Research Report on

# Preparedness for Disaster Response in Japan

Asian Disaster Reduction Center Visiting Researcher Program – FY2022

**Submitted by:**

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# 1. Introduction

## 1.1. Background of the Research

Asia-Pacific is the most disaster-prone region in the world. The region accounts 45 percent of the world's natural disasters and more than 75 percent of its population is affected. Different countries - due to their physiographic, climatic, demographic and economic conditions - are vulnerable to a wide range of natural as well as human-induced disasters/emergencies.

Heightened vulnerabilities to disaster risks can be related to increasing population, urbanization, industrialization, development within high-risk zones, environmental degradation, and climate change. A growing number of people and assets are constantly exposed to the aggravated impacts and increased frequency of disasters.

Whenever a disaster strikes, it is a major challenge to deal with the response and relief activities. The response of the first responders eventually relates to the preparedness of various stakeholders involved. It is therefore very important to strengthen the disaster management setup at preparedness and response level.

There are different systems in different countries to respond to the disasters. Disaster response includes all the activities which are taken up after the occurrence of a destructive event or a disaster. Preparedness for disaster response can be undertaken before the disaster happens to reduce impacts. Preparedness for response starts with risk assessment, forecasting, early warning systems, emergency information and communication system, contingency planning, stockpiling of supplies and resources, and training for building emergency response capacity among stakeholders and community. The response further includes specific activities like evacuation procedures, search and rescue, hospital/ medical aid, food and shelter, and logistics.

There are certain problem areas in the response preparedness like inadequate policy direction, lack of coordination, unavailability of real-time information, lack or unclear allocation of resources, and gaps in public awareness and training among disaster managers. However, a well calibrated response mechanism saves lives and strengthens people's ability to reduce the impact of disasters.

### 1.2. Objective of the Research

Japan has a long history of dealing with natural disasters, including earthquakes, tsunamis, typhoons, and volcanic eruptions. This history has influenced Japan's disaster preparedness culture, policies, and infrastructure. Disaster response in Japan is characterized by strong cooperation between the government agencies, such as the Japan Meteorological Agency and the Fire and Disaster Management Agency, as well as the community organizations, including neighborhood associations and volunteer groups. Japan has invested heavily in disaster prevention and mitigation measures, such as building earthquake-resistant structures, developing early warning systems, and conducting regular disaster drills. Despite the extensive preparation, disasters can still occur, and Japan has experienced several major disasters in recent years, including the 2011 Great East Japan Earthquake and Tsunami.

Learning from Japan's experience would widen the scope of understanding and also help in better planning of future initiatives in the field of disaster management

The objective of the research is to study the preparedness for disaster response in Japan in the following context:

a) Institutional setup for disaster management at various levels
b) Forecasting and early warning systems for disasters
c) Response mechanism in the aftermath of a disaster

### 1.3. Significance of the Research

This research is expected to provide a knowledge base for addressing the gaps in preparedness for disaster response with reference to:

a) Understanding and improving the forecasting and early warning systems for disasters
b) Helping to improve the response mechanism in the aftermath of a disaster

It will help other Asian countries to understand the Japanese system of disaster response and help them to improve on their capabilities by learning from it.

## 2. Methodology

### 2.1. Data collection and Analysis

Two main methods of data collection, primary and secondary data collection were used during this research. The Primary data collection was done directly from the source, through lectures, interactions, discussions, open-ended questions, observations, case studies, etc. which is basically qualitative in nature. This was done during the lectures at ADRC, visits of various institutions in Japan and during the conferences attended during this program. The secondary data was obtained through various literature on disaster management in Japan through government reports, academic publications, databases, publications available at ADRC as cited in the references including internet sources.

The data analysis is based on the information obtained through various sources and is basically opinion based. No specific data analysis tool was used during this research.

### 2.2. Study Area

The research topic focuses on the disaster response system in Japan. The study areas relevant to the research topic were selected by ADRC. Visits to the areas were conducted during the research program. Specific lectures were also organised based on the research topic.

### 2.3. Scope and Limitations of the Research

The scope of the research topic is very wide and the availability of data on the same is also huge. Hence, only a limited part of the information has been collected, analysed and presented in this report. There are certain limitations in the report as only specific activities which are directly related to the research topic are covered, leaving other activities which are indirectly connected to the topic.

## 3. Disasters in Japan

### 3.1. Disaster Risk Profile of Japan

Japan is an archipelagic country stretched over 3,000 km (1,900 mi) along the Pacific coast of East Asia. It is surrounded by the Pacific Ocean, the Sea of Okhotsk, the Sea of Japan, and the East China Sea. The territory of Japan comprises four large islands of Hokkaido, Honshu, Shikoku, and Kyushu, and other smaller islands with a total land area of about 378,000 square kilometers. It is a mountainous country, with two-thirds of its territory covered with forests. Most areas have a temperate climate with four distinct seasons, although Okinawa in the south is subtropical, and Hokkaido in the north is subarctic. Therefore, it has great diversity of plant and animal life.

Japan is highly prone to various natural disasters. The most frequent natural hazards are earthquakes, tsunamis, typhoons, volcanic eruptions, floods and landslides. Occasional torrential rains and heavy snows are another challenge for the country.

Japan is located in a very geologically active region known as the Pacific Ring of Fire, which is characterized by frequent earthquakes, volcanic activity, and tsunamis. This is because the country sits at the intersection of four tectonic plates - the Eurasian Plate, North American Plate, Pacific Plate, and Philippine Sea Plate. These plates are constantly moving and interacting with each other, causing seismic activity in the region. The movement of these plates also causes volcanic eruptions, as magma from deep within the Earth is pushed up to the surface. With around 110 active volcanoes, it is one of the most volcanically active countries in the world. In addition to earthquakes and volcanoes, Japan is also prone to tsunamis. These can be triggered by undersea earthquakes, as well as landslides or other disturbances in the ocean.

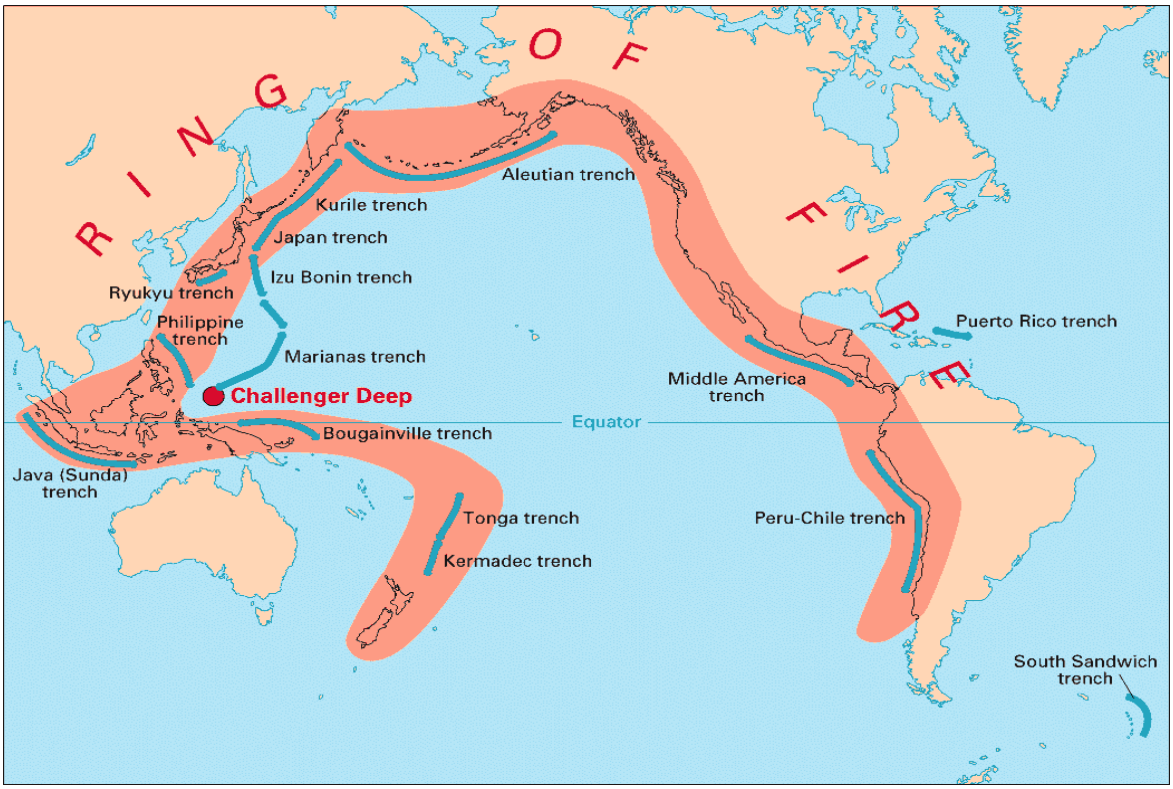
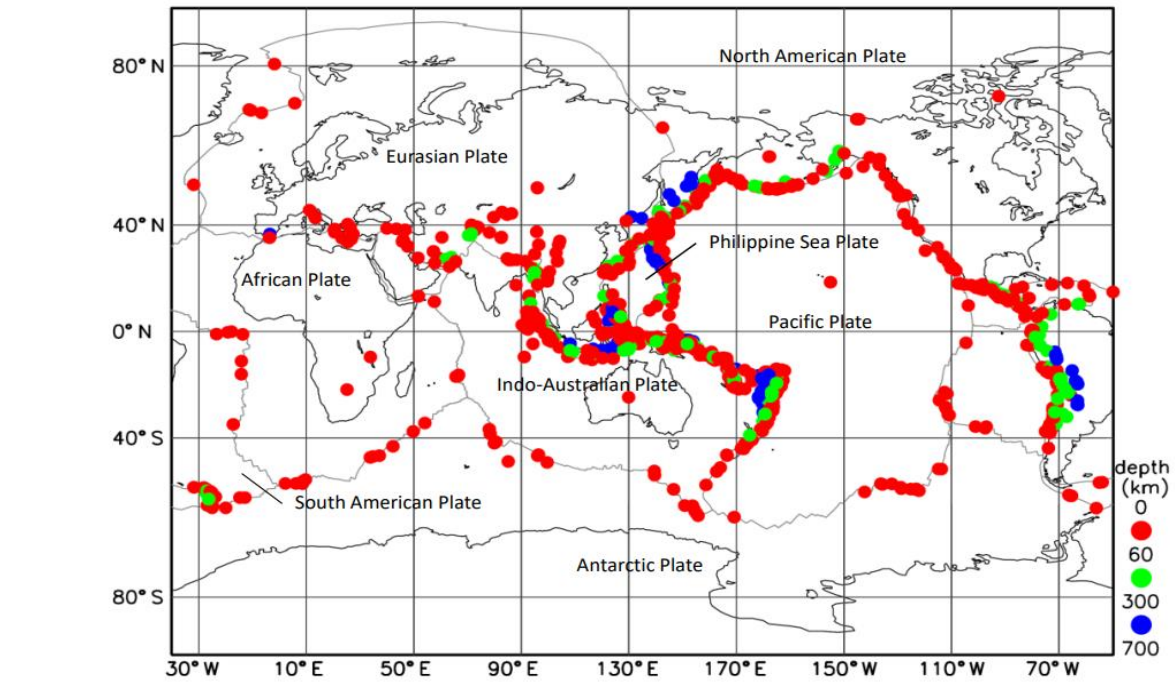
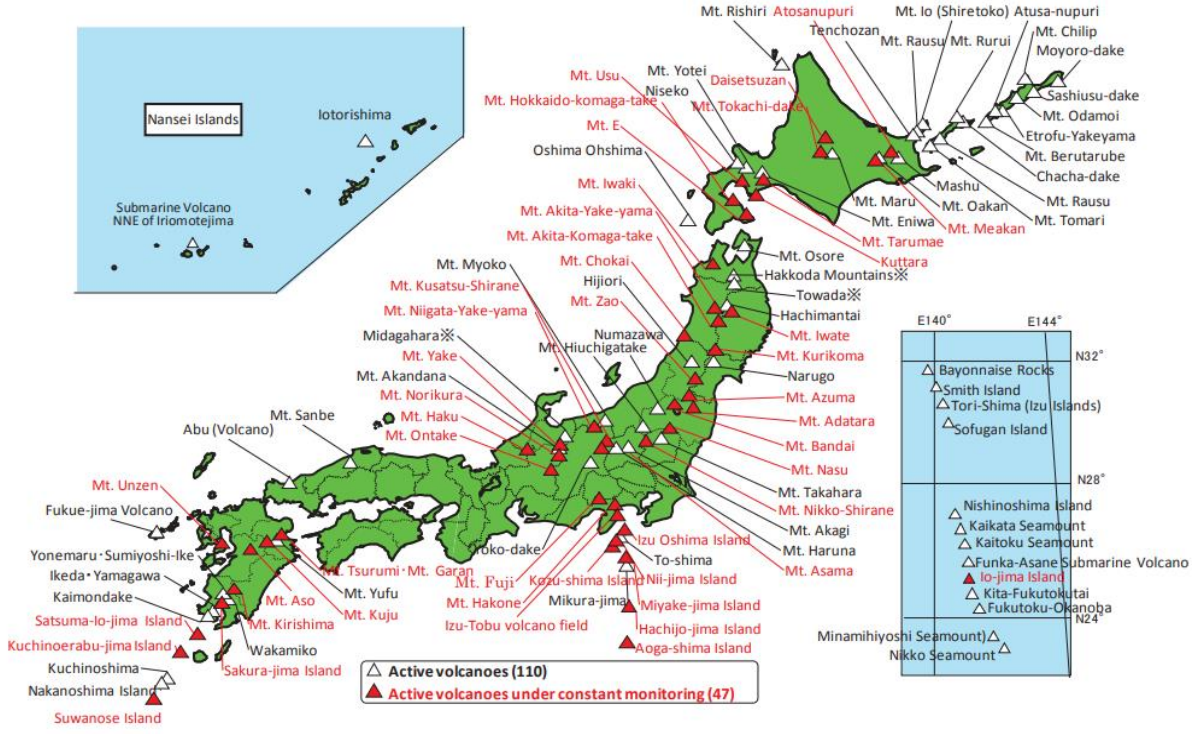



Figure 1. Ring of Fire




Note: 2011–2020
Source: Formulated by the Japan Meteorological Agency based on earthquake data from the U.S. Geological Survey

Figure 2. World distribution of tectonic plates and earthquake hypocenters




Source: Created by the Cabinet Office from the Japan Meteorological Agency website

Figure 3. Distribution of active volcanoes in Japan

Japan is also subject to extreme weather conditions, including seasonal rain fronts, typhoons, and heavy snowfall. The rainy season, or "tsuyu", typically occurs from late May to mid-July, bringing heavy rainfall and sometimes causing floods and landslides. Typhoons, or tropical cyclones that form over the warm waters of the Pacific Ocean are also a common occurrence in Japan, particularly between May and October. These storms can bring strong winds, heavy rainfall, and storm surges, which can lead to flooding and sediment disasters such as debris flows, landslides, and slope failures. August and September are typically the peak months for typhoon activity. Heavy snowfall is common on the Sea of Japan side of the country during the winter months, particularly in areas such as Niigata and Hokkaido. This can lead to transportation disruptions, power outages, and other problems.

The average precipitation in Japan is 1,718 mm/year, higher than the world average (880 mm/year). Local heavy rain and torrential shower have been occurring frequently. Comparing to the rivers in the continents, the rivers in Japan are short and steep, so rain fallen in the watershed flows out rapidly causing flooding in the plains and the bottom lands.

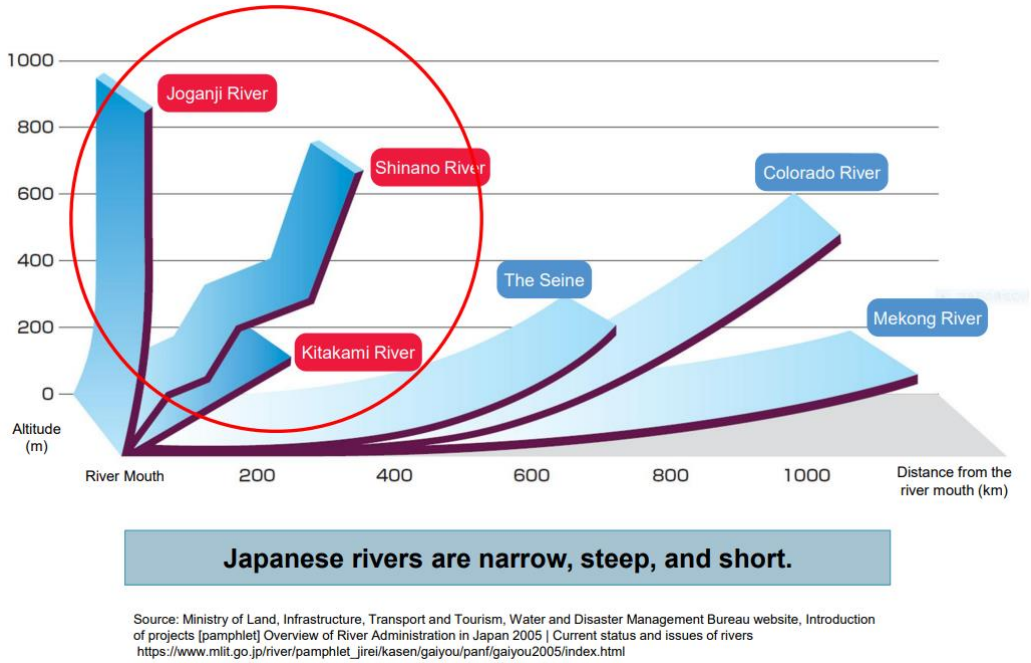



Figure 4. River gradient in Japan and the world

Fire risk in Japan is also high and there are several factors that contribute to this risk. The close proximity of buildings in densely populated areas is a factor that increases the risk of fire in Japan. Fires can easily spread from one building to another, especially in areas with narrow streets and alleys. Tsunamis and earthquakes can also lead to large-scale fires in Japan. When buildings and infrastructure are damaged by these disasters, gas lines and electrical wires can be severed, leading to gas leaks and electrical sparks that can ignite fires. Japan's highly developed chemical and high-technology industries also pose a significant fire risk. These industries often use hazardous materials and produce large amounts of heat and sparks, which can lead to fires and explosions.

Japan has a large forested area that cover around 70% of its total land area. Forest fires can be caused by lightning strikes, but they are often caused by human activities such as campfires, cigarette butts, and agricultural burning. These fires can spread quickly, especially during the dry season in summer.

When compared to the World, Japan was the site of 9% (5 of 56) of the meteorological disasters from typhoons, flooding, and other causes, and 16% (9 of 55) of the earthquakes and tsunamis since 1900 AD.

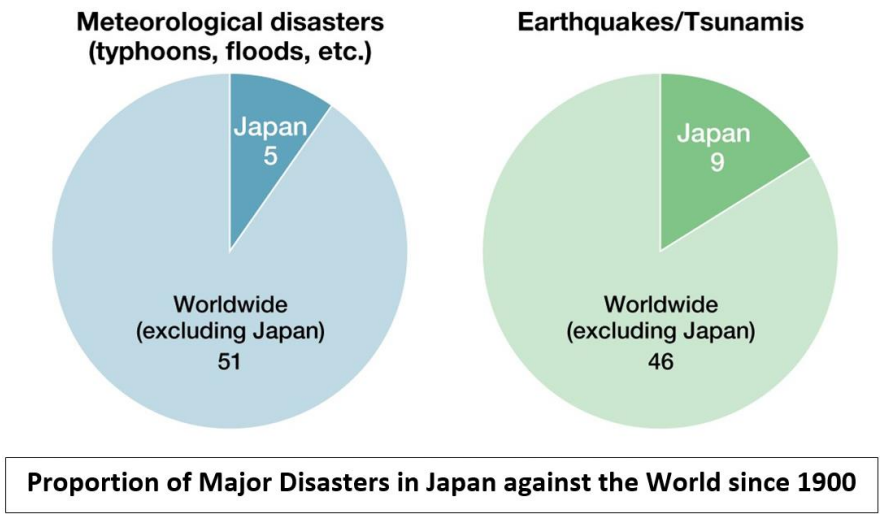



Figure 5. Disaster comparison with the world

### 3.2. Major Natural Disasters in Japan

Every year there is a great loss of people's lives and properties in Japan due to natural disasters. Largescale typhoons, earthquakes and Tsunamis have caused extensive damage and thousands of casualties.

| Date | Disaster | Main Disaster Areas | Number of Dead and Missing |
|---|---|---|---|
| January 13, 1945 | Mikawa Earthquake (M6.8) | Southern Aichi | 2,306 |
| September 17-18, 1945 | Typhoon Makurazaki | Western Japan (Especially in Hiroshima) | 3,756 |
| December 21, 1946 | Nankai Earthquake (M8.0) | Various Places in West of Chubu | 1,443 |
| August 14, 1947 | Mt. Asama Eruption | Around Mt. Asama | 11 |
| September 14-15, 1947 | Typhoon Catherine | North of Tohoku | 1,930 |
| June 28, 1948 | Fukui Earthquake (M7.1) | Around the Fukui Plains | 3,769 |
| September 15-17, 1948 | Typhoon Ion | From Shikoku into Tohoku (Especially in Iwate) | 838 |
| September 2-4, 1950 | Typhoon Jane | North of Shikoku (Especially in Osaka) | 539 |
| October 13-15, 1951 | Typhoon Ruth | Nationwide (Especially in Yamaguchi) | 943 |
| March 4, 1952 | Tokachi-oki Earthquake (M8.2) | Southern Hokkaido, Northern Tohoku | 33 |
| June 25-29, 1953 | Torrential Rains | Kyushu, Shikoku, Chugoku (Especially Kitakyushu) | 1,013 |
| July 16-24, 1953 | Torrential Rains | West of Tohoku (Especially in Wakayama) | 1,124 |
| May 8-12, 1954 | Storm Disaster | Northern Japan, Kinki | 670 |
| September 25-27, 1954 | Typhoon Toyamaru | Nationwide (Especially in Hokkaido and Shikoku) | 1,761 |
| July 25-28, 1957 | Torrential Rains | Kyushu (Especially around Isahaya) | 722 |
| June 24, 1958 | Mt. Aso Eruption | Around Mt. Aso | 12 |
| September 26-28, 1958 | Typhoon Kanogawa | East of Kinki (Especially in Shizuoka) | 1,269 |
| September 26-27, 1959 | Typhoon Ise-wan | Nationwide (Except for Kyushu, especially in Aichi) | 5,098 |
| May 23, 1960 | Chile Earthquake Tsunami | Southern Coast of Hokkaido, Sanriku Coast, Shima Coast | 142 |
| January 1963 | Snow Disasters | Hokuriku, Sanin, Yamagata, Shiga, Gifu | 231 |
| June 16, 1964 | Niigata Earthquake (M7.5) | Niigata, Akita, Yamagata | 26 |
| September 10-18, 1965 | Typhoons 23, 24, 25 | Nationwide (Especially in Tokushima, Hyogo, Fukui) | 181 |
| September 23-25, 1966 | Typhoons 24, 26 | Chubu, Kanto, Tohoku (Especially in Shizuoka, Yamanashi) | 317 |
| July to August 1967 | Torrential Rains | West of Chubu, Northern Tohoku | 256 |
| May 16, 1968 | Tokachi-oki Earthquake (M7.9) | Southern Hokkaido and Tohoku Area centering around Aomori | 52 |
| July 3-15, 1972 | Typhoons 6, 7, 9 and Torrential Rains | Nationwide (Especially in Kitakyushu, Shimane, Hiroshima) | 447 |
| May 9, 1974 | Izu-hanto-oki Earthquake (M6.9) | Southern Tip of Izu-hanto | 30 |
| September 8-14, 1976 | Typhoon 17 and Torrential Rains | Nationwide (Especially in Kagawa, Okayama) | 171 |
| January 1977 | Snow Disaster | Tohoku, Northern Kinki, Hokuriku | 101 |
| August 7, 1977- October 1978 | Mt. Usu Eruption | Hokkaido | 3 |
| January 14, 1978 | Izu-Oshima-kinkai Earthquake (M7.0) | Izu-hanto | 25 |
| June 12, 1978 | Miyagi-ken-oki Earthquake (M7.4) | Miyagi | 28 |
| October 17-20, 1979 | Typhoon 20 | Nationwide (Especially Tokai, Kanto, Tohoku) | 115 |
| December 1980 - March 1981 | Snow Disasters | Tohoku, Hokuriku | 152 |
| July to August 1982 | Torrential Rains and Typhoon 10 | Nationwide (Especially in Nagasaki, Kumamoto, Mie) | 439 |
| May 26, 1983 | Nihon-kai-chubu Earthquake (M7.7) | Akita, Aomori | 104 |
| July 20-29, 1983 | Torrential Rains | East of Sanin (Especially in Shimane) | 117 |
| October 3, 1983 | Miyake Is. Eruption | Around Miyake-jima Island | — |
| December 1983 - March 1984 | Snow Disasters | Tohoku, Hokuriku (Especially in Niigata, Toyama) | 131 |
| September 14, 1984 | Nagano-ken-seibu Earthquake (M6.8) | Western Nagano | 29 |
| November 15 - December 18, 1986 | Izu-Oshima Eruption | Izu Oshima Island | — |
| November 17, 1990 | Mr. Unzen Eruption | Nagasaki | 44 |
| July 12, 1993 | Hokkaido-nansei-oki Earthquake (M7.8) | Hokkaido | 230 |
| July 31 - August7, 1993 | Torrential Rains | Nationwide | 79 |
| January 17, 1995 | Great Hanshin-Awaji Earthquake (M7.3) | Hyogo | 6,437 |
| March 31, 2000 - June 28, 2001 | Mt. Usu Eruption | Hokkaido | — |
| June 25, 2001 - March 31, 2005 | Miyake Is. Eruption and Niijima and Kozushima Is. Earthquake | Tokyo | 1 |
| October 20-21, 2004 | Typhoon 23 | Nationwide | 98 |
| October 23, 2004 | Niigata-ken-Chuetsu Earthquake (M6.8) | Niigata | 68 |
| December 2005 - March 2006 | Heavy Snowfalls | Japan Sea Coast centering around Hokuriku Area | 152 |
| July 16, 2007 | Niigata Earthquake (M6.8) | Niigata | 15 |
| June 14, 2008 | Iwate-Miyagi Inland Earthquake (M7.2) | Tohoku (Especially in Miyagi, Iwate) | 23 |
| December 2010 - March 2011 | Snow Disasters | From Northern Japan through into Kanto-Koshinetsu Area (Especially in Yamanashi) | 131 |
| March 11, 2011 | Great East Japan Earthquake (Mw9.0) | Eastern Japan (Especially in Miyagi, Iwate, Fukushima) | 21,839 |
| August 29 - September 7, 2011 | Typhoon 12 | Kinki, Shikoku | 94 |
| November 2011 - March 2012 | Deep Snowfall from November 2011 onwards | From Northern Japan through into West Japan on the Japan Sea Coast | 132 |
| December 2012 - March 2013 | Deep Snowfall from December 2012 onwards | From Northern Japan through into West Japan on the Japan Sea Coast | 101 |
| November 2013 - May 2014 | Deep Snowfall from November 2013 onwards | From Northern Japan through into Kanto-Koshinetsu Area (Especially in Yamanashi) | 93 |
| August 20, 2014 | Torrential Rains of August 2014 | Hiroshima | 74 |
| September 27, 2014 | 2014 Eruption of Mt. Ontake | Nagano, Gifu | 63 |

*Mw: Moment magnitude
Notes:
1. The disasters listed resulted in fatalities and missing persons as follows: 500 or more for storm and flood disasters, 100 or more for snow disasters, and 10 or more for earthquakes, tsunamis, and volcanic eruptions. It also includes disasters for which governmental Major Disaster Management Headquarters were established based on the Disaster Countermeasures Basic Act.
2. The number of fatalities and missing persons for the Great Hanshin-Awaji Earthquake is the current figure as of December 22, 2005. The number of deaths directly caused by structural collapse, fire, and other factors caused by seismic shaking on the day of the earthquake, excluding so-called "related deaths," is 5,521.
3. The numbers of fatalities from the Miyake Is. Eruption and Niijima and Kozushima Is. Earthquake are from the earthquake of July 1, 2000.
4. The numbers of fatalities and missing persons since 2014 are from flash bulletins based on Cabinet Office summaries.
5. The number of fatalities (including earthquake-related fatalities) and missing persons resulting from the Great East Japan Earthquake is the current figure as of March 1, 2015.
Source: Created by the Cabinet Office based on the meteorological almanac of Japan, Chronological Scientific Tables, National Police Agency materials, Fire and Disaster Management Agency materials, Extreme Disaster Management Headquarters materials, and Hyogo Prefecture materials

Figure 6. Major natural disasters in Japan since 1945

Typhoon Ise-wan was an exceptionally intense and one of the most destructive typhoons in Japanese history. It struck the Ise Bay region on the southern coast of Honshu island, on Sept. 26, 1959, and wreaked havoc in the city of Nagoya. The storm killed more than 5,000 people, left an estimated 1.5 million people homeless, and injured almost 39,000 people.

The Great Hanshin Awaji Earthquake of a 7.3 magnitude hit Awaji island of Hyogo Prefecture in Western Japan on 17 January 1995. It killed 6,434 people, injured 43,792 people, destroyed 104,906 houses, half destroyed 144,274 houses, and partially destroyed 390,506 houses. The area of 835,858 square meters was burnt down by the fires that broke out along with the earthquake.

A magnitude 9.0 Great East Japan earthquake hit northeastern Japan on 11 March 2011, recording the largest earthquake hit in Japan. Its epicenter was located in the coast of Sanriku and its epicentral area stretched from the coasts of Iwate Prefecture to Ibaraki Prefecture. Massive shakes were observed particularly in eastern Japan, including a Japanese intensity scale of 7 registered in the north of Miyagi Prefecture. Furthermore, this trench-type earthquake occurred near the boundary of the Pacific Plate and the plate beneath the Tohoku area, triggered seafloor movements and generated a massive tsunami. It killed 15,870 people, 2,814 people went missing and 6,114 people were injured and 129,472 buildings totally collapsed, 255,977 half collapsed, and 702,928 partially collapsed.

With the progress of society's capabilities to respond to disasters and mitigate vulnerabilities to disasters by developing disaster management systems, promoting national land conservation, improving weather forecasting technologies, and upgrading disaster information communications systems, disaster damage has shown a declining tendency. As such, natural disasters remain a menacing threat to the safety and security of the country.

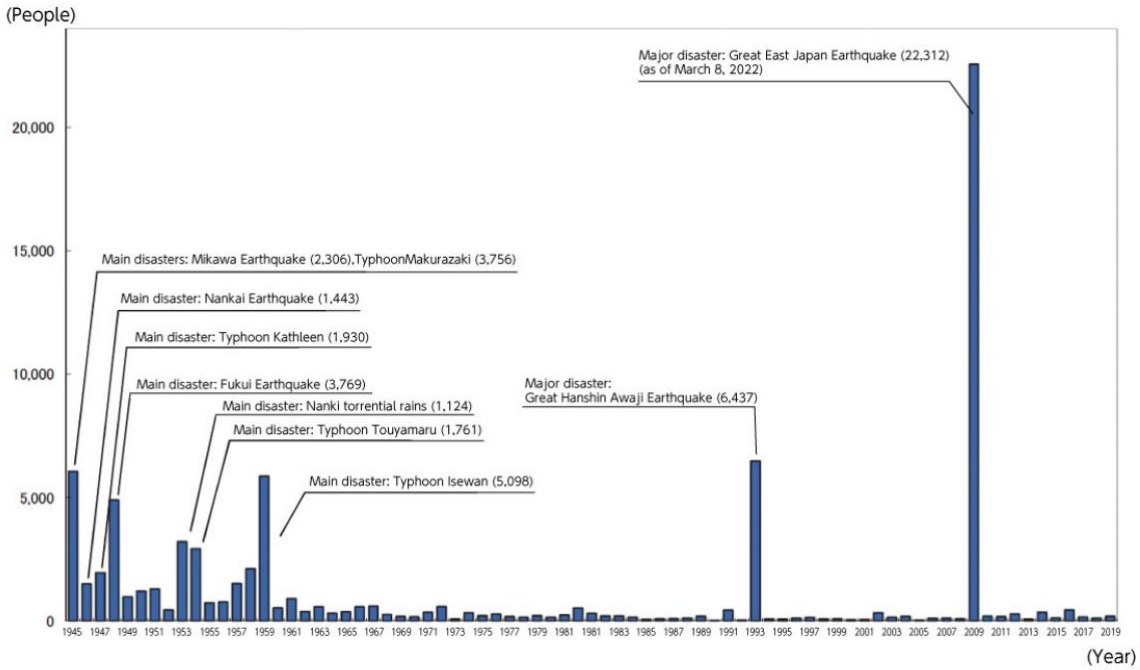



Figure 7. Number of fatalities and missing persons due to natural disasters

# 4. Disaster Management System in Japan

## 4.1. Disaster Management Laws

Japan has established a comprehensive legal framework for disaster management, including laws covering all phases of disaster management. These laws include seven basic acts, eighteen disaster prevention and preparedness acts, three disaster emergency response acts and twenty-three disaster recovery and financial measures acts. The acts and other legislations address all the phases of disaster with clearly defined roles and responsibilities among the national and local governments.

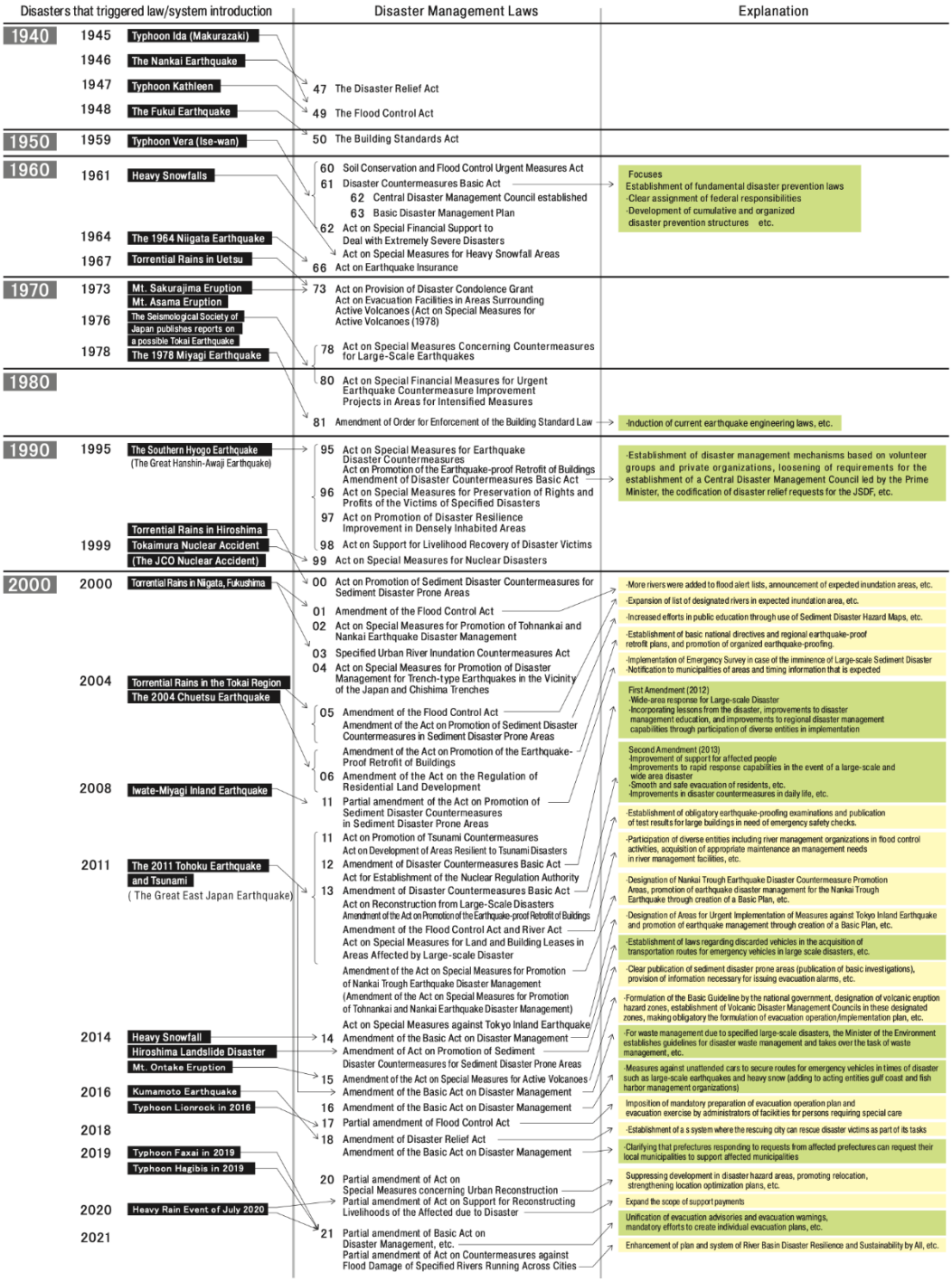



Figure 8. Disaster management laws in Japan

### 4.1.1. Disaster Countermeasures Basic Act 1961

The immense damage caused by Typhoon Ise-wan in 1959 led to the enactment of the Disaster Countermeasures Basic Act in 1961, which formulates a comprehensive and strategic disaster management system. It is considered a national priority to protect national land as well as citizens' lives, livelihoods, and property from natural disasters.

There have been constant revisions and amendments in the Basic Act on Disaster Management since its first enactment, and with lessons learned from the Great East Japan Earthquake, provisions were added for enhancement of the measures concerning support activities mutually done by local governments in 2012 and the measures for ensuring smooth and safe evacuation of residents and improving protection of affected people in 2013. Measures against unattended cars in order to promptly clear them from the roads for emergency vehicles were added in 2014. In 2021, in order to ensure smooth and rapid evacuation in the event of a disaster and strengthen the implementation system for disaster measures, evacuation information was reviewed, individual evacuation plans were legalized, and measures in the regulations concerning acceptance of residents for region-wide evacuation were stipulated. The government has also taken measures such as making it possible to establish the National Disaster Management Headquarter at the stage of threatening disaster.


Figure 9. Outline of the Basic Act on Disaster Management

### 4.1.2. Acts on Response to Disasters

Out of the different acts related to Disaster management, The Disaster Relief Act (1947), Fire Services Act (1948) and Flood Control Act (1949) are the ones focusing on response to the disasters.

The Disaster Relief Act of 1947 provides a legal framework for the Japanese government to provide emergency relief in the event of a disaster, and it outlines the roles and responsibilities of various government agencies, local governments, and non-governmental organizations in the disaster response effort. It also emphasizes the importance of cooperation between the government, local communities, and the general public in disaster preparedness and response, and it provides guidelines for the protection and support of disaster victims.

The Fire Services Act of 1948 regulates fire service and fire defense in Japan. It sets out the roles and responsibilities of the fire service and the legal framework for fire prevention, firefighting, and disaster response in Japan. It also establishes the Fire and Disaster Management Agency (FDMA), which is responsible for coordinating fire and disaster management across the country.

The Flood Control Act of 1949 is a law that was enacted to prevent and control floods in the country. The Act outlines the roles and responsibilities of various government agencies, local governments, and other organizations in flood control efforts, and it establishes a legal framework for flood control measures such as the construction of levees, dams, and other structures. It also emphasizes the importance of disaster preparedness and response, and it encourages the development of comprehensive flood control plans that involve local communities and other stakeholders.

### 4.2. Institutional Setup

Japan has a well-established disaster management system that is implemented through a 3-layered approach, consisting of the national, prefectural, and municipal levels.

At the national level, the Cabinet Office plays a leading role in disaster management by establishing policies, coordinating with other ministries and agencies, and providing financial support to the prefectural and municipal governments. The Prime Minister also serves as the head of the Central Disaster Management Council, which is responsible for overseeing national disaster management policies and operations.

At the prefectures and local municipalities, the Prefectural and Municipal Disaster Management Councils led by the respective Governors and Mayors are established with the members of representatives of local government organizations including police and fire management department, and designated local public corporations. Implementation of disaster risk management measures is based on the Local Disaster Management Plans drafted by the Councils. They are also responsible for coordinating disaster response and recovery efforts within their jurisdictions.

#### 4.2.1. The Cabinet Office

The Cabinet Office of Japan is "the place of wisdom" that provides strategic advice and support to the Cabinet and the Prime Minister. It was established in 2001 with the aim of enhancing the coordination and integration of government policies and initiatives. It plays a critical role in disaster management and emergency response.

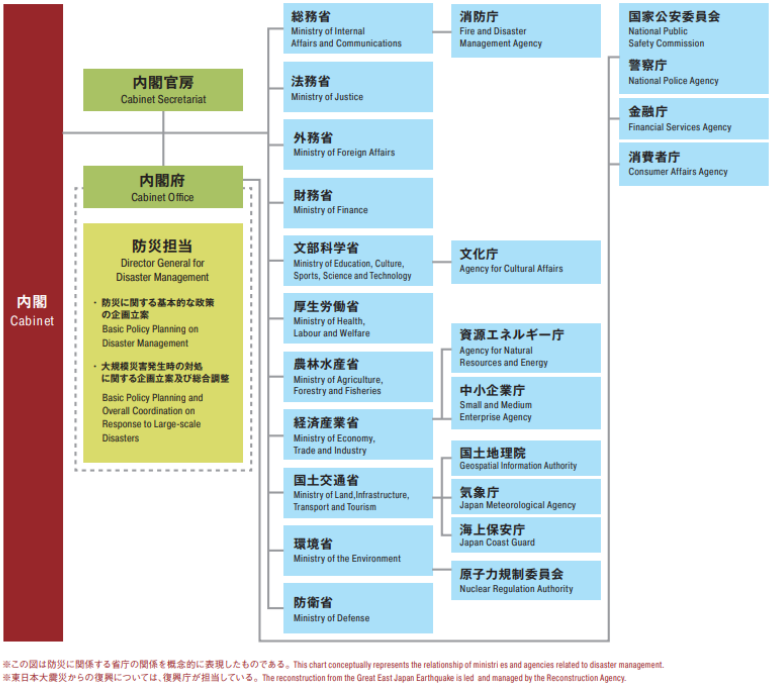



Figure 10. Cabinet Office and related Ministries

#### 4.2.2. Central Disaster Management Council

The Central Disaster Management Council is an advisory body established in 1961 under the Disaster Countermeasures Basic Act to ensure the comprehensiveness of disaster risk management and to discuss matters of importance with regard to disaster management. The council consists of the Prime Minister, who is the chairperson, Minister of State for Disaster Management, all ministers, heads of major public institutions and experts.

The Cabinet Office is the secretariat for this Council and the Minister of State for Disaster Management has been assigned as the Minister State for Special Missions and is assisted by the

Director-General for Disaster Management his mandate being to handle planning and central coordination with regard to matters relating to basic policy on disaster risk reduction, and matters concerning disaster countermeasures in the event of a large-scale disaster.

The Council decides the national government's disaster management policies which are carried out by respective ministries and agencies, accordingly. In the event of a large-scale disaster, the Cabinet Office is engaged in collection and dissemination of accurate information, reporting to the Prime Minister, establishment of the emergency activities system including the Government's Disaster Management Headquarters, and overall wide area coordination concerning disaster response measures.


Figure 11. Central Disaster Management Council


Figure 12. Outline of the Disaster Management System

### 4.3. Disaster Management Planning System

a. Basic Disaster Management Plan: This plan is the highest-level plan and constitutes the basis for disaster management activities prepared by the National Disaster Management Council based on the Disaster Countermeasures Basic Act. It is prepared by the Central Disaster Management Council and is the plan for disaster management activities in the country.

b. Disaster Management Operation Plan: This is a plan prepared by each designated government organization and designated public corporation based on the Basic Disaster Management Plan and should provide measures to be undertaken for disaster prevention pertaining to the business of a designated administrative organ.

c. Local Disaster Management Plan: This is a plan prepared by each Prefectural and Municipal Disaster Management Council, subject to local circumstances and based on the Basic Disaster Management Plan.

d. Community Disaster Management Plan: This is a “disaster management activities” plan at the community level which is established by residents and businesses jointly on a voluntary basis.

#### 4.3.1. The Basic Disaster Management Plan

It is a comprehensive and long-term disaster management plan forming a foundation for the Disaster Management Operations Plan and Local Disaster Management Plan. It stipulates provisions for the establishment of the disaster management system, promotion of disaster management measures, acceleration of post disaster recovery and reconstruction measures, and promotion of scientific and technological research on disaster management. Since its establishment in 1963, this plan has been reviewed every year based on the Basic Act on Disaster Management and revised when deemed necessary. Therefore, the plan was revised entirely in 1995 based on the experiences of the Great Hanshin-Awaji Earthquake. It defines responsibilities of each entity such as the national and local governments, public corporations and other entities. It consists of various plans for each type of disaster, where specific countermeasures to be taken by each entity are described according to the disaster management phases of prevention and preparedness, emergency response, as well as recovery and reconstruction. Further, based on the lessons learned from the Great East Japan Earthquake, a new chapter was created in December 2011, for Tsunami Disaster Countermeasures. In recent years, lessons from disaster responses and developments in measures as well as responses to the COVID-19 have been taken into account for the revisions.

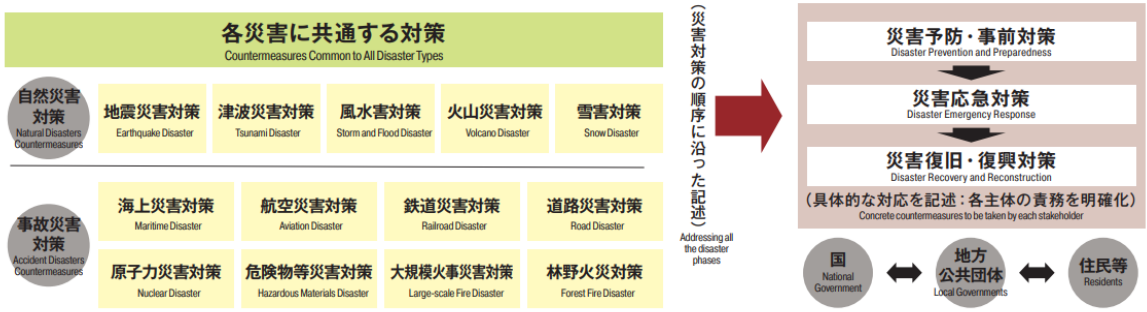



Figure 13. Basic Plan for Disaster Risk Reduction

#### 4.3.2. Community Disaster Management Plan

In order to encourage and promote proactive disaster management activities among residents (including both individual and corporate residents) in a given area based on the spirit of self-help and mutual help, and to enhance the disaster management capabilities of the area in a bottoms-up manner, it is stipulated that a community disaster management plan, featuring the community level disaster management activities, may be prescribed in the municipal disaster management plan. In developing a community disaster management plan, more active and proactive participation of the

area residents is necessary at an early stage of such development. As such, it is stipulated that the area residents may jointly make a proposal (proposed plan) to the municipal disaster management council that a community disaster management plan be stipulated in the municipal disaster management plan. Thus far, the plans reflected in the community disaster management plans are that of 30 prefectures, 73 municipalities and 901 communities (as of April 1, 2020).

### 4.3.3. The Business Continuity Plan of Central Government

"The Business Continuity Plan of Central Government (Measures against Tokyo Inland Earthquake) stipulates the executive systems and work environment essential to continue the governmental services smoothly in the event of the Tokyo Inland Earthquake occurring and in case the political, administrative and economic core functions may be seriously affected by the Earthquake. Regarding the executive system, the Plan stipulates that, upon the Tokyo Inland Earthquake occurring, government staff including those in charge of the administrative management gather at the central government buildings and stay there for a week to continue the emergency priority operations in rotation, so that such emergency priority operations will be smoothly carried out. With regard to the work environment, it stipulates that the government buildings be constructed to be earthquake resistant with a work environment to continue the emergency priority services and administrative work in case of emergency. Based on this Plan, central government ministries and agencies shall revise the business continuity plans of each ministry and agency, identify services that need to be continued under their responsibility in case of emergency as the emergency priority operations, and they work out a system and environment necessary to carry those out. It is planned that those business continuity plans developed by respective ministries and agencies be reviewed and evaluated by experts, and that these plans as well as the Plan itself be revised based on the result of such evaluation. In the same manner, the systems for business continuity of local governments in the event of a large-scale disaster are being developed and the Government is to give support to them by way of formulating guidelines.


Figure 14. Business Continuity Plan of the Central Government

### 4.4. White Paper on Disaster Management

The White Paper on Disaster Management in Japan is an annual report published by the Japanese government that provides a comprehensive overview of the country's disaster management policies, strategies, and activities. The White Paper on Disaster Management has its origins in the Disaster Countermeasures Basic Act of 1961. The act established the basic framework for disaster management in Japan, and called for the creation of a national disaster management plan and the publication of an annual report on disaster management.

The first White Paper on Disaster Management in Japan was published in 1962, and since then, it has been published annually by the Cabinet Office of Japan. The purpose of the white paper is to provide a comprehensive overview of the country's disaster management policies, strategies, and activities, and to promote public awareness and understanding of disaster management issues. The white paper is an important tool for monitoring and evaluating Japan's disaster management efforts, and for identifying areas where improvements can be made. It also serves as a valuable reference for other countries and organizations that are interested in learning from Japan's experience and expertise in disaster management.

In recent years, the relevance of the White Paper on Disaster Management in Japan has been heightened by a number of high-profile disasters, including the Great East Japan Earthquake and Tsunami in 2011, which highlighted the importance of effective disaster management and the need for ongoing efforts to improve disaster resilience.

The white paper is also relevant in the context of the growing global concern about the impact of climate change on the frequency and intensity of natural disasters. As a country that is highly vulnerable to natural disasters, Japan's experience and expertise in disaster management can provide valuable insights and lessons for other countries that are facing similar challenges. It is a valuable resource that provides insight into Japan's disaster management efforts offers important lessons for other countries and organizations that are working to improve disaster resilience and reduce the impact of disasters on communities and societies.

## 5. Early warning systems

### 5.1. Observation, Forecasting, and Warning of Disaster Risks

Observation systems that can accurately detect disaster risks in real-time have been progressively improved for establishing early warning systems, supporting early evacuation and response activities, and thereby reducing disaster damage. Organizations involved in disaster reduction, especially the Japan Meteorological Agency (JMA), use 24-hour systems to carefully monitor various natural phenomena and weather conditions. In addition to observed information, the JMA issues a wide range of forecasts, warnings and advisories. Furthermore, in August 2013, it started to issue "Emergency Warnings" in case of a severe disaster far exceeding the past level of issuing warnings such as heavy rain emergency warning and heavy snow emergency warning.

### 5.2. Five Alert Levels

When a disaster occurs, the government issues various disaster information. Among these, proper understanding of the evacuation information issued by the municipality is particularly important. The Five Alert Levels, which has been implemented since the 2019 flood season, is informed by lessons from the 2018 Japan floods and provides evacuation information as an intuitive guidance for actions residents should take. Eg. With Alert Level 3: "evacuation of the elderly, etc", the elderly, etc. evacuate from risk areas. With Alert Level 4: "evacuation instruction," all persons evacuate from risk areas. With Alert Level 5: "emergency safety securement," the disaster has already occurred, and going outside to designated emergency evacuation sites may be dangerous. Therefore, actions such as moving to the safer upper floors or to a room that is furthest away from the mountain to protect one's life, would be necessary.

| Alert level | Situation | Required action | Evacuation information |
|---|---|---|---|
| 5 | Disaster occurrence or urgency | Danger of life Secure safety immediately! | Emergency Safety Measures*1 |
| | <Be sure to evacuate by alert level 4!> | | |
| 4 | High risk of disaster | Everyone evacuates from hazardous places | Evacuation Instruction (note) |
| 3 | Risk of disaster | The elderly, etc. evacuate from hazardous places*2 | Evacuation of the Elderly, etc. |
| 2 | Weather worsening | Check how to evacuate | Heavy rain, Flood, of Storm Surge Advisories (JMA) |
| 1 | Risk of weather worsening | Be prepare for disasters | Probability of Warnings (JMA) |

*1 Alert level 5 is not always issued, as municipalities may not be able to certainly understand the situation of disasters.
*2 Alert level 3 is the timing for people other than elderly to suspend normal activities and begin evacuating voluntary when feel danger, as needed.
(note) Evacuation warning s are issued at the timing of current evacuation advisory.

Figure 15. Five alert levels

### 5.3. National Early Warning System (J-Alert)

J-Alert is a system which can send emergency information such as warnings of ballistic missile attacks, earthquakes, tsunami and any other bad weather through an artificial satellite and the terrestrial line to prefectures, cities and towns. It automatically activates municipal disaster management radio communication systems and sends information to residents immediately without manpower.

It is usually used by the Meteorological Agency to transmit weather information for risk reduction such as weather warnings, information about an earthquake, a tsunami, a volcano eruption, and any other natural disaster. The Cabinet Secretariat sends information about ballistic missiles, air raids, guerrilla attacks, terrorism, and anything else the general population would need warning of. It is done through the transmission facilities of the Fire Agency to prefectures, cities and towns of the country. Nowadays there is another transmission route apart from the one through municipalities, which sends J-alert information to individual cell-phone users by email (i.e. in the form of area mails or emergency alarm mails) from the government through cell-phone service providers. Smartphones sold in Japan come with "Area email" and "Emergency alert email" installed in and are capable of receiving a J-ALERT.

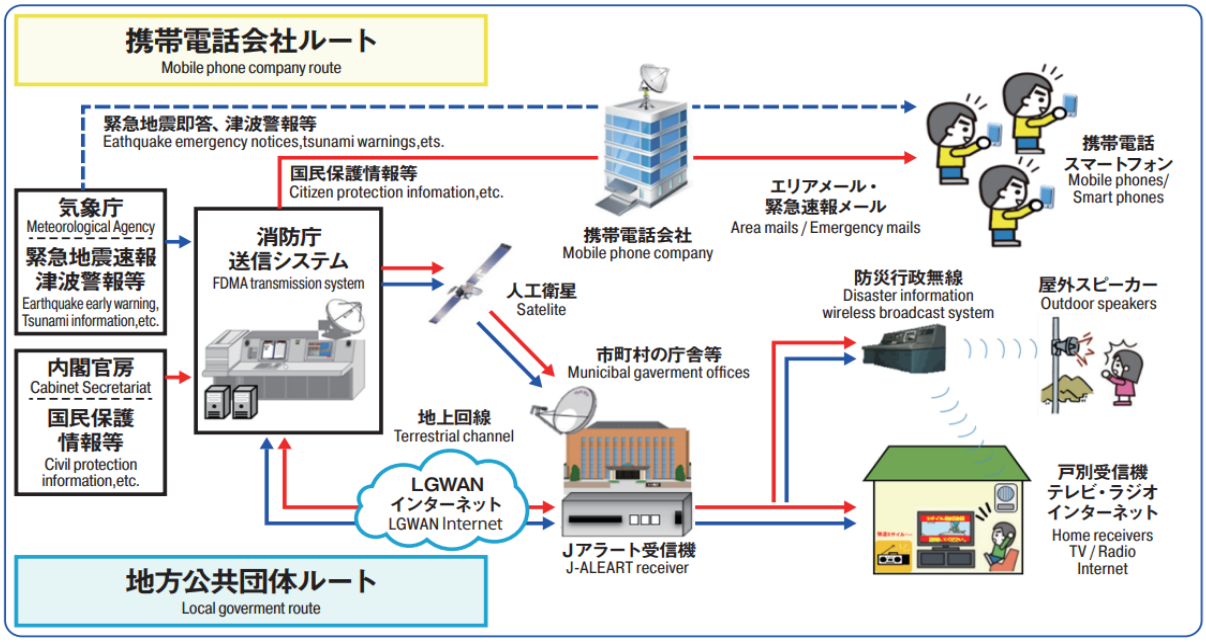



Figure 16. Outline of the J-Alert system

### 5.4. Disaster Information Sharing System (L-Alert)

L-Alert is a common platform by which local municipalities send necessary information to local residents through various media such as broadcasting societies, television, radio, mobile phones, portal sites and application companies immediately and effectively when a disaster occurs. It was launched in June 2011, and since then it has been used by a lot of information senders. All of the prefectures and metropolis have started operating L-Alert by April 2018, and it plays a certain role as an information infrastructure such as sending reports of the status of the evacuation instruction issuance immediately thus contributing to the smooth provision of information to local residents in times of disaster.

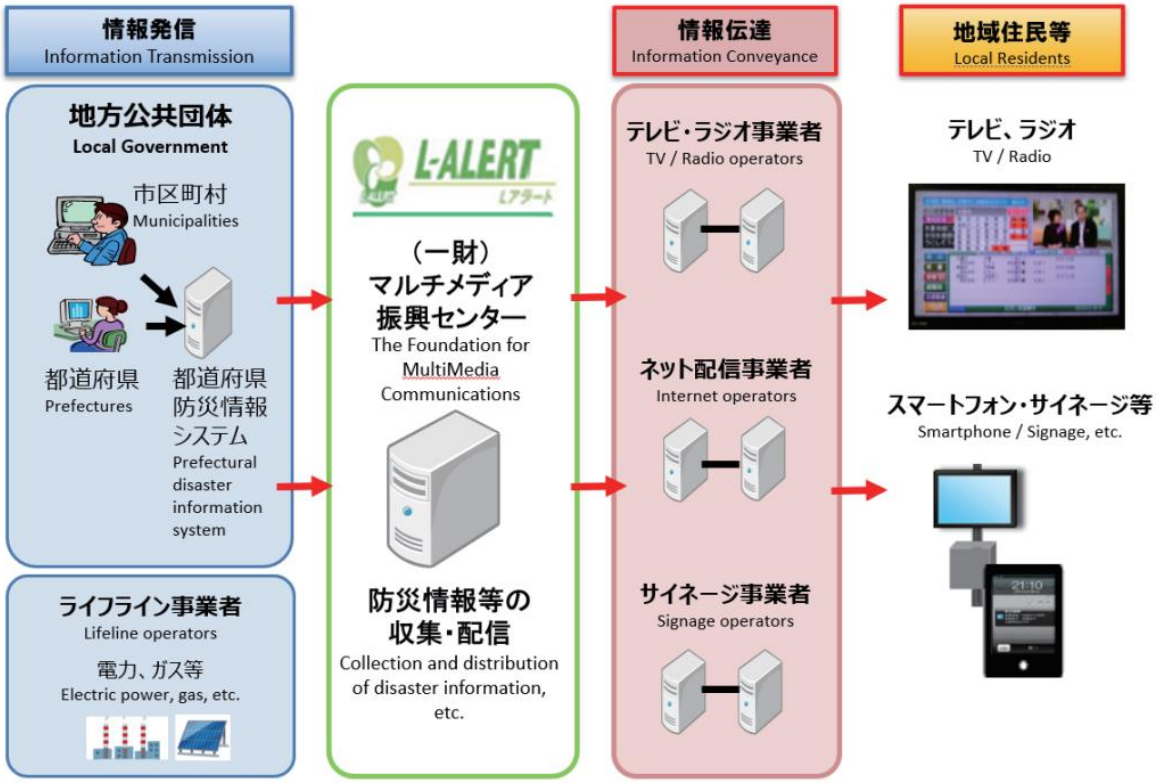



Figure 17. Outline of the L-Alert system

# 6. Information and Communications Systems

## 6.1. Central Disaster Management Radio Communication Network

The central disaster management radio network ensures mutual communication among disaster prevention related organizations nationwide in the event of a large-scale disaster such as an earthquake. In central Tokyo, the Prime Minister's Office, Central ministries, designated public institutions, and the Tokyo metropolitan government are connected by terrestrial micro wireless lines. In addition, these organizations are also equipped with portable satellite communication equipment in case of the Tokyo Inland Earthquake. On the other hand, designated public institutions located in areas other than central Tokyo are connected by satellite communication lines. In the event of a disaster, this system will be used for collecting and sharing information between central ministries, prefectures and designated public institutions, and for video conferencing between the affected prefectures and the prime minister's office. In normal times this system is used for exchanging information such as coordinating disaster-related work and for training in preparation for a disaster.

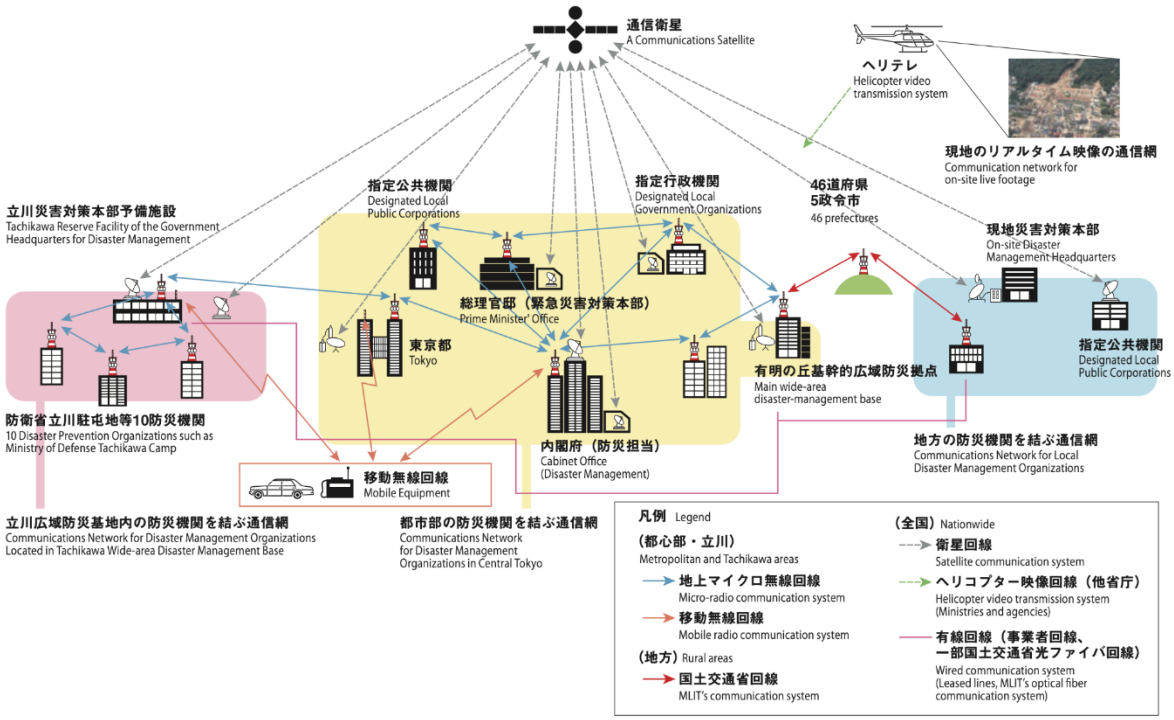



Figure 18. Outline of the Central Management Radio Communication Network

### 6.2. Integrated Disaster Management Information System

Based on the experiences of the Great Hanshin-Awaji Earthquake, the Cabinet Office has an integrated disaster management information system to ensure the quick assessment of damage as well as rapid and appropriate decision-making. The information system consists mainly of the damage estimation function (Disaster Information System, or DIS) and information sharing function (Platform, or PF). After the occurrence of an earthquake, the damage estimation function (DIS) immediately estimates the human/building damage due to the earthquake and tsunami. This is instrumental in understanding the scale of damage during the initial response phase and informs the government's decision-making for dispatch of personnel to affected areas. The information sharing function (PF) visualizes and shares various disaster information collected from disaster management related organizations such as related ministries and agencies as well as infrastructure companies (including data on weather, community lifelines, evacuation, traffic and trains as well as satellite images) on a map. It thereby facilitates the assessment of damage and drafting of countermeasures at the government's Disaster Management Headquarters and meetings of relevant ministries and agencies.

### 6.3. Information Support Team (ISUT)

During times of emergency, it is necessary to quickly collaborate with relevant organizations to take various response measures. To do so, information held by each organization about "what is happening where," must be amassed so that a shared understanding of the situation is possible. Then the strategies about "who does what" can be implemented through placement of personnel and equipment. For apt decision-making by the disaster response personnel, it is essential to visualize this information on maps to systematically understand the situation. The Cabinet Office and the National Research Institute for Earth Science and Disaster Resilience (NIED) launched as a prototype a dispatch team called ISUT (Information Support Team) in 2018. Since 2019 the team has been in full operation. At times of large-scale disasters, the team aggregates damage information and evacuation sites and plots this data on a map to support disaster response by administrative organizations and designated public organizations. Specifically, the team provides an information aggregation website (ISUT Site) as well as creates and shares maps for disaster response personnel on a need-basis. In addition, for information collected by the ISUT that can be made available to the public, they are published on the NIED Crisis Response Site (NIED-CRS) operated by the NIED. As a recent example, during the 2020 Kyushu floods, staff were dispatched to the Kumamoto Prefectural Government. The staff helped various organizations assess the damage by supporting data collection and sharing the map produced with the prefectural disaster management headquarters, front-line actors such as police, firefighters and self-defense forces, designated public organizations, and support staff from other local governments.

## 7. Emergency Response to Disasters

### 7.1. Outline of Disaster Emergency Response

In the event of a disaster, the national and local governments quickly collect and share disaster and damage information, and secure communications to carry out effective emergency activities such as emergency rescue and medical operations. Based on such information, local governments set up disaster management headquarters and related organizations establish their own operation mechanisms. The national government collects disaster information at the Cabinet Information Collection Center 24 hours a day. When a large-scale disaster strikes, an emergency team composed of the directors-general of the respective ministries and agencies gathers immediately at the Crisis Management Center in the Prime Minister's Official Residence to grasp and analyze the disaster situation, and report the results to the Prime Minister. Disaster Management meetings at the ministerial or high-ranking senior official level are held, as necessary. According to the level of damage, the government may establish the Headquarters for Major Disaster Management (headed by the Minister of State for Disaster Management) or the Extreme Disaster Management Headquarters (headed by the Prime Minister), to establish the policies for the disaster countermeasures, and to coordinate various emergency measures to be taken by various organizations. Further, in order to grasp the situation in the disaster area, a government investigation team headed by the Minister of State for Disaster Management may be dispatched, or if quick and swift actions are needed to be taken with overall coordination of emergency activities on site, the government may establish the onsite headquarters for disaster management.

### 7.2. Wide Area Support Mechanism

In case of large-scale disasters that exceed the response capacities of the affected local government, various wide-area support mechanisms are mobilized by the Government which includes the Disaster Response Units of the National Police Agency (NPA), Emergency Fire Response Teams of the Fire and Disaster Management Agency (FDMA), Japan Coast Guard. The Self-Defense Forces are also dispatched for emergency response activities upon request from the governor of the affected prefecture. Also, personnel such as Disaster Medical Assistance Team (DMAT) provide medical services to the affected people. These teams transport severely injured persons via Self-Defense Forces vehicles and aircrafts to hospitals outside the disaster-stricken zone. In addition, the government provides relief goods without awaiting specific requests from affected municipalities. These basic necessities for the affected citizens ’lives and living environment are procured by the government and delivered via emergency transportation to the affected areas in a “push-mode” support system.


Figure 19. Government Disaster Response Mechanism

### 7.3. Coordination between National government and local public entities

In the event of a disaster occurring, municipalities will primarily be engaged in emergency countermeasures as they are the closest to residents. Prefectural administration will get involved when the comprehensive wider-area measures are necessary. In the event of a large-scale disaster beyond the capability of local public entities struck by the disaster, the National government will step in to support the local entity and coordinate mutual support among the local entities. At the national level, the Extreme Disaster Management Headquarters or the Major Disaster Management Headquarters is set up to promptly collect the disaster information from relevant ministries and local public entities struck by the disaster, and overall coordination is provided for rescue, first aid, medical and emergency supplies as necessary and appropriate. Also, an on-site disaster management headquarters may be set up to promptly coordinate among the affected local entities and collect information and requests from relevant prefectures and to properly conduct the emergency response activities in consideration to the needs for the affected people. The on-site disaster management headquarters were set up in the affected areas in such cases as the Great East Japan Earthquake in 2011, the heavy winter snowfall in 2014, the heavy rains in August 2014, and the Mt. Ontake eruption in 2014. Through joint meetings held in collaboration with the disaster response headquarters organized by the local entities in the affected areas, the national government and the local entities coordinate based on their shared awareness to serve as the government's closest one-stop contact point for requests from the affected local entities. As such, the role of the on-site disaster management headquarters is increasing its importance.

### 7.4. Disaster Response Agencies

Coordination System between National and Local Governments (in the case of the Great East Japan Earthquake)

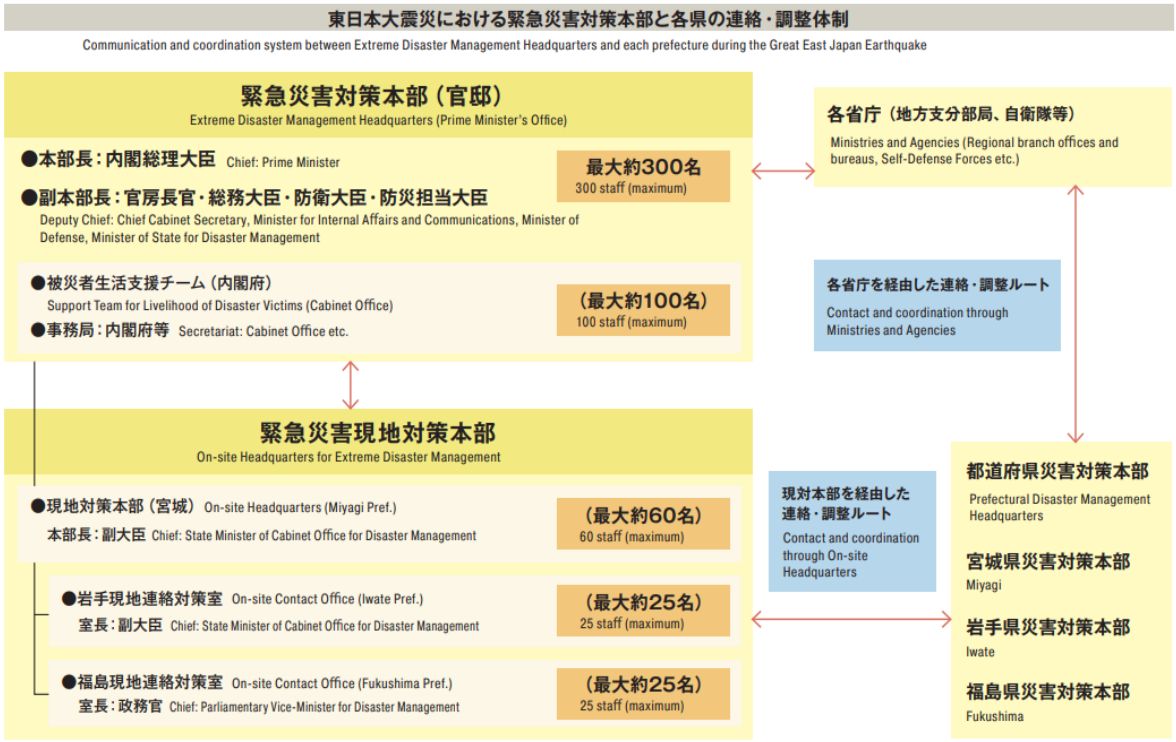



Figure 20. Example of Coordination between National and Local Governments

Various agencies at different levels carry out the disaster response operations depending upon the size of the disaster. Following are some important agencies involved in the response activities.

### 7.4.1. Fire Service Organizations

The Fire Service Organizations (FSOs) in Japan play a critical role in disaster response and management, including firefighting, rescue operations, and emergency medical services. These FSOs are organized at both the national and local levels.

At the municipal level, regular fire-fighting units and volunteer firefighters are the two main types of FSOs. Regular fire-fighting units are staffed by full-time, professional firefighters who are employed by municipal governments. They are trained in fire-fighting, medical service and rescue activities and are usually the main responders during any kind of disaster. Volunteer firefighters, on the other hand, are typically local residents who are trained and equipped to provide support to the regular fire-fighting units in times of emergency. They work on their regular jobs but are expected to respond quickly to emergencies when they occur in their communities. They have the authority and duty to carry out fire defense activities, including firefighting, rescue, and ambulance services. They are usually the first to respond to disasters on the front line, providing initial response and support until the arrival of the regular fire-fighting units.

At the national level, the Emergency Fire Response Teams (EFRTs) are operated by the Fire and Disaster Management Agency (FDMA). These teams are composed of highly trained professionals and are designed to respond to large-scale disasters that exceed the capacity of local FSOs. The EFRTs are typically dispatched to disaster areas to support and coordinate with local FSOs, as well as to provide additional resources and expertise.

Overall, the FSOs in Japan are an essential component of the country's disaster management system, and they play a critical role in protecting lives and property during emergencies.

### 7.4.2. National Police Agency

The police play a crucial role in responding to disasters by ensuring public safety, maintaining law and order, and providing security. In the event of a large-scale disaster, the police, together with fire stations and the Self-Defense Forces (SDF), play a wide range of roles, such as conducting evacuation guidance and rescue operations for victims, searching for missing persons, conducting forensic examinations and identity checks, taking various traffic measures, and tackling various crimes in the disaster area. The NPA's disaster response units are responsible for coordinating police response efforts and providing support during emergencies. Additionally, the police provide important information to the public through various channels such as social media and public address systems.

Rapid response units are dispatched during a period of about two weeks from immediately after the disaster occurrence and carry out disaster control activities in a short period of three days to one week. In principle, they conduct activities without receiving any support such as the arrangement of accommodations and the procurement of supplies from the police in the disaster area. General units are dispatched after a certain period of time has passed after a large-scale disaster. They conduct searches for missing persons, vigilance and patrol, traffic control and regulations, consultation services, initial investigation, etc., and carry out a wide range of activities based on the requests of the disaster area over a long period of time.

The ability of the police to coordinate effectively with other agencies is essential for a successful response to disasters. Overall, the police are an integral part of Japan's disaster response system, working closely with other agencies to ensure the safety and well-being of the public.

### 7.4.3. Japan Self Defense Forces

The Japanese Self-Defense Forces (JSDF), officially the Self-Defense Forces, are the unified military forces of Japan. Established in 1954, the Self-Defense Forces include the Japan Ground Self-Defense Force, the Japan Maritime Self-Defense Force, and the Japan Air Self-Defense Force. They are controlled by the Ministry of Defense with the Prime Minister as commander-in-chief.

The SDF disaster relief role is defined in Article 83 of the Self-Defense Forces Law of 1954, requiring units to respond to calls for assistance from prefectural governors to aid in fire fighting, earthquake disasters, searches for missing persons, rescues, and reinforcement of embankments and levees in the event of flooding. The SDF conducts a variety of disaster relief operations in collaboration with municipal governments when disasters such as natural disasters occur in any part of the country, by engaging in the search and rescue of disaster victims or missing ships or aircraft, controlling floods, offering medical treatment, preventing epidemics, supplying water, and transporting personnel and goods. In particular, over 100,000 SDF personnel were dispatched at a peak time for relief operations for the large-scale earthquake and nuclear disaster based on the Great East Japan Earthquake in March 2011.

SDF are deployed only upon the request of the prefectural governor. Municipal Mayors can ask prefectural governors to request a disaster relief dispatch by the SDF. In the event that mayors are unable to make such a request to the prefectural governor, they can inform the Minister of Defense, or those designated by the Minister of the disaster conditions. After receiving such requests from governors, the Minister of Defense or other personnel designated by the Minister can immediately dispatch units as necessary according to the disaster situation. Under circumstances of particular urgency when there is no time to wait for a request, the Minister of Defense or those designated by the Minister may authorize an exceptional dispatch (discretionary dispatch). The Minister of Defense is authorized to dispatch SDF once earthquake or nuclear threat alarm is issued, based on the request of Chief of the Nuclear Disaster Countermeasures Headquarters and Chief of the Earthquake Disaster Warning Headquarters (both –the Prime Minister)

#### 7.4.4. Japan Coast Guards

The Japan Coast Guard (JCG) is a government agency that falls under the Ministry of Land, Infrastructure, Transport and Tourism (MLIT) and is responsible for disaster preparedness and marine search and rescue operations. The JCG educates people about the dangers of the sea and promotes self-rescue principles to raise awareness.

In the event of a marine accident, such as a boat or vessel accident, the JCG conducts search and rescue operations. It deploys mobile rescue personnel skilled in helicopter rescues, scuba diving, and providing emergency medical treatment. The JCG also collaborates with other public and private rescue organizations, including police and fire departments, to cover the vast areas of the sea surrounding Japan. To ensure prompt assistance, the JCG operates a maritime accident reporting service 24 hours a day through the Global Maritime Distress and Safety System (GMDSS). Incidents and accidents can also be reported quickly by dialing 118 on a mobile or onboard phone. Calls from landlines are received by the respective regional centers, while calls from onboard phones are directed to headquarters. The JCG also plays a crucial role in responding to natural disasters, such as earthquakes and tsunamis. In these situations, JCG vessels and aircraft are used to assess damage and provide assistance to affected areas. The JCG operates a fleet of vessels and aircraft, including patrol boats, helicopters, and fixed-wing aircraft, to carry out its missions. These assets are strategically stationed throughout Japan to ensure rapid response to emergencies. Overall, the JCG plays a critical role in disaster response activities in Japan.

#### 7.4.6. Disaster Medical Assistance Team (DMAT)

The Disaster Medical Assistance Teams are specialized and trained medical aid teams which operate during large-scale disasters. DMAT system was established in 2005 based on the lessons of Great Hanshin Awaji Earthquake.

The guidelines for the deployment of DMATs are based on the results of research by the Ministry of Health Labour and Welfare (MHLW) and they define DMATs as “mobile, trained medical teams that can be rapidly deployed during the acute phase of a disaster (within 48 hours). “DMAT Team Member Training Course” is conducted at the National Hospital Organization’s Disaster Medical Center (an

independent administrative agency) for certification of DMAT personnel. The primary mission of DMATs is to provide emergency medical care to disaster victims. This includes triaging patients to assess their medical needs, stabilizing patients with life-threatening conditions, and providing treatment for injuries and illnesses. DMATs are also trained to provide mental health support to disaster victims who may be experiencing trauma or psychological distress. Once deployed, DMATs work closely with other disaster response teams and agencies to provide comprehensive support to disaster victims and are also part of the national disaster management plan.

The four to five-person team consists of doctors, nurses, and coordinators who are trained to respond to disasters quickly and efficiently. There are 1,686 teams and 14,204 registered personnel nationwide (as of the end of March 2019). DMAT teams were mobilized in various incidents including the Northern Osaka Prefecture Earthquake, heavy rain in western Japan, and the Hokkaido Eastern Iburi Earthquake in 2018, and the torrential rain disaster in the northern part of Kyushu and the Typhoons 15 and 19 in 2019. Approximately 100 teams were dispatched for Typhoon 15, and approximately 260 teams were dispatched for Typhoon 19. Their job was to support hospitals with water interruptions and power outages, as well as to evacuate hospitalized patients.

DMATs are an important component of Japan's disaster response system, providing critical medical assistance to disaster victims and supporting local medical facilities. The highly trained and equipped teams of medical professionals work quickly and efficiently in challenging environments, providing necessary medical care to those in need.

#### 7.4.5. BOKOMI

BOKOMI (Community Organization for Disaster and Welfare Management) is a volunteer organization established by the Kobe City government to reduce the risks associated with disasters. The organization was created in the aftermath of the Great Hanshin Awaji earthquake, which occurred in 1995 and caused extensive damage to the city. BOKOMI's primary goal is to ensure that the community is well-prepared to deal with any future disasters that may occur.

One of the unique aspects of BOKOMI is that it combines disaster response with local welfare activities during normal times. The organization is made up of elementary school district-based voluntary groups that collaborate closely with the local government and fire department. These teams serve as first responders during emergencies or disasters, and they work together to ensure that people are safe and that the situation is under control.

BOKOMI conducts various emergency drills and programs to ensure that its members are well-prepared to handle different types of disasters. These drills include rescue drills, evacuation drills, information transmission drills, flood control drills, and more. The local government provides the equipment and materials needed for these activities, and storehouses are established in local parks to ensure that emergency supplies are readily available.

In addition to its disaster preparedness activities, BOKOMI also conducts various welfare activities for the community. For example, the organization hosts lunch gatherings for elderly people and conducts other community-building activities. By combining disaster response with local welfare activities, BOKOMI helps to strengthen the disaster management system of the city.

## 8. Disaster Reduction Drill / Human Resources Development

### 8.4. Disaster Reduction Drills and Exercises

The Basic Act on Disaster Management stipulates that it is obligatory to conduct disaster management drills. In order for various disaster management entities to check and confirm the emergency measures to be taken upon occurrence of a disaster, and to raise awareness among residents of disaster reduction, the Government annually sets out, at the National Disaster Management Council, basic guidelines for the drills to be exercised nationally and by the local entities and sets out the “Disaster Preparedness Drill Plan'' stipulating overview of drills and exercises implemented by the Government. Communities implement disaster management drills at various times of the year based on this Plan. In particular, on every “Disaster Preparedness Day '' on September 1 and “Tsunami Preparedness Day '' on 5 November, wide, large-scale disaster response drills are implemented nationwide with various disaster management entities working together and numerous participating citizens. Further, based on the experience of past disasters, the Plan is revised when necessary. For example, based on lessons learned from the 2016 Kumamoto Earthquake, the Plan was revised to include provisions for training of wide-area aid/aid acceptance of dispatch staff based on intergovernmental support agreements. Also, based on the experience with 2018 Japan floods and the 2018 Hokkaido Eastern Iburi earthquake, cross-industry training for lifeline recovery was also included. In addition, the experience of COVID-19 led to the inclusion of infection control in drills.

### 8.5. Human Resources Development

The Cabinet Office started a “program for developing disaster management specialists” for the purpose of developing and training people “who can respond to the emergency promptly and appropriately” and “who can form a network between the national and local entities.” Specifically, 1) the provision of the training program, “OJT Workshop,” to employees of local public organizations by engaging them in disaster management services at the Cabinet Office and receiving workshops related to disaster management, 2) provision of a training program either online or at the Ariake-no-Oka Main Wide-Area Disaster Management Base Facility, called “Ariake-no-Oka Workshop,” teaching systematically the knowledge, skills and attitude required for disaster management operations through lectures and exercises. From 2020, with infection control of COVID-19 in mind, e-learning and video conference tools have been utilized to implement online workshops to increase the number of trainees.

## 9. Measures for Support to Disaster-Affected People

### 9.4. Measures for Residents in Need of Assistance in Evacuation

In 2006 the Cabinet Office released and disseminated to municipalities the Guidelines for Evacuation Support of People Requiring Assistance during a Disaster. There were high mortality rates for age and disabled groups in the Great East Japan Earthquake in 2011, while there was a sacrifice on a broad scale for those who provided support such as firefighters and social workers. With these lessons, the Disaster Countermeasures Basic Act was amended in 2013 to stipulate that head of each municipality be assigned with the responsibilities of establishing a list of residents who need assistance in evacuation at the time of disaster, and upon revision of the Basic Act, the above-mentioned Guidelines were revised in its entirety into the guidelines which incorporated specific procedures for establishing a list of residents in need of assistance at the time of evacuation. In addition, under the amendment of the Basic Act on Disaster Management in 2021, preparation of the individual evacuation plans which describe information such as those who provide evacuation support and evacuation sites for each person requiring assistance evacuating have been obligated to make efforts for municipalities.

### 9.5. Ensuring Satisfactory Living Conditions at Shelters

In the Great East Japan Earthquake, there were many problems arising during the disaster: affected people suffered health problems; aged people were forced to stay home because they could not adapt themselves to the evacuation shelters in some cases, relief supplies were not provided sufficiently to home evacuees in many cases; and there were reported problems for provision of information, relief supplies, and services for wide area evacuees who evacuated to other prefectures or municipalities. In order to address these challenges, the Basic Act on Disaster Management was amended in 2013, and established obligations to make efforts regarding distribution of food, clothing, medicines, and other living-related supplies, and improvement of the living environment of evacuation shelters. Also, upon revision of the Basic Act, guidelines the Guidelines for Ensuring Satisfactory Living Conditions at Shelters have been formulated and published mainly for municipalities. Under these guidelines, the Shelter Management Guidelines, the Guidelines for Securing and Managing Welfare Shelters, and the Guidelines for Securing and Managing Toilets at Shelters have been published Under the COVID-19, it is imperative that thorough infection control measures are taken at evacuation sites. The government has issued considerations for COVID-19 infection control measures at evacuation sites to local governments. The government has also taken actions to further raise awareness of citizens by distributing flyers through local governments. These flyers written in 14 languages contain 5 essential points for evacuation with the COVID-19 situation in mind.

### 9.6. Provision of Condolence Grant to Disaster Affected People

The Disaster Relief Act aims at protecting disaster affected people and maintaining social order by the national government in cooperation with local public corporations, the Japan Red-Cross and other organizations, and the general public, at the time of disaster, by providing emergency relief. Specifically, upon occurrence of a disaster with specified magnitude or more, the prefectural governors will make emergency disbursements to assist the affected, including setting up evacuation shelters and rescuing victims (the national government will reimburse 50% to 90% of such disbursement). The Act on Provision of Disaster Condolence Grant stipulates the provision of condolence grants to the bereaved families, emergency cure grants to the victims severely damaged mentally or physically and loans for the affected by disasters to the head of families with severe damage.

## 10. Disaster Management Base Facilities

In preparation for the Tokyo Inland Earthquake, the Government maintains and manages disaster management bases as follows. The Substitute Facility in Tachikawa will serve as the Government's Extreme Disaster Management Headquarters when the Prime Minister's Office is seriously damaged and dysfunctional. It is equipped with the back-up functions of the Cabinet Office (set up in the Joint Government Building #8) including communications control and information processing dedicated to disaster management. The Key Wide-area Disaster Prevention Bases in the Tokyo Bay Waterfront area, located in the Ariake-no-Oka area, is a potential site for accommodating the Government's On-site Disaster Management Headquarters, to function as the headquarters for wide-area disaster management covering the entire Metropolitan area. Also, it functions as the base camp for the wide-area support forces and for supporting disaster medical aids. In normal times, the facilities are utilized for information exchange among disaster-related institutions and for various training. The Key Wide-area Disaster Prevention Bases in the Tokyo Bay Waterfront area, located in the Higashi-Ohgijima area, coordinates the arrival of shipments of support materials from Japan and overseas in the event of a disaster, and functions as a relay base for the shipment by sea, river and land, and offers a temporary base camp for the mustering of wide-area support teams.


Figure 21. Headquarters Functions of the Greater Metropolitan Area Disaster Management

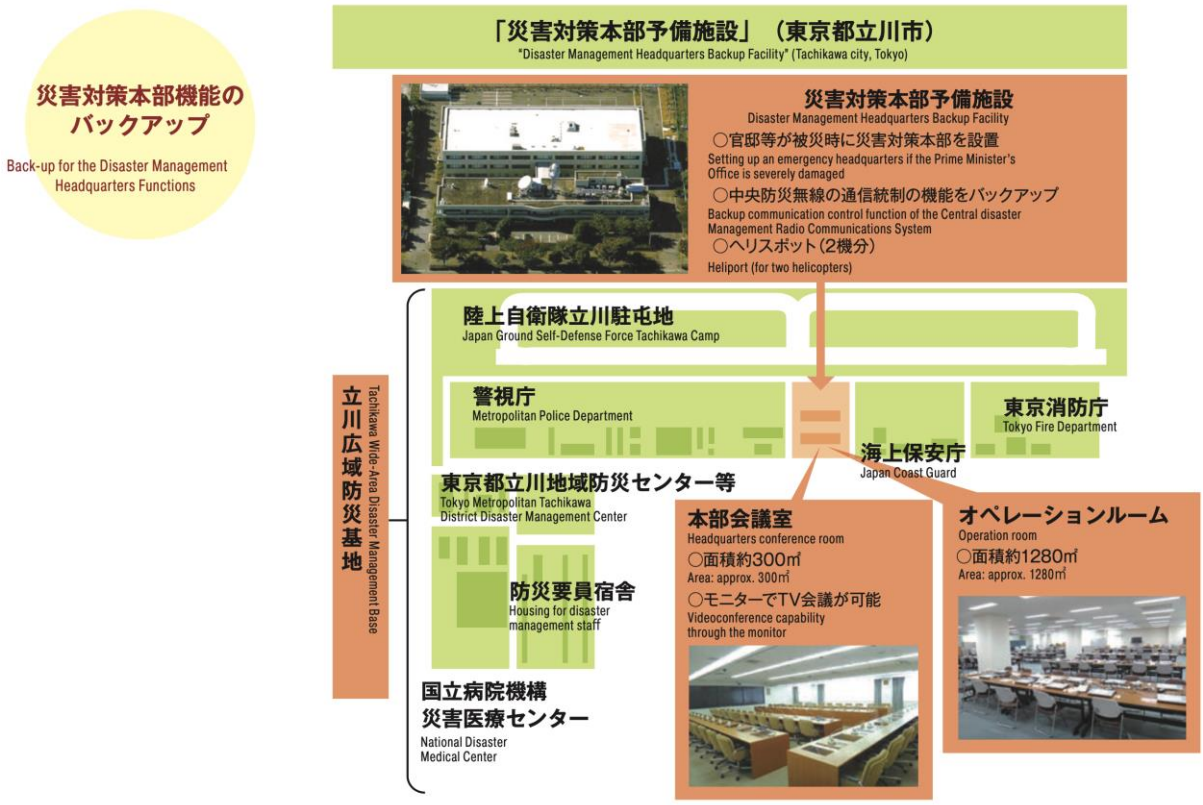



Figure 22. Back-up for the Disaster Management Headquarters Functions

## 11. Learnings for India

The following aspects of the Japanese Disaster Management system are worth emulating by India:

a) White Paper on Disaster Management

The annual White Paper on Disaster Management providing an outline of the government's policies, measures, and initiatives for disaster management. India could benefit from a similar document, which would provide a roadmap for disaster management.

b) DM Plans at Community level

Each community area develops a Disaster Management Plan based on the hazards and vulnerability in the area. These plans are periodically reviewed and updated to ensure that they remain relevant. Such an approach in India would ensure that every community is well-prepared to handle disasters.

c) BOKOMI- Community Organization for Disaster and Welfare Management

The Community Organisations like BOKOMI play a crucial role in times of disasters. These organization combines disaster response with local welfare activities during normal times. The organization is made up of various voluntary groups that collaborate closely with the local government and fire department. India could benefit by training similar organizations, which would help in building resilience at the community level.

d) Business Continuity Plan

The Business Continuity Plan stipulates that the executive systems continue to run the government services smoothly in the event of a disaster. It ensures effective response during the times of crisis. Implementation of a similar system in India will help in better response and quick resumption of normal activities.

e) Communication Network

The central disaster management radio network of Japan ensures communication among disaster prevention related organizations nationwide in the event of a large-scale disasters. This system uses communication satellites and other redundancies to keep up the communication and also for dissemination of alerts and warnings to the public. Similar system in India can improve the preparedness for disasters.

f) Human Resource Development in DRM

Japan places a strong emphasis on human resource development in disaster risk management. The country provides regular training to disaster management personnel, including government officials, first responders, and volunteers. India could benefit from a similar approach, as it would ensure that the country has a skilled workforce that can effectively respond to disasters.

g) Evacuation sites and Emergency shelters

In Japan, the network of evacuation sites and emergency shelters that can be quickly activated in the event of a disaster. The sites are equipped with basic facilities such as food, water, and medical supplies. India could benefit from the establishment of similar facilities, which would provide a safe haven for people affected by disasters.

In conclusion, India by adopting some of the above-mentioned aspects, can improve its disaster preparedness and response capabilities, and ultimately, save lives and mitigate the impact of disasters.

## 12. Conclusions

Japan is a country that is highly prone to natural disasters such as earthquakes, tsunamis, typhoons, floods, and landslides. The country's high-risk profile makes it necessary to have a well-defined disaster management system in place. It has developed a comprehensive disaster management system that includes disaster prevention, preparedness, response, and recovery.

The government has enacted several laws and acts related to disaster management prominently the Disaster Countermeasures Basic Act of 1961 which requires the national and local governments to take preventive and preparedness measures against disasters. It establishes the roles and responsibilities of government agencies, and requires them to work together to prepare for disasters. There is a well-defined institutional setup that includes the Cabinet Office and the Central Disaster Management Council with Prime Minister as the Chairperson.

Japan also has a system of updating the disaster management system, such as introducing amendments to the Basic Countermeasures Act and the publication of the White Paper on Disaster Management which outlines the government's policies, measures, and initiatives for disaster management.

Basic Disaster Management Plan, Community Disaster Management Plans, and Business Continuity Plans form the core of Japan's disaster management planning aimed at the functioning of the systems in the aftermath of a disaster.

Japan has a sophisticated early warning system with different levels of alerts at the national and local levels in the form of J-alert and L-alert, respectively. Information and communication with Central Disaster Management Radio network, Integrated Disaster Management information systems, and Information Support Teams play a crucial role in disaster management.

The emergency response mechanism in Japan involves wide area support and coordination between the national and local governments. Response agencies like the Fire Service Organizations, National Police Agency, Japan Self Defense Forces, Japan Coast Guards, Disaster Medical Assistance Teams, and BOKOMIs (the community volunteers) play a crucial role in emergency response.

Human resource development activities like DRR drills and exercises help in building resilience and preparedness among the citizens. The system caters for support during evacuation and emergency shelters and other provisions to ensure the safety and well-being of the affected population.

While Japan invested in readiness for response (e.g., mitigation, forecasting, EWS, and drills), large-scale disasters like the Great East Japan Earthquake proved that those efforts were not enough, as shown in the magnitude of damage and loss of lives and properties brought about by large-scale disasters.

But then, the policies, programs, and activities on preparedness for response in Japan often undergo major changes for improvement. Firstly, by learning from the past disaster experiences and addressing the limitations to improve the system (e.g., use of satellites in EWS). Secondly, by using disaster data to simulate future impacts of disasters and prepare the response system to withstand the impacts (e.g., projection studies showing that the existing 5-meter levee could not withstand future tsunami. So, the heights of levees need to be raised accordingly).

Japan has an ever evolving, comprehensive and well-organized disaster management system reflecting the country's experience in dealing with natural disasters and showing a high level of preparedness for response in the event of a disaster.

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