115 facilities	391,016	277,721	71.0%	93 facilities	239,424	150,877	63.0%	219 facilities	689,917	506,681	73.4%	71 facilities	243,703	166,114	68.2%
8. Social welfare facilities	482,317	219,490	45.5%	857 facilities	280,028	176,408	63.0%	521 facilities	114,756	56,400	49.1%	681 facilities	126,275	98,772	78.2%	255 facilities	46,339	22,403	48.3%
8-2. Public kindergartens	-	-	-	-	-	-	-	995 schools	35,198	7,074	20.1%	1,159 schools	54,480	27,203	49.9%	270 schools	24,429	8,266	33.8%
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%	13,612 schools	2,322,751	1,631,920	70.3%	1,169 schools	367,915	196,997	53.5%
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%	199 schools	43,173	29,955	69.4%	5 schools	5,293	3,893	73.5%
11. Public buildings	24,169	5,267	21.8%	29 facilities	2,662	1,199	45.0%	670 facilities	62,975	24,429	38.8%	1,737 facilities	369,417	209,134	56.6%	735 facilities	253,320	126,074	49.8%
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%	687 sites	345,184	302,195	87.5%	802 sites	643,750	376,073	58.4%
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%	525 sites	229,583	184,601	80.4%	571 sites	350,755	194,348	55.4%
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%	162 sites	115,601	117,594	101.7%	231 sites	292,975	181,725	62.0%
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%	9,327 sites	845,288	786,324	93.0%	9,031 sites	905,455	538,784	59.5%
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%	2,063 sites	303,286	257,665	85.0%	1,840 sites	270,783	168,343	62.2%
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	173,261	118.7%	2,738 sites	163,700	100,144	61.2%
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%	849 sites	119,025	109,130	91.7%	717 sites	95,681	60,778	63.5%
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%	2,629 sites	193,935	185,729	95.8%	1,902 sites	197,267	125,604	63.7%
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%	1,103 sites	83,029	60,539	72.9%	1,384 sites	178,024	83,915	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%	161 sites	90,683	68,591	75.6%	122 sites	92,889	58,298	62.8%
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%	8,777 sites	190,612	105,334	55.3%	9,022 sites	171,017	58,628	34.3%
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%	517 sites	121,728	93,437	76.8%	449 sites	125,098	70,375	56.3%
17. Storage warehouses	17,763	8,028	45.2%	437 sites	10,338	5,292	51.2%	296 sites	4,081	838	20.5%	650 sites	7,053	3,968	56.3%	454 sites	11,012	3,805	34.6%
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	891	161	18.0%	29 groups	150	38	25.3%
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%	12,156 ha	501,836	340,080	67.8%	12,685 ha	438,361	154,939	35.3%
	18,503,368	14,117,470	76.3%		14,157,285	10,018,773	70.8%		12,197,074	8,359,916	68.5%		11,080,537	8,386,758	75.7%		7,914,766	4,277,725	54.0%

Notes:

1. The content of the Fifth Five-Year Plan (FY2016-2020) is current as of the end of FY 2018.
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 termsof 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.

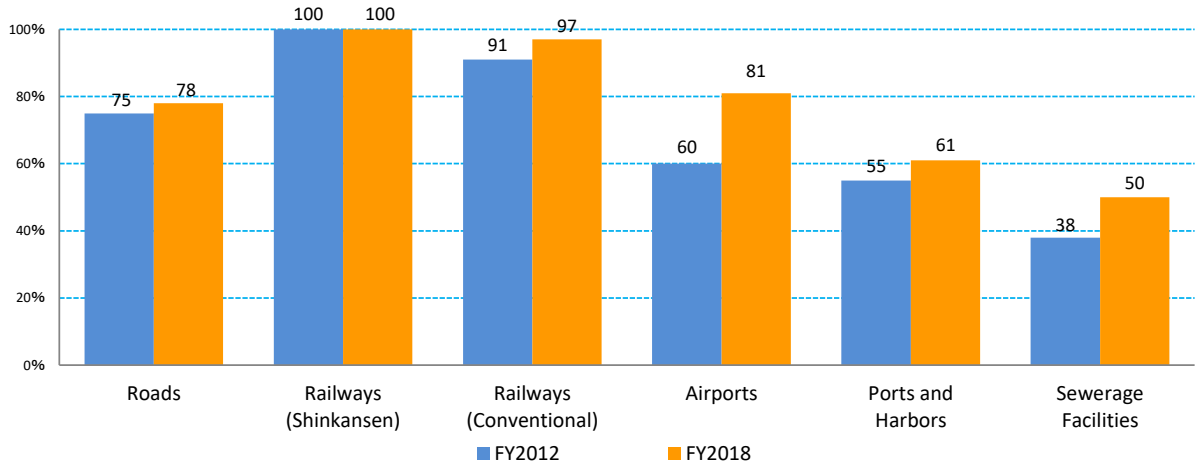
6. Disaster Management Facilities and Equipment

Fig. A-36 Number of Red Cross Hospitals, Emergency Medical Centers, and Disaster Base Hospitals

Prefectures	Red Cross Hospital	Emergency Medical Center	Disaster Base Hospital	Prefectures	Red Cross Hospital	Emergency Medical Center	Disaster Base Hospital
Hokkaido	10	12	34	Shiga	3	4	10
Aomori	1	3	10	Kyoto	3	6	13
Iwate	1	3	11	Osaka	2	16	20
Miyagi	2	6	16	Hyogo	3	10	18
Akita	2	1	14	Nara	0	3	7
Yamagata	0	3	7	Wakayama	1	3	10
Fukushima	1	4	8	Tottori	1	2	4
Ibaraki	2	6	14	Shimane	2	4	10
Tochigi	3	5	11	Okayama	2	5	10
Gunma	2	4	18	Hiroshima	3	7	19
Saitama	3	9	22	Yamaguchi	2	5	13
Chiba	1	14	26	Tokushima	1	3	11
Tokyo	4	26	85	Kagawa	1	3	10
Kanagawa	6	21	33	Ehime	1	3	8
Niigata	1	6	14	Kochi	1	3	12
Toyama	1	2	8	Fukuoka	3	10	31
Ishikawa	1	2	10	Saga	1	4	8
Fukui	1	2	9	Nagasaki	2	3	13
Yamanashi	1	1	9	Kumamoto	2	3	14
Nagano	6	7	10	Oita	1	4	14
Gifu	2	6	12	Miyazaki	0	3	12
Shizuoka	5	11	23	Kagoshima	1	3	14
Aichi	2	23	35	Okinawa	1	3	13
Mie	1	4	16	Total	96	291	749

Source: Red Cross Hospital information was formulated by the Cabinet Office based on the website of the Japanese Red Cross Society (as of March 2020).
Information on emergency medical centers and disaster base hospitals was formulated by the Cabinet Office based on materials from the Emergency Medical Information System (EMIS) (as of March 2020).

Fig. A-37 Seismic Reinforcement of Public Infrastructure



Notes

Roads: The rate of bridges not in danger of being damaged related to all bridges along emergency transport roads (important roads that have to be secured for evacuation and rescue as well as ensuring the passage of emergency vehicles immediately after the earthquake, including national expressways, national highways and the arterial roads that connect them.) (As of end of FY2018)

Railway (Shinkansen): Elevated bridges. (Left: As of end of FY2012. Right: As of end of FY2018.)

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 FY2012. Right: As of end of FY2018.)

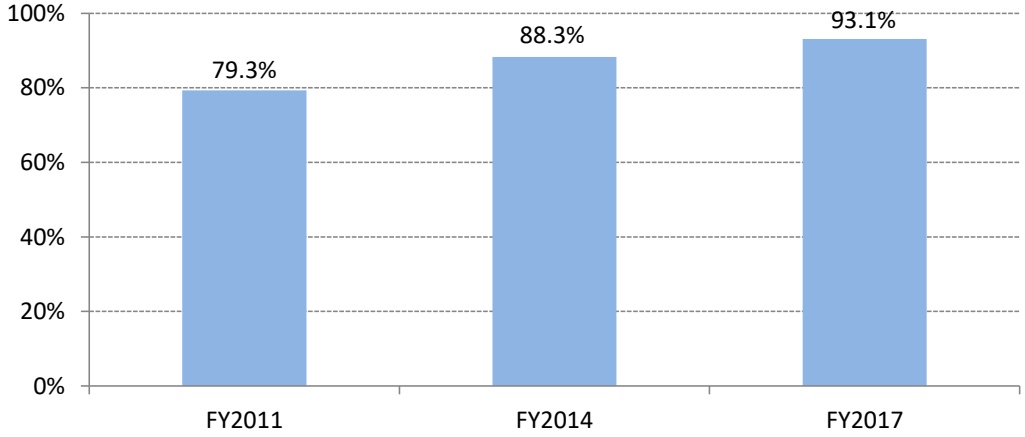
Airports: Percentage of population in a 100 km area around an airport that could be used for emergency transport.

Ports and Harbors: Seismically reinforced piers (number completed as a proportion of those detailed in plans for seismic retrofit of piers to facilitate the transportation of emergency supplies (those classed as major ports or higher)). (Left: As of end of FY2012. Right: As of end of FY2018.)

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 FY2012. Right: As of end of FY2018.)

Source: Formulated by the Cabinet Office using materials from the Ministry of Land, Infrastructure, Transport and Tourism (MLIT)

Fig. A-38 Trends in the Seismic Reinforcement Rate of Public Facilities That Serve as Disaster Management Bases

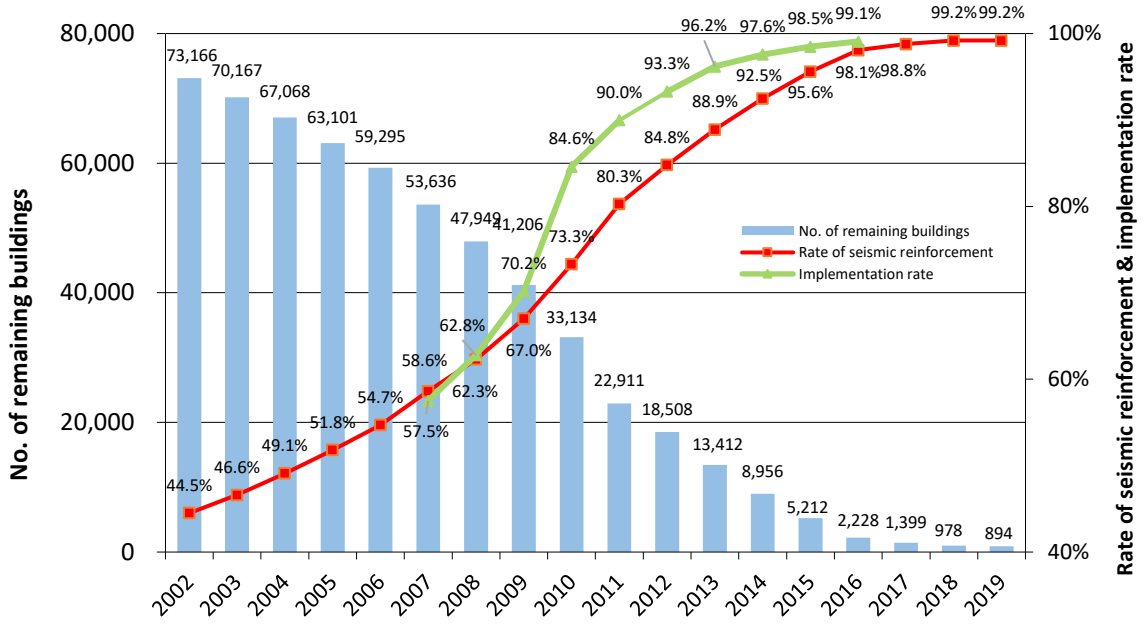


Note) Of all the public facilities owned or managed by local governments (buildings for public or public-private use: non-wooden structures built two stories or taller or buildings with a floor area of 200 m^2 or more), the facilities that could serve as disaster management bases for implementing disaster response measures are identified, consolidated and analyzed based on the criteria below.

<Classification criteria of public facilities that serve as disaster management bases>	
(1) Social welfare facilities	All facilities
(2) Education facilities (classrooms, gymnasiums)	Facilities designated as designated emergency evacuation site or designated shelter, etc.
(3) Government buildings	Facilities that will be used for the implementation of disaster response measures
(4) Prefectural civic halls, civic centers	Facilities designated as designated emergency evacuation site or designated shelter, etc.
(5) Gymnasiums	Facilities designated as designated emergency evacuation site or designated shelter, etc.
(6) Health care facilities	Facilities positioned in local plans for disaster risk reduction as medical care facilities
(7) Police headquarters and police stations	All facilities

Source: "Results of the Survey on the Seismic Reinforcement Rate of Public Facilities That Serve as Disaster Management Bases," Ministry of Internal Affairs and Communications (November 2018)

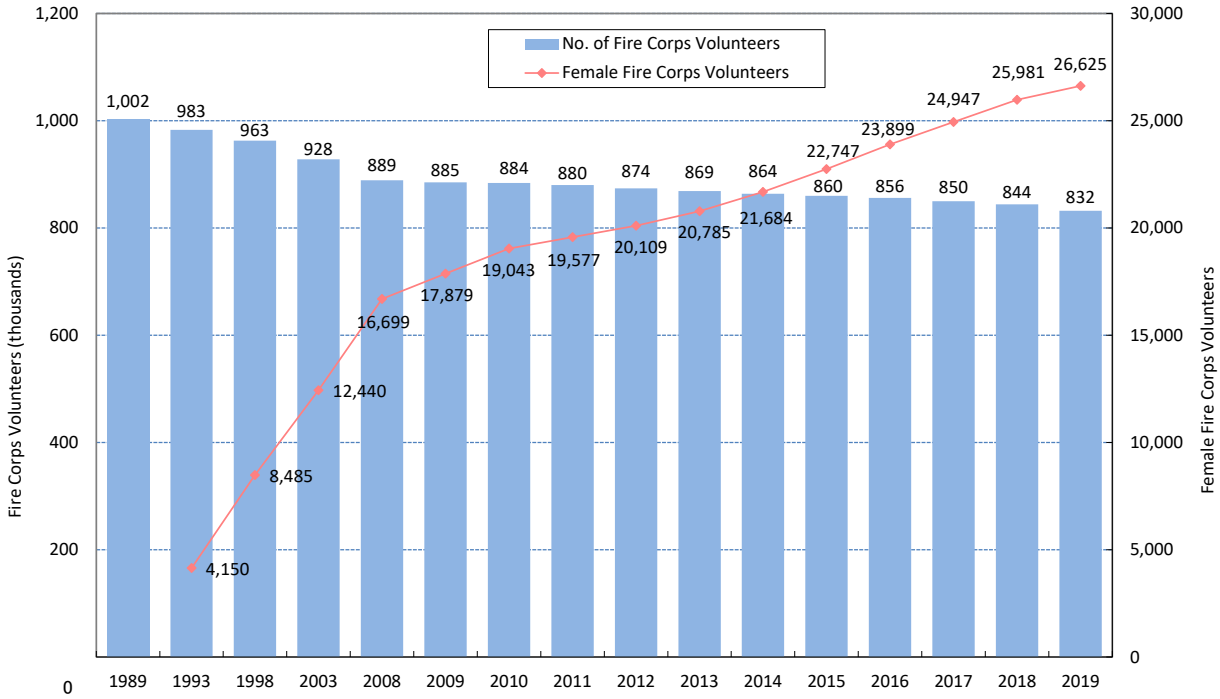
Fig. A-39 Seismic Reinforcement of Public Elementary and Junior High Schools



Source: "Results of a Follow-up Investigation on the Progress of the Seismic Retrofitting of Public School Facilities," Ministry of Education, Culture, Sports, Science and Technology (MEXT) (August 2019)

7. Trends in Numbers of Workers in Disaster Management

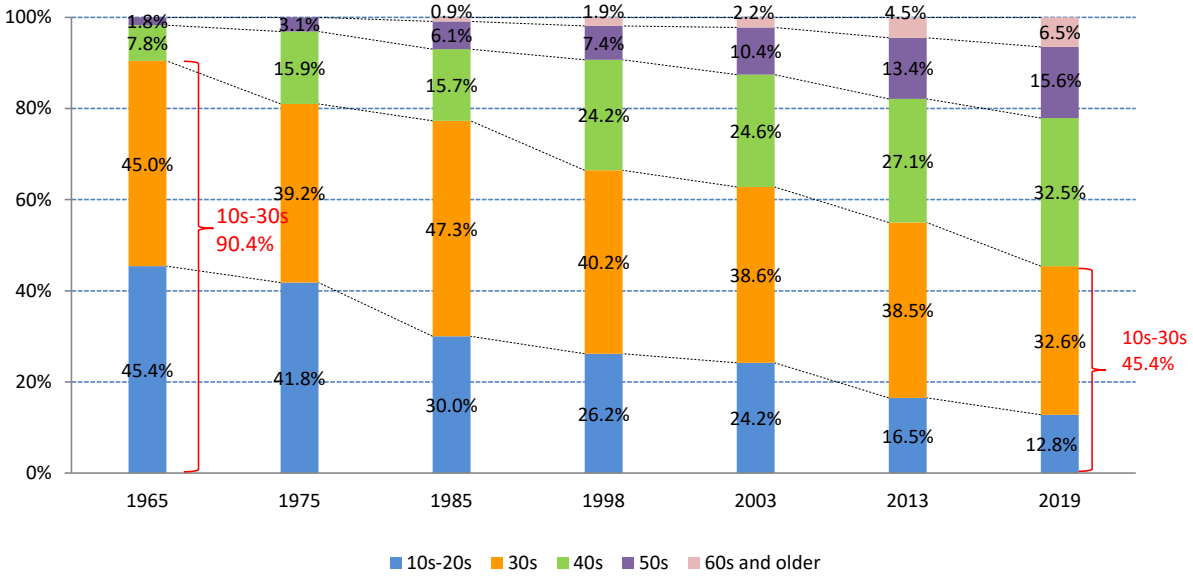
Fig. A-40 Numbers of Fire Corps Volunteers



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)

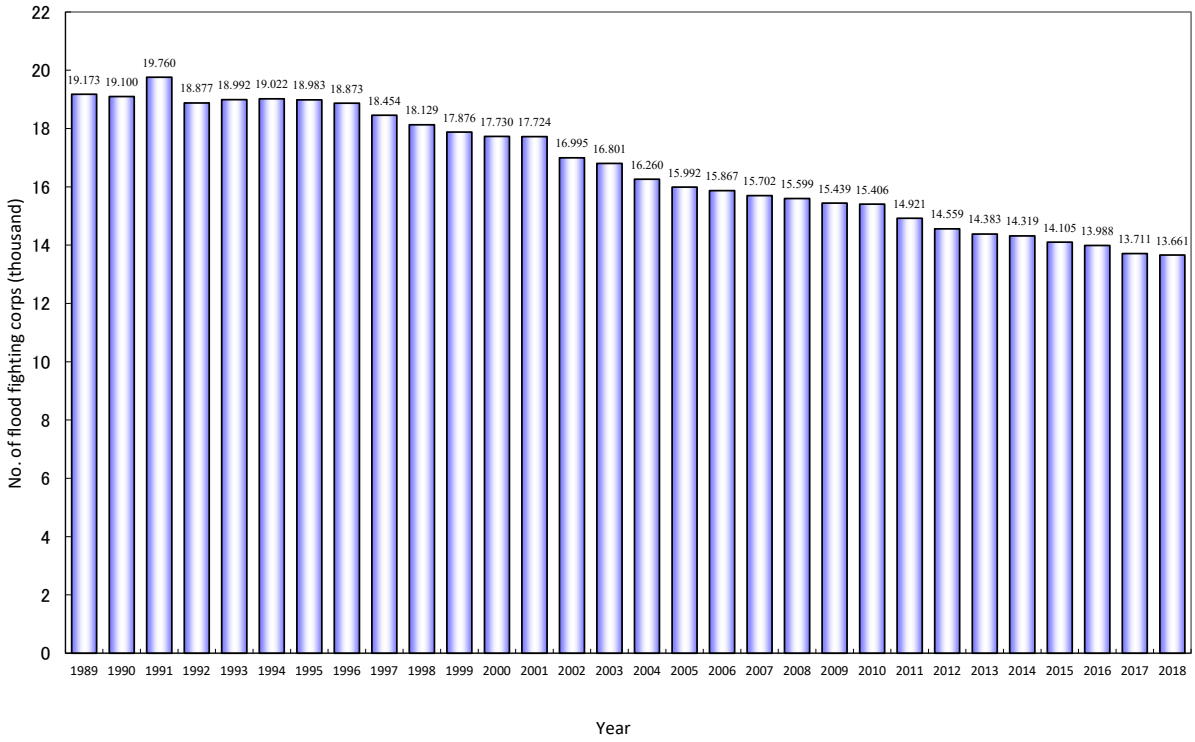
Source: Formulated by the Cabinet Office based on the Survey on the Current Status of Fire and Earthquake Disaster Management Measures of the Fire and Disaster Management Agency

Fig. A-41 Age Composition Ratios among Fire Corps Volunteers



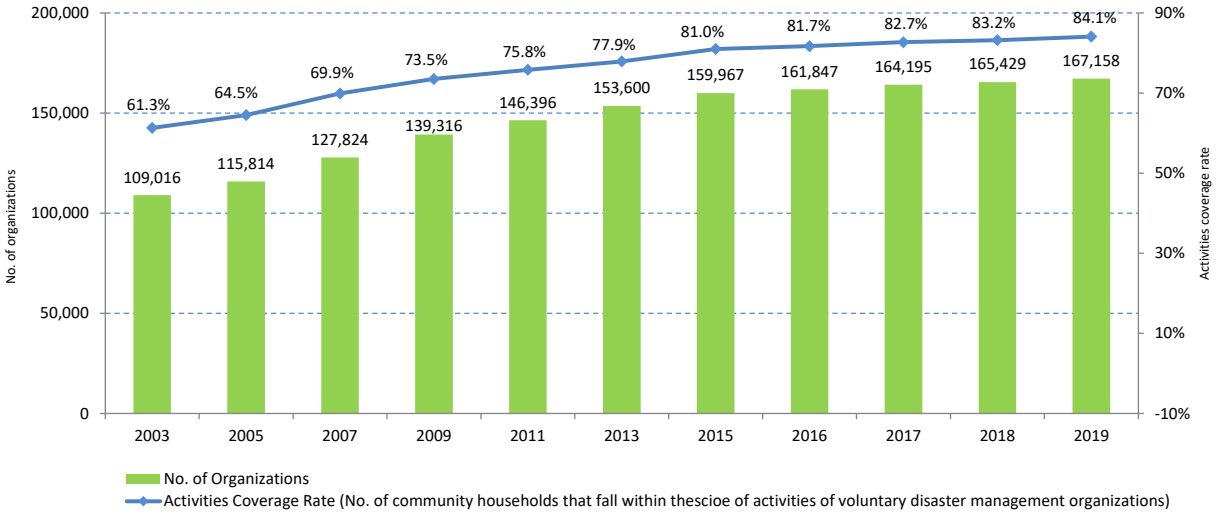
Source: Formulated by the Cabinet Office based on the Survey on the Current Status of Fire and Earthquake Disaster Management Measures of the Fire and Disaster Management Agency

Fig. A-42 Numbers of Flood Fighting Corps Personnel



Note) Number of full-time flood fighting corps personnel
Source: Ministry of Land, Infrastructure, Transport and Tourism (MLIT)

Fig. A-43 Numbers of Voluntary Disaster Management Organizations



Source: Formulated 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-44 Female Representation in Local Disaster Management Councils (by Prefecture, 2019)

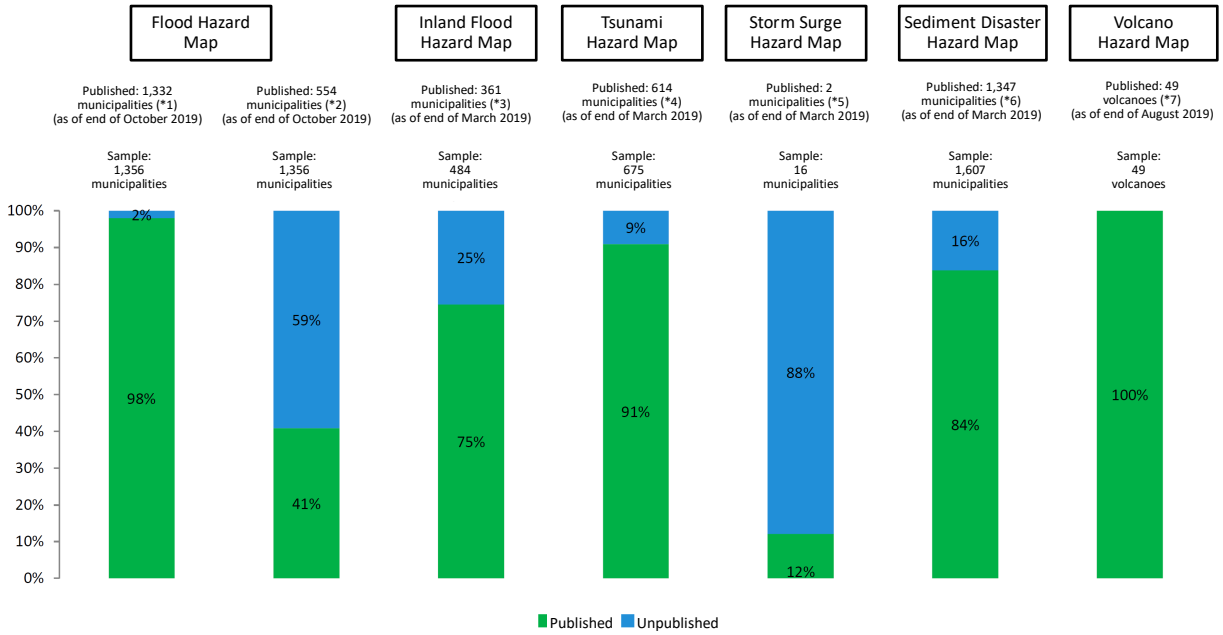
	Prefectural Disaster Management Council			Municipal Disaster Management Council		
	Total Members	Of which, Female Members	Proportion of Women (%)	Total Members	Of which, Female Members	Proportion of Women (%)
Hokkaido	68	5	7.4	3,911	128	3.3
Aomori	59	10	16.9	773	40	5.2
Iwate	76	14	18.4	1,144	97	8.5
Miyagi	58	9	15.5	833	61	7.3
Akita	60	4	6.7	719	78	10.8
Yamagata	62	8	12.9	995	60	6.0
Fukushima	54	8	14.8	1,003	53	5.3
Ibaraki	51	6	11.8	1,240	107	8.6
Tochigi	52	10	19.2	586	67	11.4
Gunma	47	6	12.8	989	86	8.7
Saitama	69	12	17.4	2,138	240	11.2
Chiba	52	8	15.4	1,550	171	11.0
Tokyo	73	11	15.1	2,207	243	11.0
Kanagawa	57	13	22.8	1,005	128	12.7
Niigata	72	16	22.2	876	50	5.7
Toyama	67	11	16.4	515	32	6.2
Ishikawa	70	7	10.0	461	28	6.1
Fukui	56	3	5.4	501	49	9.8
Yamanashi	64	6	9.4	578	54	9.3
Nagano	77	15	19.5	1,939	141	7.3
Gifu	61	10	16.4	913	77	8.4
Shizuoka	58	5	8.6	1,053	97	9.2
Aichi	68	5	7.4	1,482	167	11.3
Mie	60	5	8.3	915	91	9.9
Shiga	59	12	20.3	490	48	9.8
Kyoto	66	14	21.2	757	61	8.1
Osaka	58	5	8.6	1,315	139	10.6
Hyogo	56	8	14.3	1,294	128	9.9
Nara	61	7	11.5	853	77	9.0
Wakayama	55	7	12.7	610	49	8.0
Tottori	65	28	43.1	407	57	14.0
Shimane	73	34	46.6	607	52	8.6
Okayama	58	9	15.5	508	83	16.3
Hiroshima	59	4	6.8	822	55	6.7
Yamaguchi	60	7	11.7	615	62	10.1
Tokushima	81	39	48.1	557	37	6.6
Kagawa	60	8	13.3	441	53	12.0
Ehime	61	5	8.2	487	32	6.6
Kochi	58	7	12.1	754	73	9.7
Fukuoka	61	4	6.6	1,199	196	16.3
Saga	70	18	25.7	378	41	10.8
Nagasaki	68	13	19.1	671	45	6.7
Kumamoto	56	6	10.7	1,635	109	6.7
Oita	58	6	10.3	548	48	8.8
Miyazaki	53	4	7.5	709	47	6.6
Kagoshima	63	7	11.1	1,124	65	5.8
Okinawa	54	7	13.0	632	57	9.0
Total	2,904	466	16.0	45,739	3,959	8.7

Notes)

1. Formulated by the Cabinet Office from its material titled the “Implementation Status of Measures for Promoting the Formation of a Gender-equal Society or Policy Considerations for Gender in Local Government” (FY2019)
2. Figures for April 1, in principle.

8. Various Policies and Measures

Fig. A-45 Hazard Map Development



Source: Formulated by the Cabinet Office based on materials of the Ministry of Land, Infrastructure, Transport and Tourism (volcano hazard maps are materials owned by the Cabinet Office)

*1 Municipalities (including special wards) with designated flood and inundation hazard areas based on Article 14 of the Flood Control Act, which have published a hazard map pursuant to Article 15, paragraph (3) of the Flood Control Act

*2 Municipalities (including special wards) that have published a hazard map covering the estimated maximum precipitation

*3 Municipalities that need to promptly develop a hazard map as they suffered significant damage from past floods, which have already published a hazard map.

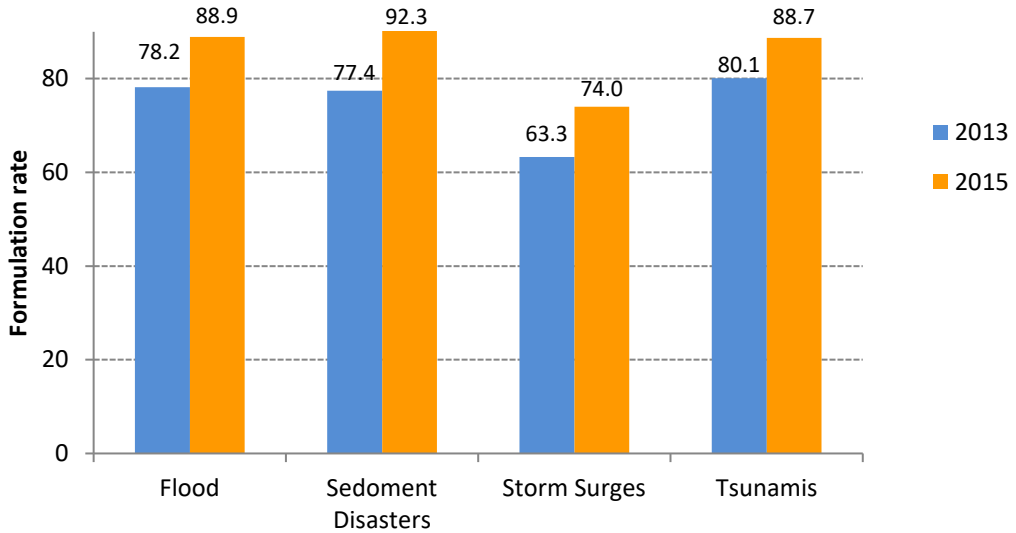
*4 Municipalities located in coastal areas or the tsunami hazard areas under Article 8 of the Act on Regional Development for Tsunami Disaster Prevention, which have already published a tsunami hazard map

*5 Since hazard coastal areas were first designated in FY2018, municipalities which were designated as storm surge and inundation hazard areas under Article 14-3 of the Flood Control Act and have already published a hazard map pursuant to Article 15, paragraph (3) of the Flood Control Act are tallied.

*6 Municipalities (including special wards) designated as sediment disaster hazard areas that have already published a hazard map pursuant to Article 8, paragraph (3) of the Sediment Disasters Prevention Act

*7 Volcanoes for which Volcanic Disaster Management Councils were established in accordance with Article 4 of the Act on Special Measures for Active Volcanoes, which have already published a volcano hazard map (one of the tasks of a Volcanic Disaster Management Council)

Fig. A-46 Formulation of Official Announcement Criteria for Evacuation Recommendations in Municipalities



Note) The disasters anticipated vary from one municipality to another, so the formulation rate is calculated using different denominators, according to the type of disaster.

Source: Formulated by the Cabinet Office based on the "Results of a Survey into the Formulation Status of Specific Official Announcement Criteria for Evacuation Recommendations" from the Fire and Disaster Management Agency

Fig. A-47 Communication Method of Evacuation Instructions in Municipalities

Year	Disaster management radio communications system		Communication facilities of agricultural/ fishery cooperatives (including wired systems)	Patrols by loudspeaker vans	Siren	Bell ringing	News media	Through voluntary disaster management organizations	email	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%
2015	1,128 65%	1,412 81%	192 11%	1,659 95%	1,317 76%	238 14%	975 56%	1,193 69%	- -	1,093 63%
2016	1,145 66%	1,426 82%	178 10%	1,654 95%	1,282 74%	219 13%	993 57%	1,204 69%	- -	1,078 62%
2017	1,157 66%	1,443 83%	169 10%	1,651 95%	1,277 73%	208 12%	1,028 59%	1,212 70%	- -	1,081 62%
2018	1,170 67%	1,450 83%	155 9%	1,651 95%	1,256 72%	195 11%	1,046 60%	1,203 69%	883 51%	972 56%
2019	1,181 68%	1,466 84%	149 9%	1,658 95%	1,255 72%	182 10%	1,070 61%	1,211 70%	1,070 61%	990 57%

Source: Formulated by the Cabinet Office based on the Fire and Disaster Management Agency report “Status of Regional Disaster Management Administration”

Fig. A-48 Assistance based on Mutual Support Agreements between Prefectures and Support Agreements with Private-Sector Institutions

Year	Support Based on Mutual Support Agreements Between Prefectures		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
2015	24	6	343	47	454	39	893	47	382	46	2,397	47	1,694	47	1,515	46
2016	19	5	352	47	461	40	970	47	438	46	2,626	47	1,795	47	1,751	47
2017	16	5	351	47	438	40	1,065	47	477	47	2,648	47	1,754	47	1,898	47
2018	10	5	349	47	457	41	1,272	47	514	47	3,392	47	1,850	47	2,384	47
2019	14	5	364	47	467	41	1,415	47	561	47	3,461	47	1,998	47	2,893	47

Source: Formulated by the Cabinet Office based on the Fire and Disaster Management Agency report “Status of Regional Disaster Management Administration”

Fig. A-49 Mutual Support Agreements in Municipalities

Year	No. of Municipalities	No. of mutual support agreements concluded between municipalities in the same 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%
2015	1,741	3,642	1,705 98%
2016	1,741	4,013	1,699 98%
2017	1,741	4,280	1,698 98%
2018	1,741	—	1,701 98%
2019	1,741	—	1,708 98%

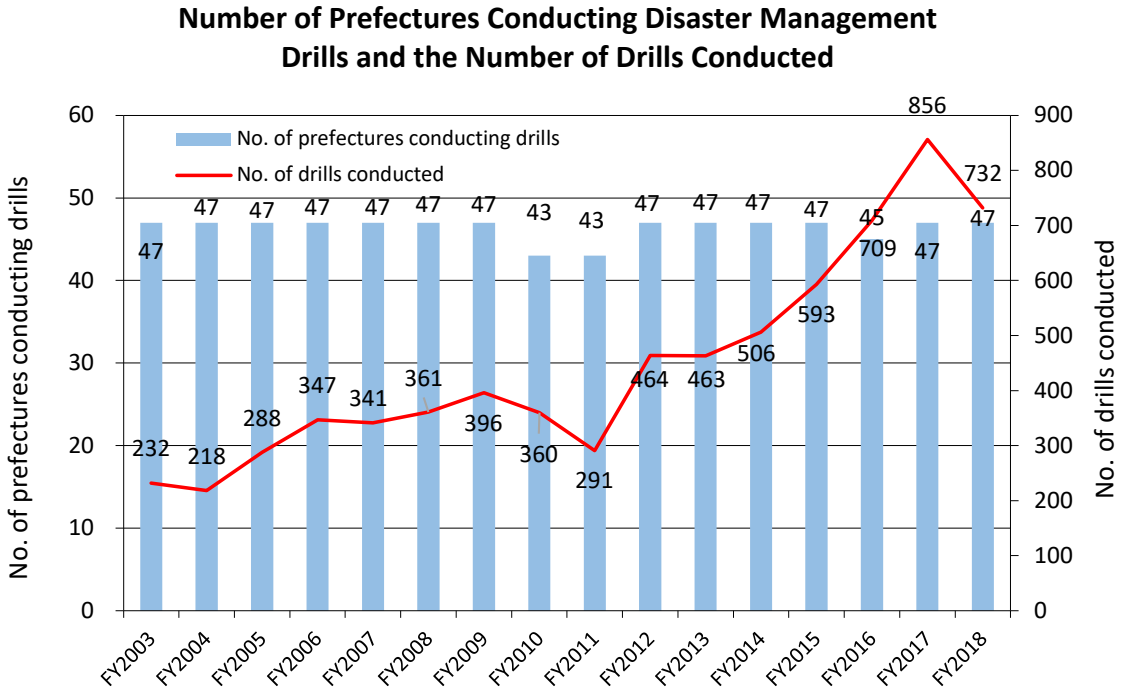
Source: Formulated by the Cabinet Office based on the Fire and Disaster Management Agency report “Status of Regional Disaster Management Administration”

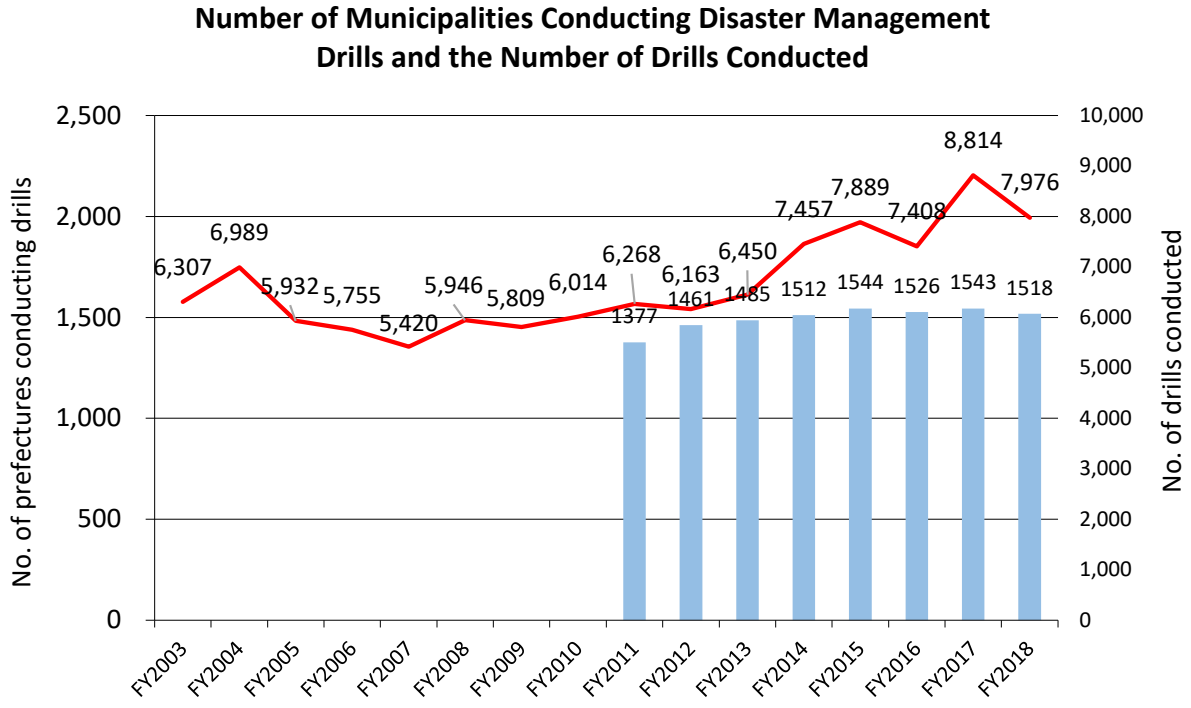
Fig. A-50 Municipalities' Support Agreements with Private-Sector Institutions

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
2015	609	50	83	1	869	34	719	3	1,408	62	1,500	31	809	15
2016	636	48	101	1	921	43	811	6	1,451	41	1,526	44	810	25
2017	676	108	116	1	948	2	870	14	1,454	49	1,543	40	821	11
2018	708	140	117		981	31	925	10	1,478	213	1,561	56	826	276
2019	731	100	135	1	1,007	54	958	20	1,492	1,020	1,577	107	837	37

Source: Formulated by the Cabinet Office based on the Fire and Disaster Management Agency report "Status of Regional Disaster Management Administration"

Fig. A-51 Disaster Management Drill Implementation

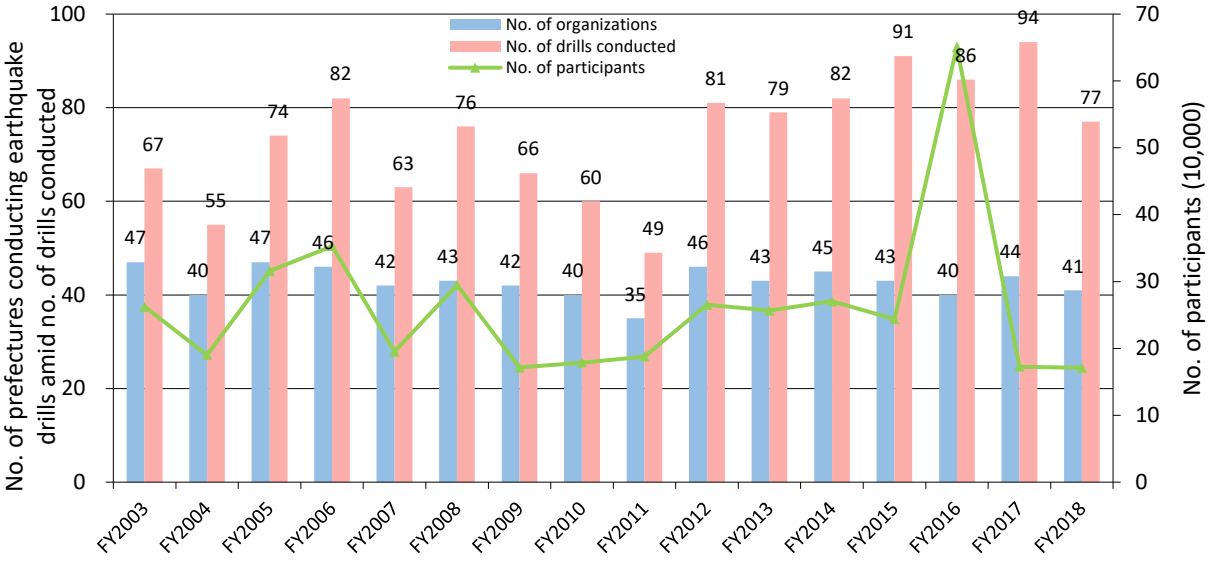




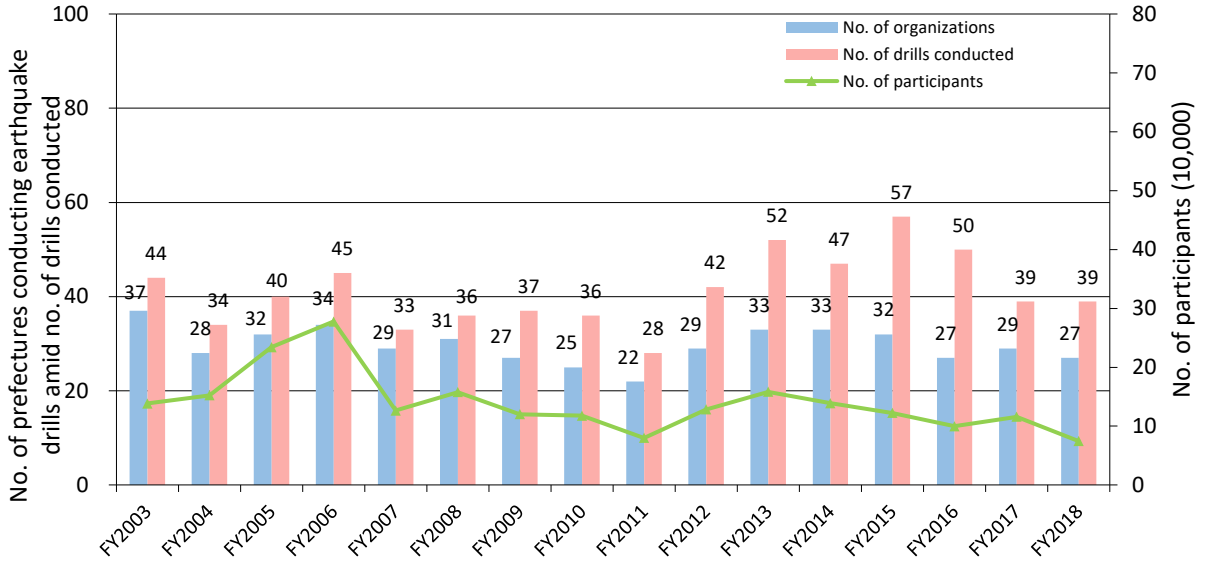
Source: Formulated by the Cabinet Office based on the Fire and Disaster Management Agency report “Status of Regional Disaster Management Administration”

Fig. A-52 **Earthquake Disaster Management Drill Implementation**

Number of Prefectures Conducting Earthquake Disaster Management Drills, Number of Drills Conducted, and the Number of Participants (Comprehensive Drills)



Number of Prefectures Conducting Earthquake Disaster Management Drills, Number of Drills Conducted, and the Number of Participants (Including Region-Wide Drills)



Source: Formulated by the Cabinet Office based on the Fire and Disaster Management Agency report "Status of Regional Disaster Management Administration"

Fig. A-53 Implementation of Tsunami Countermeasures

(Unit: Extended Distance = km)

Year	No. of govts.	Coastlines		Designated as hazardous tsunami inundation areas	Measures incorporated into local disaster risk reduction plan	Evacuation Routes		Evacuation Sites		Tsunami Breakwaters	
		Present	Absent			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	1,105	133
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
2015	1,741	646	1,095	603	431	6,176	166	22,589	410	841	97
2016	1,741	646	1,095	612	444	6,086	174	23,263	418	913	93
2017	1,741	645	1,096	623	483	9,414	179	23,481	425	959	98
2018	1,741	645	1,096	626	500	10,058	184	23,285	414	967	101
2019	1,741	645	1,096	628	525	10,279	187	24,331	432	1,023	101

Source: Formulated by the Cabinet Office based on the Fire and Disaster Management Agency report “Status of Regional Disaster Management Administration”

9. Japan's International Cooperation

Fig. A-54 List of Cooperation Projects Conducted by Ministries and Agencies

Ministry/ Agency	Project	Partner/ Target Country (Target Institution)	Description	Budget for FY2019 (in JPY million; if applicable)	Department Responsible
Cabinet Office (CAO)	Partnership between the Cabinet Office and FEMA	US	Based on the Memorandum of Cooperation signed by the Cabinet Office and FEMA in December 2014, MOC was revised in December 2019 because 5 years had passed since the conclusion.	—	Disaster Preparedness, Public Relations and International Cooperation Division, Disaster Management Bureau, CAO
	Partnership between the Cabinet Office and Indian Ministry of Home Affairs	India	Based on the Memorandum of Cooperation signed by the Cabinet Office and the Ministry of Home Affairs in India in September 2017, aiming to develop a disaster management partnership and strengthen the relationship between the two counties, the Cabinet Office and the Ministry of Home Affairs held the Follow-up Meeting for the 3rd round of the Japan-India Disaster Management Cooperation Meeting in Delhi in June 2019.	—	Disaster Preparedness, Public Relations and International Cooperation Division, Disaster Management Bureau, CAO
	Cooperation in disaster risk reduction through the Japan International Public-Private Association for Disaster Risk Reduction (JIPAD) for overseas deployment of the disaster prevention technologies	Countries	The Cabinet Office has established the "Japan International Public-Private Association for Disaster Risk Reduction (JIPAD)" in August 2019 with the aim of promoting the deployment of Japanese disaster risk reduction technology abroad under the framework of public- private collaboration and leading the improvement of disaster risk reduction capabilities worldwide including two public-private sector liaison meetings, bringing together related ministries and agencies, private companies, and ambassadors in Tokyo; three public-private sector disaster prevention seminars overseas (Turkey, Ecuador, and Colombia) and 11 seminars in Japan to introduce the technologies for DRR/ DRM of Japanese companies.	—	Disaster Preparedness, Public Relations and International Cooperation Division, Disaster Management Bureau, CAO
	Japan-U.S. Emergency Management Working Group	US	Partnerships in the field of Nuclear Emergency Preparedness Systems were deepened through regular exchanges of information and opinions since 2013,, and reciprocal invitations to exercises, which took place within the framework of the Emergency Management Working Group (EMWG) under the U.S.-Japan Bilateral Commission on Civil Nuclear Cooperation established in 2012. The 12th EMWG was held in the United States in September 2019 to discuss the outcome of the cooperation and the action plan for the next 3 years. Prior to the meeting, participants participated in seminars and tabletop exercises on nuclear emergencies in the United States.	—	Director General for Nuclear Disaster Management, CAO
	Cooperation between the Cabinet Office of Japan and the Ministry of the Interior of France on emergency management related to nuclear accidents	France	Opinions are exchanged with relevant bodies in the country and reciprocal invitations to exercises were issued within the framework of the memorandum of cooperation on nuclear emergency preparedness signed in May 2015. In October 2019, the Cabinet Office held the first meeting of the "Committee for Cooperation in the Field of Emergency Situation and Management in the Event of a Nuclear Accident," introducing the efforts of the two countries to enhance the emergency response plan and discussing areas of future cooperation. In January 2020, Cabinet Office officials visited French related organizations.	—	Director General for Nuclear Disaster Management, CAO
	Hosting observers of a comprehensive nuclear emergency response exercise	Eight countries and regions and one international organization	With the objective of sharing information and exchanging views concerning nuclear emergency preparedness in each country, a total of 21 foreign* personnel inspected the Comprehensive Nuclear Emergency Response Exercise held at the Shimane Nuclear Power Station in November 2019. After touring the national base on the day following the training, an international workshop was held to exchange views on trainings and exercises and the system for emergencies between visitors and staffs in charge who planned the training. *The US, France, the United Kingdom, Finland, UAE, Korea, Singapore, Taiwan, and the International Atomic Energy Agency (IAEA)	—	Director General for Nuclear Disaster Management, CAO/ International Affairs Office, Policy Planning and Coordination Division, Secretary-General's Secretariat, the Secretariat of the Nuclear Regulation Authority
Ministry of Internal Affairs and Communications (MIC)	Promotion of International Cooperation of ICT Systems for Disaster Management	ASEAN	The Ministry of Internal Affairs and Communications (MIC) encourages countries in the ASEAN region prone to natural disasters to collaborate with the private sector through policy dialogs, demonstration tests, workshops and others to promote the overseas deployment of the ICT system for disaster management, which have been cultivated based on Japan's experience and expertise.	Included as a part of packaged assistance projects for strengthening international competitiveness in the field of ICT, FY2019 (JPY 377m)	International Cooperation Division, Global Strategy Bureau, MIC
	Support to AHA Center (ASEAN Coordinating Centre for Humanitarian Assistance on disaster management)	AHA Center (ASEAN)	ASEAN Integration Fund (JAIF) to support the AHA Center, which is the disaster management information hub for the ASEAN region. The center not only shares disaster information with the ASEAN nations and coordinates emergency responses in the event of a natural disaster or emergency, but also monitors the ASEAN region, supports disaster drills in the region and holds workshops to consolidate the partnership with disaster response organizations in normal times.	—	International Cooperation Division, Global Strategy Bureau, MIC Regional Policy Division, Asian and Oceanian Affairs Bureau, MOFA

Ministry/ Agency	Project	Partner/ Target Country (Target Institution)	Description	Budget for FY2019 (in JPY million; if applicable)	Department Responsible
Fire and Disaster Management Agency (FDMA)	International Forum on Fire and Disaster Management	Asian countries	The International Forum on Fire and Disaster Management has been held since 2007 to mainly enable Asian countries to improve their firefighting and disaster management capacity and to introduce Japan's firefighting technologies and systems.	3	(Counselor of) Civil Protection and Disaster Management Department, FDMA
	Japan-Republic of Korea Firefighting Administration Seminar	Republic of Korea	In the wake of the Year of Japan-Republic of Korea National Exchange and the joint hosting of the 2002 FIFA World Cup by the two countries, the Japan-ROK Firefighting Administration Seminar started to take place – which aimed at promoting the two countries' communication, partnership and cooperation in fire service and disaster management through sharing information and exchanging ideas . The seminar has been held on the delegation's mutual visit.	1	(Counselor of) Civil Protection and Disaster Management Department, FDMA
	Cooperation in the fire control field between the Fire and Disaster Management Agency and the Ministry of Public Security of Vietnam	Vietnam	Based on the Memorandum of Cooperation in the fire control field signed in October 2018, the Fire and Disaster Management Agency will exchange opinions with relevant Vietnamese agencies and provide them with support in improving fire control and safety, including the standardization of fire control equipment and the establishment of a certification system.	—	Fire Prevention Division, FDMA
Ministry of Foreign Affairs (MOFA)	Science and Technology Research Partnership for Sustainable Development (SATREPS)	134 countries that are the object of ODA (Public offering in 2020)	This program is jointly implemented by MOFA, the Japan International Cooperation Agency (JICA), MEXT, the Japan Science and Technology Agency (JST), and the Japan Agency for Medical Research and Development (AMED). Research institutions in Japan and developing countries cooperate with one another to conduct joint international research on solutions to global issues, tapping into the power of Japanese leading science and technology and the Official Development Assistance (ODA). Disaster prevention is one of the research fields under this program; in FY2019, 25 projects were carried out in 20 countries.	(MOFA) Included in JICA Management Expenses Grant (MEXT) Included in JST Management Expenses Grant	Development Administration Division, International Cooperation Bureau, MOFA International Science and Technology Affairs Division, Science and Technology Policy Bureau, MEXT
	Japan-Turkey Disaster Management Cooperation	Turkey	This program is jointly implemented by MOFA, the Japan International Cooperation Agency (JICA), MEXT, the Japan Science and Technology Agency (JST), and the Japan Agency for Medical Research and Development (AMED). Research institutes in Japan and developing countries cooperate in the international research on solutions to global issues, tapping into the power of leading science and technology and Official Development Assistance (ODA). On December 10, 2019, the first annual conference was held in Tokyo.	—	First Middle East Division, Middle Eastern and African Affairs Bureau, MOFA
	Provision of Emergency Relief Goods	Countries affected by natural disasters	In the event of a large-scale disaster overseas, MOFA decides providing emergency relief goods to support the immediate needs of affected people, upon request of the government of the affected country through Japan International Cooperation Agency (JICA). In FY2019, 10 cases of such assistance were carried out. One example is the provision of tents, blankets, and other supplies to hurricane damage victims in the Bahamas in September. *As of the end of February 2020.	Included in JICA Management Expenses Grant	Humanitarian Assistance and Emergency Relief Division International Cooperation Bureau, MOFA
	Deployment of Japan Disaster Relief (JDR) teams	Countries affected by natural disasters	In 2019, seven teams were dispatched to five countries in total, including the Japan Disaster Relief (JDR) teams and the Infection Control Team (ICT)(the first and second teams), in response to the outbreak of measles in the Independent State of Samoa, which began to worsen around November. * As of the end of February 2020.	Included in JICA Management Expenses Grant	Humanitarian Assistance and Emergency Relief Division International Cooperation Bureau, MOFA
	Operation of IAEA RANET Capacity Building Centre (CBC)	IAEA member countries (IAEA)	The IAEA RANET Capacity Building Centre (CBC), where IAEA staff are permanently stationed, was designated in Fukushima Prefecture in May 2013, based on 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" signed between MOFA and the IAEA in December 2012. Materials and equipment stored for emergence response in the CBC are used in an emergency involving radiation. In addition, the CBC serves as the venue for training courses for officials from foreign and Japanese governments and local government officials held several times a year.	37.5	International Nuclear Energy Cooperation Division, Disarmament, Non-proliferation and Science Department, MOFA

Ministry/ Agency	Project	Partner/ Target Country (Target Institution)	Description	Budget for FY2019 (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	28 countries and regions of the Asia Pacific Region/ 16 international organizations	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 28 countries and regions, 95 institutions, and 16 international institutions (as of February 2020).	Included in JAXA Management Expenses Grant	Office for Space Utilization Promotion, Space Development and Utilization Division, Research and Development Bureau, MEXT
	Science and Technology Research Partnership for Sustainable Development (SATREPS)	Developing Countries and Others Targeted for ODA Technical Cooperation	Through Japanese leading science and technology and Official Development Assistance (ODA), SATREPS has been set up in order to promote joint international research on solutions to global issues that occur in developing countries, including DRR.	Included in JST Management Expenses Grant	International Science and Technology Affairs Division, Science and Technology Policy Bureau, MEXT
Ministry of Land, Infrastructure Transport and Tourism (MLIT)	Disaster Management Collaboration Dialogues	Vietnam, Myanmar, Indonesia, Turkey,	Since 2013, workshops have been held to match Japanese technologies for DRR/DRM with disaster management issues of other countries.	32	River Planning Division, Water and Disaster Management Bureau, MLIT / Overseas Projects Division, Policy Bureau, MLIT
	Initiatives on Tsunami Preparedness in Partnership with Chile	Chile	On the assumption that a tsunami caused by an earthquake in Chile propagated the Pacific Ocean, communication drills, etc. were conducted with Chile (Date of Drill: October 31, 2019)	—	Risk Management Office, Coastal Administration and Disaster Management Division, Ports and Harbors Bureau, MLIT
	Raising Awareness of World Tsunami Awareness Day (Hamaguchi Award)	All relevant countries	Taking advantage of the opportunity presented by the establishment of World Tsunami Awareness Day, Japan founded the Hamaguchi Award (presented by the Minister of Land, Infrastructure and Transport and Tourism) in FY2016 for individuals and/or organizations within Japan or overseas that have made significant contributions in the field of technologies for coastal disaster risk reduction, especially tsunami preparedness. At the award ceremony held on October 29, 2019, Professor Tomoya Shibayama of Waseda University/Professor Emeritus of Yokohama National University and Professor Ahmet Cevdet Yalciner of Middle East Technical University (Turkey) received the prize.	—	Port and Airport Research Institute, National Institute of Maritime, Port and Aviation Technology
	US-Japan Natural Resources Panel on Earthquake Research (UJNR)	US	With a view to contributing to the establishment of earthquake disaster reduction technologies, researchers from public seismic research institutions in Japan and the U.S. met to present the latest research outcomes and exchange opinions. The event was held in Kumamoto Prefecture in 2020 (the event will be held every two years in Japan and the U.S. alternately).	—	Research Management Division, Geography and Crustal Dynamics Research Center, Geospatial Information Authority of Japan, MLIT
	International Centre for Water Hazard and Risk Management (ICHARM)	UNESCO, etc.	As a UNESCO Category 2 Center, Water Hazard and Risk Management (ICHARM) actively undertook research, training, and information networking activities aimed at mitigating damage due to water hazards worldwide. Specifically, it developed the Rainfall-Runoff-Inundation model (WEB-RRI model), and put them into practice in the field; conducted research and development on risk management; and offered master's and doctoral courses in disaster mitigation studies. In addition, it undertook technical assistance and international support initiatives funded by organizations including UNESCO and the World Bank.	—	Public Works Research Institute
	Discussion with India on DRR Technology Through a Bilateral Conference	Ministry of Road Transport and Highways in India	In accordance with the cooperation framework concluded in September 2014, the 6th meeting of the Japan–India Joint Working Group on Roads and Road Transport was held in Tokyo. At the meeting, the Japanese side presented slope protection measures and the disaster recovery measures implemented in FY2018.	—	International Affairs Office, Planning Division, Road Bureau, MLIT

Ministry/ Agency	Project	Partner/ Target Country (Target Institution)	Description	Budget for FY2019 (in JPY million; if applicable)	Department Responsible
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 to facilitate harmonious development of meteorological services around the world), sends experts to international conferences and is responsible for international centers.	—	Office of Disaster Mitigation, Planning Division, Administration Department, JMA
	International Cooperation through UNESCO	UNESCO member countries, etc.	Under the framework of the UNESCO Intergovernmental Oceanographic Commission (IOC), the JMA collects, analyzes, and provides data on oceans and maritime meteorology for the northeast Asian region. It also provides information on tsunamis caused by earthquakes that occur in the northwest Pacific region.	—	Office of Disaster Mitigation, Planning Division, Administration Department, JMA
	International Cooperation through International Civil Aviation Organization (ICAO)	ICAO member countries	The JMA participates in meetings 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, 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 Mitigation, 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 conducts training for developing countries to improve their meteorological services. Also, in response to requests from developing countries, the JMA dispatches expert staff and accepts trainees from national meteorological institutions.	—	Office of Disaster Mitigation, Planning Division, Administration Department, JMA
Japan Coast Guard (JCG)	Participation in the projects of the Northwest Pacific Action Plan (NOWPAP) Marine Environmental Emergency Preparedness and Response Regional Activity Centre (MERRAC)	Republic of Korea, China, Russia	The JCG participates in the projects of the NOWPAP MERRAC, which is a center responsible for preparing for and responding to marine environmental emergencies. As well as undertaking a marine environmental conservation initiative focused on the Sea of Japan and the Yellow Sea, etc. in partnership with neighboring countries, the JCG takes part in joint oil spill cleanup drills organized by relevant organizations and attends meetings held each year. Through these activities, it promotes international cooperation by striving to build systems that will enable relevant countries to work together in the event of an accident.	2.1	Protection of Marine Environment Division, Guard & Rescue Department, JCG
Ministry of Defense (MOD)	HA/DR Multinational Exercise (Equator 19) Hosted by the French Armed Forces in New Caledonia	France, Australia, Canada, Fiji, Indonesia, New Zealand, Papua New Guinea, Solomon Islands, Tonga, United Kingdom, United States, Vanuatu	A multilateral joint training hosted by the French Armed Forces in New Caledonia Navy. Japan joined the drills related to disaster relief and humanitarian aid activities.	—	Training Division, Bureau of Defense Policy, MOD
	US-Philippines Joint Training Exercise (Kamandag 2019)	US, Philippines	A joint training hosted by the U.S. and the Philippines. Japan joined the drills related to humanitarian aid and disaster relief activities as part of international disaster relief activities.	—	Training Division, Bureau of Defense Policy, MOD
	Training for Humanitarian Assistance and Disaster Relief in the Federated States of Micronesia and other Countries (Christmas Drop)	USA, Australia, New Zealand	A joint training among Japan, the U.S., and Australia. The drills related to humanitarian aid and disaster relief activities were implemented.	—	Training Division, Bureau of Defense Policy, MOD
	Exercise Cobra Gold 2020	Thailand, US, Indonesia, Singapore, Malaysia, Republic of Korea, Malaysia, India, China	A multilateral joint training hosted by the U.S. and Thailand. Japan joined the drills related to humanitarian aid and civilian assistance activities.	—	Training Division, Bureau of Defense Policy, MOD
	Japan-U.S.-Australia Joint Training and Japan-U.S.-Australia Humanitarian Assistance and Disaster Relief Joint Training at Cope North 20	US, Australia	A joint training among Japan, the U.S., and Australia. Japan conducted the drills related to humanitarian aid and disaster relief activities.	—	Training Division, Bureau of Defense Policy, MOD

Source: Formulated by the Cabinet Office based on materials from various ministries and agencies.

Fig. A-55 Technical Cooperation Projects in Disaster Risk Reduction (FY2019)

Country	Cooperation Period	Project Name	Description
Indonesia	2013-2019	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	2019-2023	Earthquake and Tsunami Observation and Information Dissemination Capacity Improvement Project	In Indonesia, where earthquakes and tsunamis frequently occur, the project aims at disseminating timely and accurate seismic information and tsunami warnings to disaster management agencies and residents by enhancing a series of capacities of Badan Meteorologi, Klimatologi, dan Geofisika (BMKG)(Indonesian Agency for Meteorology, Climatology and Geophysics) from observing earthquake and tsunami to information dissemination.
Philippines	2016-2019	Project for Strengthening Capacity of Integrated Data Management of Flood Forecasting and Warning	This project aims to enhance the capacity of PAGASA (Philippine Atmospheric, Geophysical and Astronomical Service Administration) on integrated data management and utilization for river flood forecasting and warning. The project gives focus on the operation in Cagayan de Oro/Tagoloan River Flood Forecasting and Waning Center.
Philippines	2017-2021	Development of an Extreme Weather Observation and Information Sharing System (SATREPS)	This includes establishing a lightning, weather and 3D cloud structure monitoring system, developing technologies for short-term weather forecasts of extreme weather and the intensity of cyclones in Metropolitan Manila using an extrapolation method and developing software to distribute information to disaster management organizations.
Philippines	2018-2020	Project for Developing a Flood Control Master Plan for Davao	This project aims to support the preparation of a comprehensive flood control master plan for three river basins (Davao river, Matina river, Talomo river) in Davao city and carry out feasibility studies on priority plans.
Thailand	2016-2019	Project for Strengthening the ASEAN Regional Capacity on Disaster Health Management (ARCH Project)	Thailand's National Institute for Emergency Medicine (NIEM) serves as the implementing agency for this project, which aims to strengthen collaborative frameworks for disaster health management in the ASEAN region through collaborative intraregional disaster health management drills, the development of collaboration tools, and training courses, thereby enhancing disaster response capabilities within the region. ASEAN has endorsed this project as an official ASEAN project.
Thailand	2018-2022	The project on regional resilience enhancement through establishment of Area-BCM at industry complexes in Thailand	This project aims to establish a method to introduce and use Area-BCM in clusters in Thailand through the development of a method to analyze and assess flood risks, development of a method for business impact analysis concerning natural disasters, establishment of systems to manage Area-BCM in specific clusters, and development of training programs for the domestic and international introduction of Area-BCM.
Vietnam	2018-2021	The project for strengthening capacity in weather forecasting and flood early warning system	This project aims to provide disaster management institutions and residents with more accurate meteorological information in a prompt manner by improving maintenance, inspection, and calibration skills for meteorological observation equipment, improving abilities to analyze data obtained from two weather radars introduced under the Grand Aid program and quality control skills, improving monitoring and forecasting skills concerning heavy rains and typhoons, and improving communication skills.
Myanmar	2015-2020	Project for Development of a Comprehensive Disaster Resilience System and Collaboration Platform in Myanmar (SATREPS)	Yangon Technological University, which falls under the jurisdiction of Myanmar's Ministry of Education, is planning to develop and build a scenario analysis system that forecasts changes in disaster vulnerability as needed, and an integrated disaster response system based on this to enhance disaster resilience. In addition, it is planning to establish an industry-academia-government collaborative platform to disseminate these systems in governmental organizations and industry. Japan will provide support for R&D of these systems, human resource development required for this R&D, and the establishment of a platform, thereby helping to enhance disaster resilience in Myanmar.
Myanmar	2019-2022	Project for Enhancing Capacity of Weather Observation and Forecasting in Myanmar	This program aims to improve the Myanmar Department of Meteorology and Hydrology's capacity for the maintenance of meteorological observation equipment and weather data analysis and processing skills. By ensuring more effective forecasting, Myanmar aims to reduce damage from disasters. This program is intended to create a synergy effect with support related to meteorological observation equipment, such as the introduction of three weather radars under the Grand Aid program.
Mongolia	2016-2019	Project for Strengthening the National Capacity of Earthquake Disaster Protection and Prevention in Mongolia	This project seeks to strengthen capacity at the Mongolian national government's disaster prevention body (National Emergency Management Agency: NEMA) by strengthening preventive measures in respect of earthquake-related disaster preparedness. In addition to increasing NEMA's capacity to formulate its own disaster prevention plans, this project will improve NEMA's capacity through the engagement in the initiatives such as the formulation and updating of disaster prevention plans by regional governments and earthquake-resistant construction and disaster preparedness education by other ministries and agencies.
Kyrgyz	2016-2019	Project for Capacity Development for Road Disaster Prevention Management	This road disaster prevention project involving Kyrgyzstan's Ministry of Transport and Roads seeks to (1) summarize the roles of relevant departments; (2) improve road disaster prevention inspection and analysis capabilities; (3) build and operate a road disaster prevention database management system; and (4) promote cooperation in improving capabilities in the area of preparing road disaster prevention management plans. Through this, it aims to develop capacity for road disaster prevention management within the Ministry of Transport and Roads, and thereby increase the safety of road traffic against slope or snow disasters in the area under the jurisdiction of the road maintenance management office targeted by the project.
Turkmenistan	2017-2020	Project for Improvement of the Earthquake Monitoring System in and around the Ashgabat City	The purpose of this project is to improve the capacity of the nation in earthquake observation and earthquake hazard assessment of earthquake risk using earthquake observation data and the result of earthquake hazard assessment and formulate earthquake disaster management plans by developing an earthquake observation and strong motion observation system to establish a system for early decision-making on seismic intensity, epicenter and earthquake size and prediction of seismic intensity in pilot districts of the Ashgabat Area.
Armenia	2019-2021	The Project for the Improvement of Crisis Communication and Public Awareness for Disaster Risk Reduction	This program aims to improve the crisis communication capabilities of the Ministry of Emergency Situations (Armenia) and domestic media by developing crisis communication guidelines, conducting drills based on the guidelines, developing training materials and plans, and conducting training, with a view to ensuring accurate and timely emergency communication.

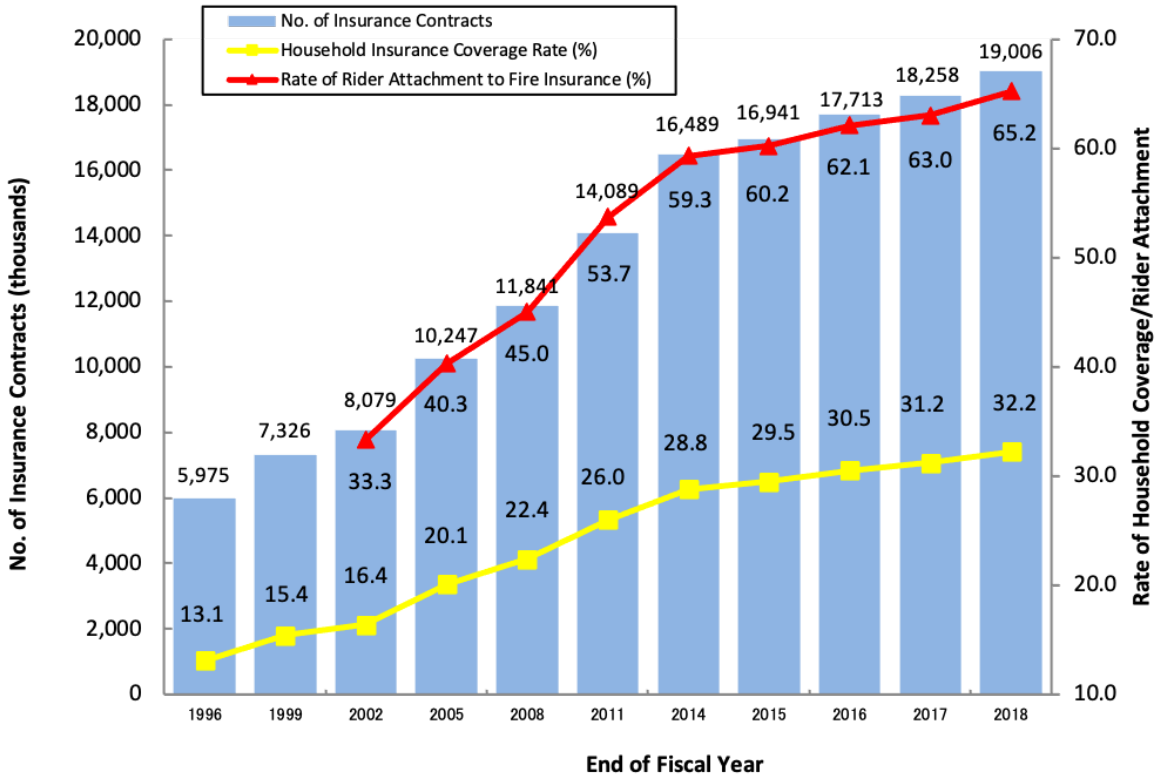
Country	Cooperation Period	Project Name	Description
Bangladesh	2014-2018	Research Project on Disaster Prevention/Mitigation Measures against Floods and Storm Surges (SATREPS)	This project proposes prevention and mitigation measures for storm surge and flood damage including the creation of flood risk 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.
Bangladesh	2015-2021	Building Safety Promotion Project for Disaster Risk Reduction (BSPP)	Primarily targeting staff at the Public Works Department under the Ministry of Housing and Public Works, this project seeks to increase the safety of buildings in Bangladesh and reduce the risk of disaster in urban areas by supporting efforts to strengthen human resource development systems aimed at increasing building safety and making use of manuals to enhance the capability of the staff for evaluating seismic capacity, undertaking seismic design and supervising construction at the end of the project.
Bangladesh	2016-2021	Technical Development to Upgrade Structural Integrity of Buildings in Densely Populated Urban Areas and its Strategic Implementation towards Resilient Cities (SATREPS)	Focusing on buildings in Dhaka that are primarily built from reinforced concrete, this project involves research into diagnostic techniques and reinforcement methods suitable to local components and structural styles, and the presentation of recommendations for strategies for applying them. Through this, it aims to increase the structural resilience of buildings, and encourage technology development and its effective implementation, thereby contributing to reducing the structural vulnerability of buildings in Bangladesh, and increasing safety against urban earthquakes.
Bangladesh	2020-2024 (plans)	Project for Strengthening Abilities to Formulate and Conduct Local Disaster Plans	The project provides support to formulate local disaster management plans for weather-related disasters in two Upazilas of Cox's Bazar, Shunamganj and Kurigram Districts as pilot activity sites and obtains budget for the implementation of the planned projects, and develops local management plans throughout the country to strengthen the implemented system.
Nepal	2016-2021	The project for Integrated Research on Great Earthquakes and Disaster Mitigation in Nepal Himalaya (SATREPS)	The goal of this project is to strengthen remote monitoring systems and develop human resources in the earthquake field by estimating future earthquakes that could occur in the Himalayan seismic gap, thoroughly examining the ground properties of the Kathmandu basin, and enhancing the seismographic network.
Pakistan	2016-2021	Project for Capacity Development of Disaster Management	Via the National Institute of Disaster Management (NIDM), an NDMA training institution established in 2007 to develop capacity at the National Disaster Management Authority (NDMA), this project will support efforts to strengthen human resource development implementation systems in the field of disaster management and contribute to increasing the knowledge concerning disaster management held by personnel belonging to the country's disaster management administration bodies.
Sri Lanka	2014-2018	Technical Cooperation for Landslide Mitigation Project	This 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, design and construction supervision and monitoring, and accumulation of knowledge and know-how on sediment disasters mitigation measures.
Sri Lanka	2018-2021	Project for capacity strengthening regarding non-structural measures for landslide risk reduction	This program aims to improve Sri Lanka's capabilities concerning intangible measures by establishing an early sediment disaster alert system using risk assessment, and introducing the concept of land use planning.
Sri Lanka	2020-2024 (plans)	Project to Promote the Mainstreaming Disaster Risk Reduction through the Development of Local Disaster Management Plans Based on Watershed Strategies	The project will support the development of a system to promote the mainstreaming of disaster risk management (DRM) in Sri Lanka through the development of local disaster management plans and improvement of items on the introduction of a disaster risk management perspective in the applications for the projects of the central government agencies in the Kelani River Basin, including Colombo City, a major city in Sri Lanka, as a pilot area.
Sri Lanka	2018-2020	Project for Storm Water Drainage Plan in selected areas in Colombo Metropolitan Region	This project aims to plan urban drainage and inland flood control measures in Colombo and its surrounding areas, while also selecting priority programs and conducting investigations.
Fiji	2014-2018	Project to Promote Mainstreaming of Disaster Risk Reduction	The project aims to strengthen the capacities of the National Disaster Management. Office (NDMO) to implement and facilitate disaster risk management activities through the improvement of hazard evaluation abilities, the formulation and dissemination of the local disaster management, and the development of a system to implement and facilitate disaster management projects of the central government in Fiji, which is highly susceptible to natural disasters.
Vanuatu	2018-2021	Project for Enhancing the Capacity of Issuing Earthquake, Tsunami and Storm Surge Information	This project aims to develop a system for the timely and accurate communication of earthquake, tsunami, and storm surge information from the Vanuatu Meteorology and Geohazards Department and the National Disaster Management Office (NDMO) to relevant institutions and residents, by strengthening earthquake and tide monitoring networks (including the observation networks developed under the Grand Aid program), improving data analysis capabilities, and enhancing disaster information communication and alert issuing capabilities.
Central America	2015-2020	Project on Capacity Development for Disaster Risk Management in Central America, Phase 2	The Project on Capacity Development for Disaster Risk Management in Central America was conducted to build disaster-resilient societies by improving the disaster risk reduction capabilities of six countries in Central America (El Salvador, Honduras, Guatemala, Nicaragua, Costa Rica, and Panama), which face similar risks in terms of natural disasters, including earthquakes, floods, and volcanic disasters. Based on the results of that project, Phase 2 supports the strengthening of capacity among administrative organizations with a view to nationwide rollout, and the strengthening of frameworks for sustained efforts to popularize systematic community disaster preparedness, as well as supporting the construction of frameworks for sharing each country's experiences with others in Central America, with the aim of developing disaster risk management capacity throughout the region.
Mexico	2016-2021	Hazard Assessment of Large Earthquakes and Tsunamis in the Mexican Pacific Coast for Disaster Mitigation (SATREPS)	In collaboration with a Mexican research institute, this project involves installing measuring instruments on the earth's surface and sea floor in the coastal region of Guerrero state in southern Mexico, and gathering and analyzing earthquake data. This will be used to develop scenarios for major earthquake and tsunami disasters that could occur in future and to prepare a hazard map and evacuation signs. In addition, the project will develop and disseminate a disaster mitigation education program that takes local sociocultural attributes into account.

Country	Cooperation Period	Project Name	Description
Nicaragua	2016-2019	Project for Strengthening of Capacity of the Central American Tsunami Advisory Center (CATAC)	Focusing on the Instituto Nicaraguense de Estudios Territoriales (INETER) (Nicaraguan Institute of Territorial Studies) which implemented a 24-hour earthquake and tsunami monitoring system for the first time in the Central America and the Central American Tsunami Advisory Center (CATAC) in Nicaragua, the goal of this project is to improve the quantitative tsunami forecasting capabilities required for CATAC's tsunami advisory information so that the information can be used in the tsunami warnings of Central American countries. It will involve increasing CATAC's ability to analyze earthquake parameters and forecast tsunami using observation data from Central American countries; putting in place facilities and infrastructure for conducting human resource development in Central American countries; and conducting human resource development among core personnel. This has been implemented.
Honduras	2018-2022	Project for Control and Mitigation of Landslide in Tegucigalpa Metropolitan Area	This project aims to improve landslide management capabilities by strengthening the following skills: (1) detailed investigation and analysis to understand landslide phenomenon; (2) design, construction, construction management, and maintenance skills concerning small and medium-scale landslide control measure; (3) formulation of landslide hazard maps and risk maps; and (4) land use regulation related to landslide disasters.
Chile	2014-2019	Disaster Risk Reduction Training Program for Latin America and the Caribbean	With a view to contributing to the improvement of disaster risk reduction measures in Latin America and the Caribbean, this project will support the development of mechanisms to establish Chile as a base for human resource development in the field of disaster risk reduction. These mechanisms will cover such matters as cooperation policy, budget planning, needs surveys in countries receiving assistance, the coordination and investment of cooperation resources appropriate to those needs, and capacity building for implementation of each training course, etc.
Chile	2018-2021	Institutional Strengthening of ONEMI for Capacity Development in Disaster Risk Reduction Project	Under the Sendai Framework for Disaster Risk Reduction, this project aims to contribute to disaster prevention measures taken by ONEMI (Chile's national disaster control institution) by improving capabilities required for the promotion of disaster prevention and reduction measures, development of a disaster knowledge management system, and formulation of regional disaster management plans and developing disaster-prevention human resources.
Colombia	2015-2020	Project for Application of State of the Art Technologies to Strengthen Research and Response to Seismic, Volcanic and Tsunami Events, and Enhance Risk Management (SATREPS)	Colombia experiences frequent disasters due to earthquakes, tsunami, and volcanic eruptions. This project involves promoting partnerships between research institutes and relevant disaster management organizations, along with research and practical activities aimed at strengthening measures to mitigate the damage due to disaster through capacity building in such areas as earthquake, tsunami, and volcanic activity monitoring, modeling, damage forecasting, and the transmission of information. In addition, it will contribute to advances in disaster research in South America through collaboration with neighboring countries.
Ecuador	2017-2021	Project for Safe and Resilient Cities for Earthquake and Tsunami Disaster	Initiatives for developing "disaster resilient cities" will be deployed nationwide to mitigate damage caused by earthquakes and tsunamis by formulating tsunami evacuation plans, updating the disaster management agenda and strengthening the operational structure of building system in three pilot cities (Atacames, Portoviejo and Salinas).
Mauritius	2019-2022	Project for Enhancing Meteorological Observation, Weather Forecasting and Warning Capabilities	This project aims to ensure the timely provision of accurate meteorological information to Mauritian disaster management institutions and residents through technological cooperation aimed at improving the Mauritius Meteorological Services' forecasting and alert issuing capabilities, while also utilizing weather radars introduced under the Grand Aid program.
Philippines	2019-2024	Disaster Risk Reduction and Management Capacity Enhancement Project Phase 2	This project supports the planning, implementation and monitoring of disaster prevention measures to reduce human and economic damages caused by natural disasters with technical support of the national disaster management system in the regional and local governments (provinces, cities and towns).
Bhutan	2019-2022 (plans)	Project on Strengthening Weather Observation, Forecasting and Flood Warning Capacities for Disaster Preparedness and Responses in the Thimphu and Paro River Basins	This project will enhance the capacities of the National Centre for Hydrology and Meteorology (NCHM) for weather observation and forecasting, and flood risk assessment, forecasting and warning in the Thimphu and the Paro River basins as well as strengthen the capacities of the Department of Disaster Management (DDM) and the provinces and cities in the basins for preparedness of and respond to flood disasters.

Source: Japan International Cooperation Agency (JICA)

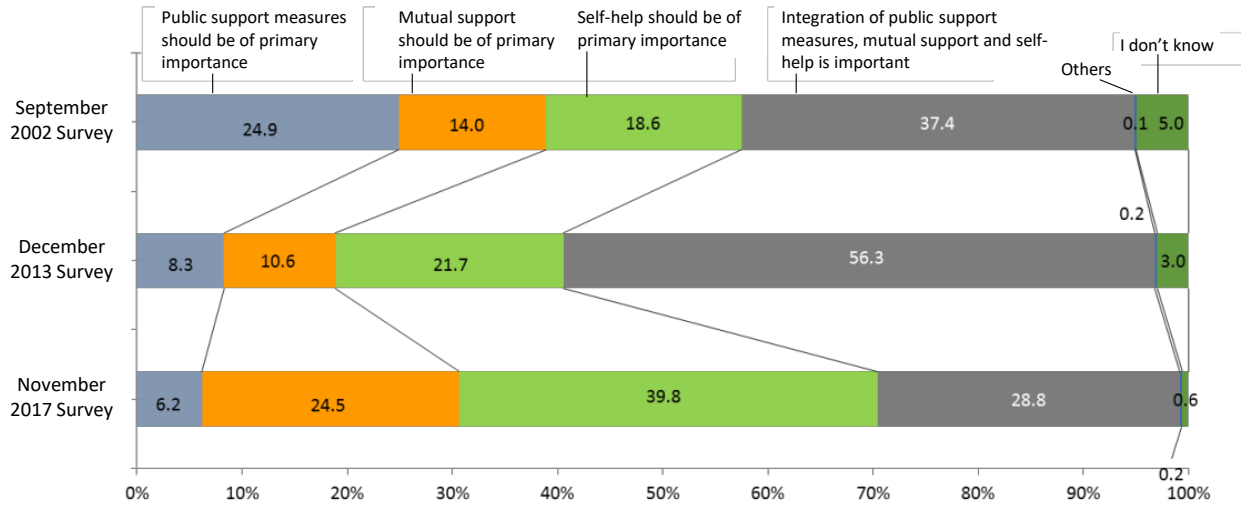
10. Others

Fig. A-56 Number of Earthquake Insurance Contracts



Source: Formulated by the Cabinet Office based on materials from the General Insurance Rating Organization of Japan

Fig. A-57 Awareness of Self-Help, Mutual Support, and Public Support Measures



Source: Formulated by Cabinet Office on basis of "Public Opinion Poll regarding Disaster Risk Reduction" conducted by the Public Relations Office, Cabinet Office

Fig. A-58 Tables Explaining the Japan Meteorological Agency Seismic Intensity Scale

Notes:

(1) As a rule, seismic intensities announced by JMA are values observed using seismic intensity meters installed on the ground or on the first floor of low-rise buildings. This document describes the phenomena and damage that may be observed for individual seismic intensity levels. Seismic intensities are not determined from the observed phenomena described here.

(2) Seismic ground motion is significantly influenced by underground conditions and topography. Seismic intensity is the value observed at a site where a seismic intensity meter is installed, and may vary even within the same city. In addition, the amplitude of seismic motion generally differs by floor and location within the same building, as shaking on upper floors of middle-to-high-rise buildings may be considerably amplified.

(3) Sites with the same level of seismic intensity will not necessarily suffer the same degree of damage, as the effect of tremors depends on the nature of the seismic motion (such as amplitude, period and duration), the type of construction and underground conditions.

(4) This document describes typical phenomena that may be seen at individual seismic intensity levels. In some cases, the level of damage may be greater or less than specified. Not all phenomena described for each intensity level may necessarily occur.

(5) The information outlined here is made by experiences of recent earthquake disasters and regularly checked at intervals of about five years. This information will be updated in line with actual phenomena observed in new cases or improvements in the earthquake resistance of buildings and structures.

(6) In the case that the extent of damage cannot be 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 seismic intensity meters.

●Human perception and reaction, indoor situation, outdoor situation

Seismic intensity	Human perception and reaction	Indoor situation	Outdoor situation
0	Imperceptible to people, but recorded by seismometers.	—	—
1	Felt slightly by some people keeping quiet in buildings.	—	—
2	Felt by many people keeping quiet in buildings. Some people may be awoken.	Hanging objects such as lamps swing slightly.	—
3	Felt by most people in buildings. Felt by some people walking. Many people are awoken.	Dishes in cupboards may rattle.	Electric wires swing slightly.
4	Most people are startled. Felt by most people walking. Most people are awoken.	Hanging objects such as lamps swing significantly, and dishes in cupboards rattle. Unstable ornaments may fall.	Electric wires swing significantly. Those driving vehicles may notice the tremor.
5 Lower	Many people are frightened and feel the need to hold onto something stable.	Hanging objects such as lamps swing violently. Dishes in cupboards and items on bookshelves may fall. Many unstable ornaments fall. Unsecured furniture may move, and unstable furniture may topple over.	In some cases, windows may break and fall. People notice electricity poles moving. Roads may sustain damaged.
5 Upper	Many people find it hard to move; walking is difficult without holding onto something stable.	Dishes in cupboards and items on bookshelves are more likely to fall. TVs may fall from their stands, and unsecured furniture may topple over.	Windows may break and fall, unreinforced concrete-block walls may collapse, poorly installed vending machines may topple over, automobiles may stop due to the difficulty of continued movement.
6 Lower	It is difficult to remain standing.	Many unsecured furniture moves and may topple over. Doors may become wedged shut.	Wall tiles and windows may sustain damage and fall.
6 Upper	It is impossible to remain standing or move without crawling. People may be thrown through the air.	Most unsecured furniture moves, and is more likely to topple over.	Wall tiles and windows are more likely to break and fall. Most unreinforced concrete-block walls collapse.
7		Most unsecured furniture moves and topples over, or may even be thrown through the air.	Wall tiles and windows are even more likely to break and fall. Reinforced concrete-block walls may collapse.

●Wooden houses

Seismic intensity	Wooden houses	
	High earthquake resistance	Low earthquake resistance
5 Lower	—	Slight cracks may form in walls.
5 Upper	—	Cracks may form in walls.
6 Lower	Slight cracks may form in walls.	Cracks are more likely to form in walls. Large cracks may form in walls. Tiles may fall, and buildings may lean or collapse.
6 Upper	Crazing or cracks may be seen in walls.	Large cracks are more likely to form in walls. Buildings are more likely to lean or collapse.
7	Cracks are more likely to form in walls. Buildings may lean in some cases.	Buildings are even more likely to lean or collapse.

Notes:

(1) Wooden houses are classified into two categories according to their earthquake resistance, which tends to be higher for newer foundations. Earthquake resistance tends to be low for structures built up to 1981, and high for those built since 1982. However, to maintain a certain range of earthquake resistance according to differences in structure and wall arrangement, resistance is not necessarily determined only by foundation age. The earthquake resistance of existing buildings can be ascertained through quakeproofing diagnosis.

(2) The walls in this table are assumed to be made of mud and/or mortar. Mortar in a wall with a weak base can easily break off and fall, even under conditions of low deformation.

(3) Damage to wooden houses depends on the period and duration of seismic waves. In some cases (such as the Iwate-Miyagi Nairiku Earthquake of 2008), few buildings sustain damage in relation to the level of seismic intensity observed.

●Reinforced-concrete buildings

Seismic intensity	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 are more likely to form in walls, crossbeams and pillars.
6 Upper	Cracks are more likely to form in walls, crossbeams and pillars.	Slippage and X-shaped cracks may be seen in walls, crossbeams and pillars. Pillars at ground level or intermediate floors may disintegrate, and buildings may collapse.
7	Cracks are even more likely to form in walls, crossbeams and pillars. Ground level or intermediate floors may sustain significant damage. Buildings may lean in some cases.	Slippage and X-shaped cracks are more likely to be seen in walls, crossbeams and pillars. Pillars at ground level or on intermediate floors crumble are more likely to disintegrate, and buildings are more likely to collapse.

Notes:

(1) Earthquake resistance tends to be higher for newer foundations. The value tends to be low for structures built up to 1981, and high for those built since 1982. However, to maintain a certain range of earthquake resistance according to differences in structure and 2D/3D arrangement of reinforced walls, resistance is not necessarily determined only by foundation age. The earthquake resistance of existing buildings can be ascertained through quakeproofing diagnosis.

(2) Slight cracks may form in reinforced-concrete buildings without their core structure being affected.

●Situation of ground and slopes, etc.

Seismic intensity	Situation of ground	Situation of slopes, etc.
5 Lower	Small cracks*1 may form and liquefaction*2 may occur.	Rock falls and landslips may occur.
5 Upper		
6 Lower	Cracks may form.	Landslips and landslides may occur.
6 Upper	Large cracks may form.	Landslips are more likely to occur; large landslides and massif collapses may be seen.*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 Liquefaction may be seen in areas with a high groundwater level and loose sand deposits. Damage observed as a result of liquefaction includes spouts of muddy water from the ground, outbreaks of subsidence in riverbanks and quays, elevation of sewage pipes and manholes, and leaning or destruction of building foundations.

*3 When large landslides and massif collapse occurs, dams may form depending on geographical features, and debris flow may occur due to the large quantities of sediment produced.

●Influence on utilities and infrastructure, etc.

Suspension of gas supply	In the event of shaking with a seismic intensity of about 5 Lower or more, gas meters with safety devices are tripped, stopping the supply of gas. In the event of stronger shaking, the gas may stop for entire local blocks.*
Suspension of water supply, electrical blackouts	Suspension of water supply and electrical blackouts may occur in regions experiencing shaking with a seismic intensity of about 5 Lower or more.*
Suspension of railroad services, regulation of highways, etc.	In the event of shaking with a seismic intensity of about 4 or more, services on railroads or highways may be stopped for safety confirmation. Speed control and traffic regulations are performed according the judgment of the relevant bodies. (Standards for safety confirmation differ by organization and area).
Disruption to lines of communication such as telephones	In the event of an earthquake, communication network congestion may occur due to increased calls related to safety confirmation and inquiries around regions experiencing strong shaking. To combat this, telecommunications providers offer Disaster Emergency Message Dial and Message Board services if a disaster such as an earthquake with a seismic intensity of about 6 Lower or greater occurs.
Suspension of elevator service	In the event of shaking with a seismic intensity of about 5 Lower or more, elevators with earthquake control devices will stop automatically for safety reasons. Resumption of service may be delayed until safety is confirmed.

*In the event of shaking with a seismic intensity of 6 Upper or more, gas, water, and electric supplies may stop over wide areas.

●Effect on large-scale structures

Shaking of skyscrapers from long-period ground motion*	Due to their longer characteristic period, skyscrapers react less to earthquakes than general reinforced-concrete buildings, which have a shorter characteristic period. However, they exhibit slow shaking over a long time in response to long-period ground motion. If motion is strong, poorly fixed office appliances may move significantly, and people may have to hold onto stable objects to maintain their position.
Sloshing of oil tanks	Sloshing of oil tanks occurs in response to long-period ground motion. As a result, oil outflows or fires may occur.
Damage or collapse of ceilings etc. at institutions covering large spaces	In institutions covering large spaces such as gymnasiums or indoor pools, ceilings may shake significantly and sustain damage or collapse, even in cases where ground motion is not severe enough to cause other structural damage.

*Occasionally, when a large earthquake occurs, long-period seismic waves reach locations far from the hypocenter; such waves may be amplified over plains depending on the characteristic period of the ground, thus extending their duration.

Source: Japan Meteorological Agency

Fig. A-59 Emergency Warning Issuance Criteria

■Criteria for Meteorological Emergency Warnings

<table>
<tr><th>Phenomenon</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 similar.
Or:
Heavy rainfall is predicted in association with a typhoon expected to have a level of intensity observed only once every few decades or an extratropical cyclone with comparable intensity.</td></tr>
<tr><td>Storm</td><td>A storm is predicted…</td><td rowspan="3">…in association with a typhoon expected to have a level of intensity observed only once every few decades or an extratropical cyclone with comparable intensity.</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 extratropical cyclone expected to have a level of intensity observed only once every few decades.</td></tr>
<tr><td>Heavy snow</td><td colspan="2">Heavy snowfall with a level of intensity observed only once every few decades is predicted.</td></tr>
</table>

■Emergency Warning Criteria for Tsunami, Volcanic eruptions, and Earthquake

Phenomenon	Criteria
Tsunami	Tsunami height is expected to be greater than 3 meters. (Major Tsunami Warnings are issued in the classification of Emergency Warnings.)
Volcanic eruption	Eruption or possibility of eruption that may cause serious damage in residential areas and non-residential areas nearer the crater. (Volcanic Warning (Level 4 and 5) and Volcanic Warning (residential areas)* are issued in the classification of Emergency Warnings.)
Earthquake	Seismic intensity of 6-lower or more is expected. (Earthquake Early Warnings incorporating prediction of tremors measuring 6-lower or more on JMA's seismic intensity scale are issued in the classification of Emergency Warnings.)

Source: Japan Meteorological Agency

Fig. A-60 Evacuation Information Using Five Warning Levels of Warning (Flood and Landslide Disasters)

Check the key evacuation information and evacuate during a typhoon and/or heavy rain

Check during emergencies

Key evacuation information

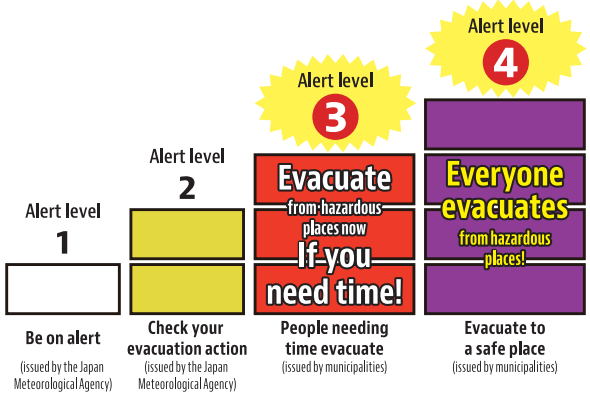
! ▪▪▪▪▪ Make sure to check this ▪▪▪▪▪ !

Evacuation information issued by municipalities (alert levels)

Evacuate means to escape danger, in other words, to ensure your safety.
If you are in a safe place, you do not need to evacuate.

If you are in a hazardous place, at alert level 3 <the elderly and people with special needs evacuate>, and at alert level 4 <everyone evacuates*1>

*1 Alert level 4 <everyone evacuates> is when everyone, not just the elderly and people with special needs, evacuates from hazardous places.



Alert level 4 is an evacuation *advisory* to evacuate from hazardous places.

The alert levels are separated into five levels to inform residents of the action they should take in preparation for a water or landslide, so this information is issued by municipalities together with evacuation information.

Alert level 5 means that a disaster is already occurring.

- If a alert level 5 is issued and you have not yet evacuated, take the best action you can to protect your life, such as moving to a safer location in your home, or moving to a safer building if there is one nearby.
- Alert level 5 disaster occurrence information provides information within the scope available when municipalities have been able to get a picture of the disaster. This information is not always issued.

Evacuating outdoors is dangerous during heavy rains.
Please also avoid car travel during heavy rains.

Alert level 4 is an evacuation advisory or evacuation warning (emergency)*2.
In either case, you should always evacuate at alert level 4.

- Alert level 4 evacuation advisories are issued taking into account factors such as the time needed to evacuate and the time of sunset, so it is necessary to evacuate from hazardous places when the advisory is issued.

*2 Alert level 4 evacuation warnings (emergency) are not always issued, and are sometimes issued urgently according to local conditions or to repeatedly urge people to evacuate.

List of Acronyms

ACDR	Asian Conference on Disaster Reduction
ADRC	Asian Disaster Reduction Center
AMCDRR	Asia Ministerial Conference on Disaster Risk Reduction
APEC	Asia-Pacific Economic Cooperation
ASAP	as soon as possible
BCM	Business Continuity Management
BCP	Business Continuity Plan
DOE	Department of Energy
DRR	Disaster Risk Reduction
ECCS	emergency core cooling system
EMWG	Emergency Management Working Group
EPReSC	Emergency Preparedness and Response Standards Committee
ERC	Emergency Response Center
FEMA	Federal Emergency Management Agency
HA/DR	humanitarian assistance and disaster relief
IAEA	International Atomic Energy Agency
ICHARM	International Centre for Water Hazard and Risk Management
ICT	information and communication technology
IRP	International Recovery Platform
ISO	International Organization for Standardization
ISUT	Information Support Team
JANDR	Japan Academic Network for Disaster Reduction
JBP	Japan Bosai Platform
JICA	Japan International Cooperation Agency
JIS	Japanese Industrial Standards
JMA	Japan Meteorological Agency
JVOAD	Japan Voluntary Organizations Active in Disaster
MAFF	Ministry of Agriculture, Forestry and Fisheries
MEXT	Ministry of Education, Culture, Sports, Science and Technology
MHLW	Ministry of Health, Labour and Welfare
MIC	Ministry of Internal Affairs and Communications
MLIT	Ministry of Land, Infrastructure, Transport and Tourism
MOC	Memorandum of Cooperation
NIED	National Research Institute for Earth Science and Disaster Resilience
NPO	Non-Profit Organization
NRA	Nuclear Regulation Authority
NRC	Nuclear Regulatory Commission
OECD/NEA	Nuclear Energy Agency of the Organization for Economic Cooperation and Development
OEIWG	Open-Ended Intergovernmental Expert Working Group
PAZ	Precautionary Action Zone
SCJ	Science Council of Japan
SDF	Self-Defense Forces
SDGs	Sustainable Development Goals
SDMOF	Senior Disaster Management Officials Forum
SFDRR	Sendai Framework for Disaster Risk Reduction 2015-2030
SIP4D	Shared Information Platform for Disaster Management
SMEs	Small and Medium-sized Enterprises
SRSG	Special Representative of the UN Secretary-General
TEC-FORCE	Technical Emergency Control FORCE
TMG	Tokyo Metropolitan Government
UNISDR	United Nations Office for Disaster Risk Reduction
UPZ	Urgent Protective Action Planning Zone
VC	volunteer center

Be prepared for typhoons and heavy rains by checking the evacuation decision flowchart together with a hazard map

Check during normal times

With the mindset of protecting your own life, check the disaster risks at your home and the actions you should take.

Evacuation decision flowchart

What evacuation action should you take? Try it and find out !

Find your home on the hazard map* and mark it.

*Hazard maps show the areas at high risk of flood or landslides in color. Disasters can still occur in areas that are not colored.

Is your home in an area that is colored?

No → Even if the area is not colored, if your home is in an area that is lower than the surrounding land, near a cliff, etc., evacuate as necessary using the evacuation information from your municipality as a guide.

Yes

There is the danger of a disaster, so in principle*, you need to evacuate to somewhere outside your home.

Exception → *Even if there is danger of flooding, it is possible to remain in your home and stay safe if
(1) Your home is outside the zone at high risk of homes being destroyed in a flood
(2) You are in a place higher up than the flood depth
(3) You can wait until the water recedes if there is a flood, and have enough food, water and other supplies.

See explanation on the back

Do you or someone you are with need extra time to evacuate?

No

Yes

Do you have a relative or an acquaintance who lives in a safe place where you can go?

Yes

When a alert level 3 is issued, evacuate to the safe home of the relative or acquaintance (discuss your plans regularly with them)

No

When a alert level 3 is issued, evacuate to the designated emergency evacuation site designated by your municipality

Do you have a relative or an acquaintance who lives in a safe place where you can go?

Yes

When a alert level 4 is issued, evacuate to the safe home of the relative or acquaintance (discuss your plans regularly with them)

No

When a alert level 4 is issued, evacuate to the designated emergency evacuation site designated by your municipality