



NDMA
NATIONAL DISASTER
MANAGEMENT AUTHORITY

Improvement pathways for coordination in disaster response and emergencies in Maldives- Lesson learnings from Japan's response coordination



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DISCALIMER

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The findings, interpretations and conclusion represent my own work and all sources of information included in the report is acknowledged from secondary sources and does not signify the views of the Asian Disaster Reduction Center or National Disaster Management Authority.

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ACRONYMS

ADRC	ASIAN DISASTER REDUCTION CENTER
NDMA	NATIONAL DISASTER MANAGEMENT AUTHORITY
NDMC	NATIONAL DISASTER MANAGEMENT CENTER
NEOP	NATIONAL EMERGENCY OPERATION PLAN
NEOC	NATIONAL EMERGENCY OPERATION CENTER
EOC	EMERGENCY OPERATION CENTER
DRR	DISASTER RISK REDUCTION
MNDF	MALDIVES NATIONAL DEFENCE FORCE
MRC	MALDIVIAN RED CRESCENT
CERT	COMMUNITY EMERGENCY RESPONSE TEAM
IDPS	INTERNALLY DISPLACED PERSONS
WNI	WEATHER NEWS INC
JMA	JAPAN METEOROLOGICAL AGENCY
DMATS	DISASTER MEDICAL ASSISTANCE TEAMS
GIS	GEOGRAPHIC INFORMATION SYSTEM
NDMP	NATIONAL DISASTER MANAGEMENT PLAN
SOPs	STANDARD OPERATING PROCEDURES

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CHAPTER 1

INTRODUCTION

The imperative for effective coordination in disaster response and emergencies is rooted in the ever-growing complexity of global challenges. Over the years, the world has witnessed an increase in the frequency and intensity of natural disasters, including hurricanes, earthquakes, floods, and wildfires, compounded by the emergence of new threats like pandemics. These events often transcend national borders, necessitating a coordinated and collaborative approach on a global scale. First, coordination needs to be inclusive, bringing together different government sectors and levels, and stakeholders such as development agencies, universities, the private sector, local leaders and civil society, with equitable gender representation. Second, structural aspects of coordination bodies are important, including availability of coordination structures and regular meeting fora; clear roles, mandates and sufficient authority; the value of building on existing coordination mechanisms; and ongoing functioning of coordination bodies, before and after crises. Third, organizations responsible for coordination require sufficient capacity, including staff, funding, communication infrastructure and other resources, and learning from previous emergencies. Fourth, effective coordination is supported by high-level political leadership and incentives for collaboration.

The ability to coordinate their efforts efficiently and collaboratively is essential for maximizing resources, minimizing duplication of efforts, and ultimately saving lives. The lessons learned from past disasters underscore the need for comprehensive coordination strategies that not only address immediate needs but also foster long-term resilience and recovery. This background underscores the urgency of understanding and refining coordination mechanisms in disaster response and emergencies to build a more resilient and interconnected global community. Despite the importance of coordination in disaster response and emergency management, there is a lack of research on how coordination can be improved in a global context, particularly in low-resource settings.

In the face of escalating natural disasters and emergencies, the Republic of Maldives stands at a critical juncture in fortifying its disaster response and coordination mechanisms. The Maldives is a small island nation prone to disasters. Due to its weak geological features, the majority of the island nation experiences hydrometeorological phenomena. Past disasters have identified several factors that can affect coordination in disaster response and emergency management, including communication systems, leadership, and organizational structures.

BACKGROUND AND SIGNIFICANCE OF THE RESEARCH

The National Disaster Management Center (NDMC) was established in the Maldives following the devastating Indian Ocean Tsunami that occurred on December 26, 2004. This initiative was undertaken by the then-president through a presidential decree. Prior to the Tsunami, the Maldivian community had not actively addressed or discussed the need to mitigate and prepare for disasters due to the relatively few hazards they faced, such as floods, surges and fire incidents. The concept of mega-disasters like Tsunamis was largely unknown. However, the 2004 Tsunami highlighted the urgent need to address and prepare for such calamities. Consequently, the then-president issued a presidential decree to establish the NDMC, which would be responsible for coordinating and managing disaster response and recovery efforts.

The formation of the NDMC marked a significant turning point in the approach to disaster management in the Maldives. It brought attention to the importance of preparedness, response and proactive measures to mitigate the impacts of potential future disasters. The NDMC's work not only focused on addressing the immediate aftermath of the 2004 Tsunami but also aimed to build resilience within the country to better cope with future disasters.

Following the establishment of the National Disaster Management Center (NDMC), the Maldives implemented the National Emergency Operation Plan (NEOP). The NEOP is a comprehensive framework that outlines the strategies, procedures, and responsibilities for managing emergency operations in the country. The introduction of the NEOP was a crucial step towards strengthening disaster management capabilities in the Maldives. It provided a structured and coordinated approach to emergency response and ensured that all relevant stakeholders were equipped to handle various types of disasters effectively.

On December 30, 2018, the National Disaster Management Authority (NDMA) was established in accordance with the Disaster Management Act (28/2015). In an effort to address issues of vulnerability, NDMA is implementing a more comprehensive model in which the procedures for hazard identification and mitigation, community preparedness, coordinated response operations, and recovery are planned for and carried out concurrently within a risk management environment.

Since the Maldives has primarily faced incidents related to flooding, surges, and fire incidents, the understanding and importance of coordinating mechanisms in emergency and disaster response may not have been fully recognized by those involved in the response force or the community. However, the COVID-19 pandemic posed a significant challenge for the Maldives, becoming the country's next major calamity after the Tsunami. In the face of this new and unprecedented crisis, the National Emergency Operation Plan

(NEOP) could not be fully put into operation. During the response to the COVID-19 pandemic, the roles and responsibilities of all necessary stakeholders were identified and coordinated efforts were made. This experience highlighted the gaps and shortcomings in the existing NEOP, as it was not specifically designed to address a pandemic of this magnitude. The challenges faced during the pandemic provided valuable insights into the areas that require improvement in the country's disaster response strategies. As a result, an update to the NEOP is being considered to address the gaps identified during the COVID-19 pandemic. This update will likely incorporate lessons learned from the pandemic response and provide a more comprehensive and adaptable framework for future emergency situations.

Overall, the Tsunami served as a catalyst for the development of coordinated response efforts in the Maldives, but the unique challenges posed by the COVID-19 pandemic emphasized the need for continuous evaluation and improvement of disaster management plans and coordinated response mechanisms.

Therefore, this research will explore pathways for improvement in the existing coordination mechanism in disaster response and emergencies in the Maldives.

SPECIFIC AIMS

Coordination is essential for effective disaster response and emergency management. Recognizing the existing issues in the areas and drawing out its significance to the coordination effort is vital for future improvements. And specific research in coordination has not been done previously. As such, this study aims to identify current gaps, assess existing frameworks, and propose strategic enhancements to streamline coordination efforts.

CHAPTER 2

RISK PROFILE OF MALDIVES

The Maldives are a group of scattered islands in the Indian Ocean, located to the south west of Sri Lanka. It consists of approximately 1,190 coral islands grouped in a double chain of 26 atolls, spread over roughly 90,000 square kilometers, making this one of the most disparate countries in the world¹. The Maldives archipelago stretches 823 km north to south and 130 km east to west. Over 99% of the Maldives is made up of the sea: only 0.331% (115 square miles) of its 35,000 square mile surface area is dry land.

The islands that make up the Maldives are very small (most can be walked across in 10 minutes; only a few are longer than 2 kilometers) and low-lying (they rarely reach more than six feet above sea-level). This makes them particularly vulnerable to sea erosion. In 1812 and again in 1955, devastating gales destroyed many northern islands, while in 1987 the capital, Male, was flooded by a severe storm. If, as some scientists predict, global sea levels continue to rise as a consequence of global warming, it will pose a particular risk to the Maldives.

The nation's geographical placement, coupled with the physical and geo-climatic characteristics of its islands located near the equator in the Indian Ocean, exposes it to a range of natural hazards. These hazards encompass earthquakes, predominantly in the Southern region, as well as tropical cyclones, storms, thunderstorms, heavy rainfall, drought, floods resulting from intense rainfall, storm surges, swell waves, and tsunamis. The country consistently faces significant risks, marked by frequent, though low-impact events such as monsoonal flooding, sea surges, and persistent phenomena like coastal erosion, saltwater intrusion, and other climate-related risks. Moreover, since the 2004 Indian Ocean Tsunami, numerous islands in the Maldives encounter freshwater shortages during the dry season due to heightened salinity and groundwater contamination. To address this, the government annually allocates substantial funds to provide emergency drinking water to communities on affected islands.

A disaster is an abrupt and catastrophic occurrence resulting in extensive harm, loss, and devastation to both life and property. The extent of damage caused by disasters is incalculable, fluctuating based on geographic location, climate conditions, and the characteristics of the Earth's surface, as well as the level of vulnerability. These events have profound effects on the psychological, socio-economic, political, and cultural conditions of the affected region and its inhabitants.

Hazards and Disaster Risk

The Maldives is one of the most vulnerable countries in the world. Being the flattest and the lowest elevated nation with average height of 1.5 meters, Maldives faces multi-hazard risks and threats from the global warming and climate change induced sea level rise and extreme weather events. Maldives is one of the fewer countries which do not have any natural higher grounds. Not a single piece of land is higher than three meters above mean sea level. Generally, urban or rural, all the islands are coastal communities. All the human settlements, industries and critical infrastructure are located near the shoreline. Airports, hospitals, schools, power plants and more than 40 per cent of houses lie less than 100 meters from the sea. Due to the close proximity to the coastline, several households are prone to severe climate hazards.

¹ Climate Risk Profile: Maldives- Asian Development Bank, <https://www.adb.org/publications/climate-risk-country-profile-maldives>



Figure 1: coastal erosion in one of the islands in Maldives



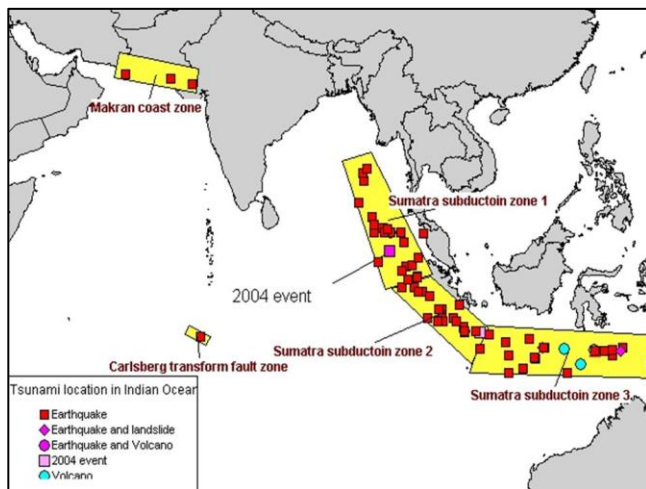
Figure 2: Sea surges affecting a school in one of the island (K. Dhiffushi)

Geologically, Maldives is located on the Indian tectonic plate which makes Indian Ocean ring as the main area of concern. There are two main subduction zones in this ring, the plate boundaries near Sumatra, Indonesia and the Makran coast. Large magnitude earthquakes in subduction zones tend to create Tsunamis, hence these areas are given a special importance. The frequency of natural disaster of large scale is relatively low in Maldives. However, the 2004 Indian ocean Tsunami brought devastating impact to the life of its people, economy and development progress. With the realization, discussions and mindfulness

for disaster preparedness began among the communities. Back then locals had a belief that Maldives is a country safe from catastrophic disasters with little to no historical records. Hence, 2004 Indian Ocean Tsunami came when no one was prepared, not knowing what Tsunami is.



Figure 3: Tsunami affected area in one of the islands in Maldives



In addition to the subduction zones mentioned, we experience earthquakes in the Carlsberg Ridge which is located on the south west of Maldives islands. Even though this fault does not cause a Tsunami, it can cause other damages depending on the magnitude of the event. The earthquake occurred on 15th of July 2013 which was recorded 7.6 in Richter scale, caused some damages to the Addu City infrastructure².

Figure 4: Tsunami and Earthquake subduction zones near Maldives

² EARLY WARNING SYSTEM AND COMMUNITY BASED EMERGENCY RESPONSE MECHANISM,

https://www.adrc.asia/aboutus/vrdata/finalreport/2015B_MDV_fr.pdf

Summary of disaster statistics from 2018–2021 (These statistics are from the reported cases to the NDMA.)



Figure 5: Obtained from Disaster Statistics of the Maldives 2018–2021

CHAPTER 3

DISASTER MANAGEMENT SYSTEM IN MALDIVES

In the aftermath of the 2004 Indian Ocean Tsunami, the establishment of the National Disaster Management Centre (NDMC) was initiated through a presidential decree. Initially tasked with coordinating the recovery process and relief efforts in response to the tsunami, the government subsequently expanded the NDMC's mandate to include disaster preparedness and risk reduction. A significant milestone in the history of disaster management in the country occurred with the enactment of the Disaster Management Act 28/2015, leading to the creation of the National Disaster Management Authority (NDMA). Post the 2004 Indian Ocean Tsunami, there has been a dedicated emphasis on enhancing national-level disaster preparedness. An annual observance on December 26, known as National Unity Day, serves as a commemoration of the 2004 Tsunami and provides a platform for national institutions and civil organizations to advocate for improved disaster preparedness in the country.

ADMINISTRATIVE SYSTEM IN MALDIVES

There are 20 administrative atolls and 5 City Councils in the Maldives with over 940 council members in 187 Administrative islands.

In April 2010 the Decentralization Act was passed by the parliament. This act formalized the roles and responsibilities of atoll and island councils and required that they be democratically elected. The Local Government Authority was established in late 2010 and the first local council elections were held in February 2011.

INTRODUCTION TO NATIONAL DISASTER MANAGEMENT AUTHORITY

National Disaster Management Authority (NDMA) was established by former President Ibrahim Mohamed Solih as per the Disaster Management Act (28/2015). With this, all staff, assets, ongoing work of NDMC has been transferred to NDMA.

Currently, NDMA is carrying out a more holistic model, where in the processes of hazard identification and mitigation, community preparedness, integrated response efforts, and recovery are planned for and undertaken contiguously within a risk management context to address issues of vulnerability.

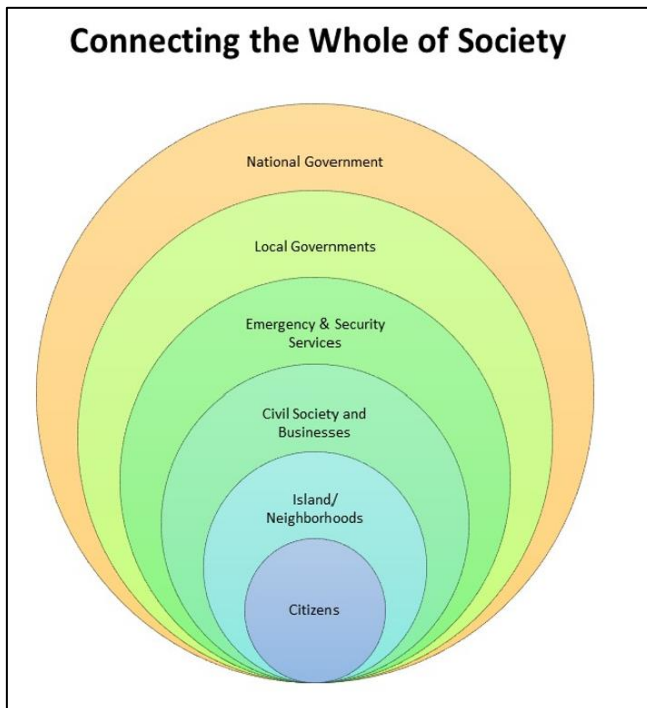
One of the most important objectives of NDMA is to mainstream disaster risk reduction at the national level. This includes planning processes, establishing agreed standards, developing procedures and policies. This work is guided by the National Community-based Disaster Risk Reduction Framework. Several

other documents and processes are in development or have already been institutionalized, including the Relief Guideline, Framework for managing internally displaced persons (IDPs) and the National Emergency Operations Plan (NEOP)³. Significant internal re-structuring has taken place to meet the demands of a changing social climate and environment.

³ National Disaster Management Authority, <https://ndma.gov.mv/en>

NDMA Strategic Framework

Our Role	Our Purpose	Our Mission	Our Vision
We are the lead for Disaster Risk Management and Emergency Response	Working towards a resilient Maldives that ready and prepare for emergencies and disasters	Save Lives and Protect Livelihood	A resilient Maldives



The objective of the National Disaster Management Authority is to promote an integrated coordinated system of disaster management with special focus on reducing disaster risks and mitigation by National, Atoll, State institutions, civil society organizations, public, private organizations and other relevant stakeholders in disaster management.

Figure 6: Whole of society disaster management concept

CHAPTER 4

EMERGENCY RESPONSE MECHANISM

Detailed below are the institutional arrangements, roles and responsibilities to ensure effective and efficient emergency response, established at different levels through the Disaster Management Act.

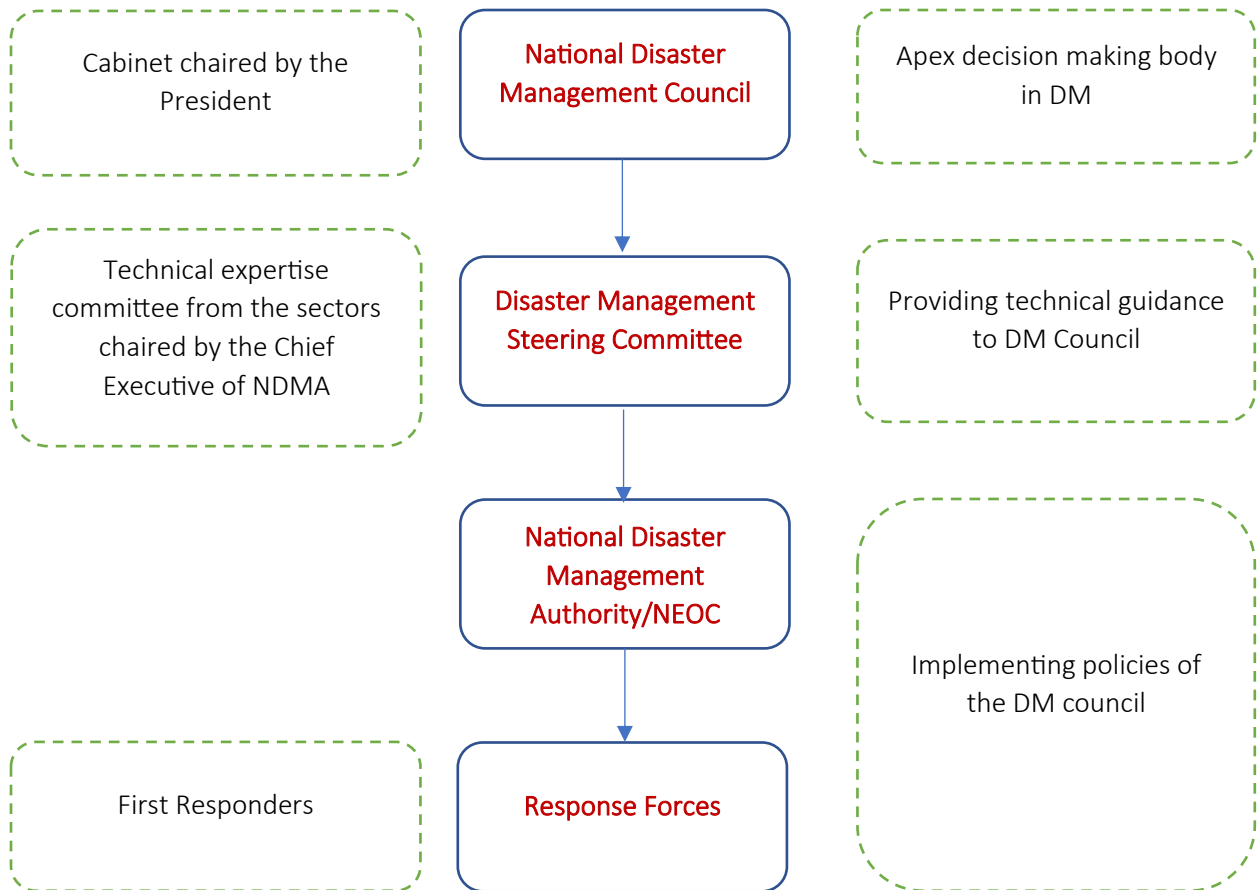


Figure 7: Emergency Response Mechanism

If disaster occurs at City, Atoll and Island level, City Mayor, or Council president or the person in charge of the island will play a lead role with local level stakeholders. The City/Atoll/Island Council/DMC also interacts with both national and local volunteer groups for timely dissemination of information to vulnerable communities and to responding and coordinating agencies.

NATIONAL EMERGENCY RESPONSE FORCES

In the Maldives, disaster response operates across three tiers: national, city/atoll, and island levels. Detailed below illustrates the response tools implemented at each level to guarantee a proficient and effective emergency response. Each level is assigned distinct roles and responsibilities tailored to the nature and scale of emergencies.

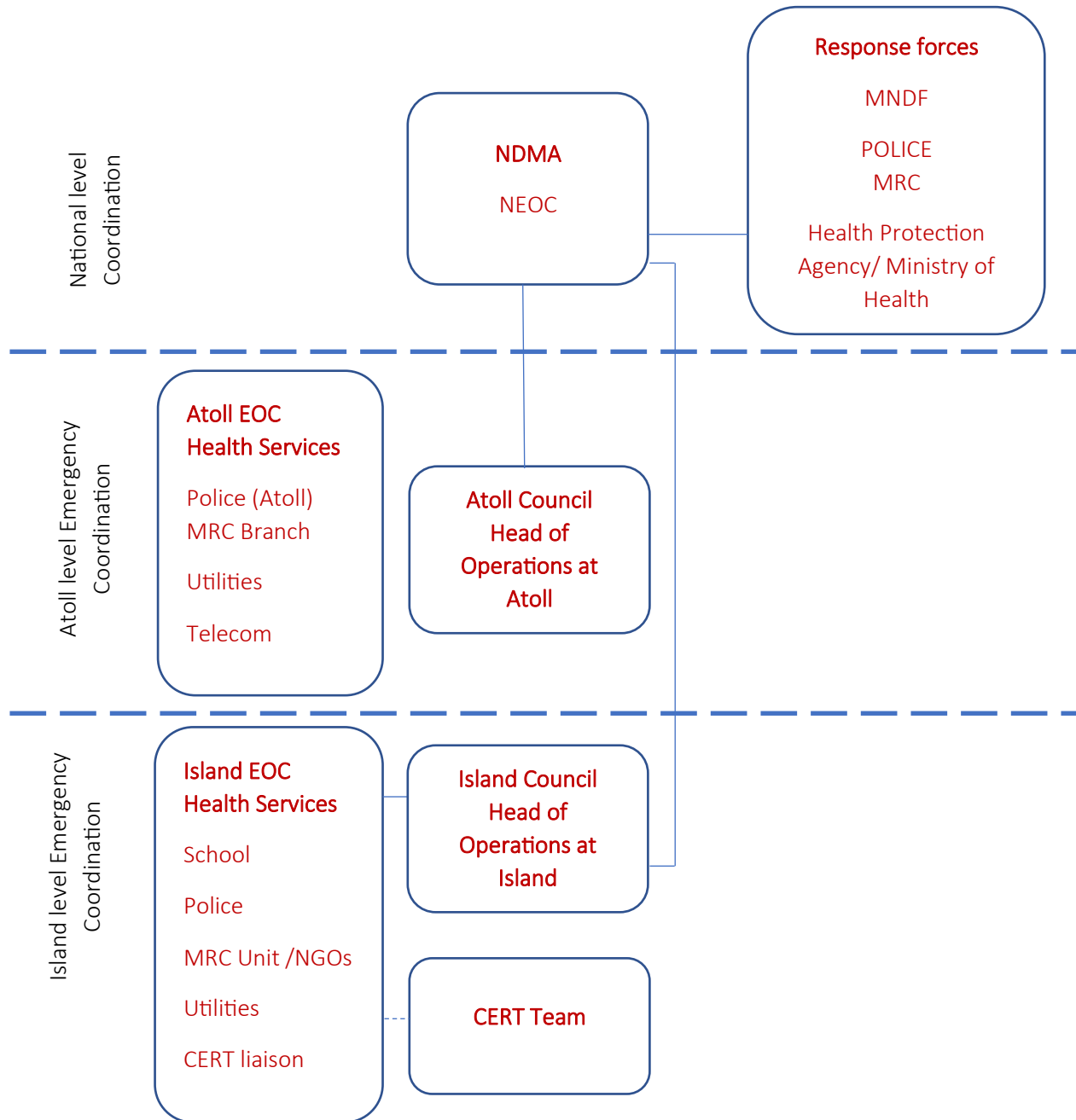


Figure 8: Response Coordination Levels

National Emergency Response Force consists of the following organizations and elements;

- Maldives National Defense Force (Fire and Rescue Service and Coast Guard)
- Maldives Police Service
- Maldives Red Crescent
- Emergency Health Service Providers

Local Councils (Atolls, Island, and cities) are responsible for first response to incidents/emergencies impacting their jurisdictions including the application of fiscal procedures and remedies designed and available to be used for various applications during local emergencies. NDMA may receive emergency funding from its tier partner organizations or from state funding sources and shall provide reports of their ongoing costs and emergency finance activities.

The assumption of the situation will be as follow:

- The Local councils will seek emergency supplemental response and recovery funding when funding resources within their jurisdiction have been exhausted.
- The Local councils will seek supplemental response and recovery funding from the government through the NEOC when incident-related costs meet or exceed their thresholds and declaration factors.
- Islands, atolls, and cities will follow laws, regulations, applicable policies, and grant guidance when grants are made available.
- During and after a local response, accurate accounting of and for income and expenses related to the incident need to be documented and recorded.

ATOLL AND ISLAND LEVEL

Currently, the state of disaster preparedness at the atoll and island levels is inadequate, lacking an established official mechanism for disaster response. It is imperative for the Atoll Council, Island Councils, and other stakeholders to prioritize the development of disaster response, search and rescue, and community-based emergency management plans.

Presently, disaster response activities are conducted through various components of the National Emergency Response Force. The Maldives National Defense Force operates Area Commands and Posts, the Maldives Police Service manages Divisional Commands, Atoll Police, and Island Police Stations, while the Maldives Red Crescent and Emergency Healthcare Service have their respective Branches, Units, Regional

Hospitals, and Atoll Hospitals distributed across the country. In response to emergency requests from NDMA, Atolls Council, and Island Councils, these agencies swiftly provide initial emergency response and relief based on their capacity and mandate.

However, due to limited resources and training, islanders often rely heavily on the military or police for incident response and emergencies. The lack of resources and training at the community level leads to a dependency on the Police Force or Defense Force during disaster events. Consequently, many island communities wait for these forces to attend to disaster events. The absence of emergency response plans and mechanisms at the community level results in ad-hoc coordination, causing delays in search and rescue operations and, regrettably, leading to loss of lives in recent incidents due to delayed responses.

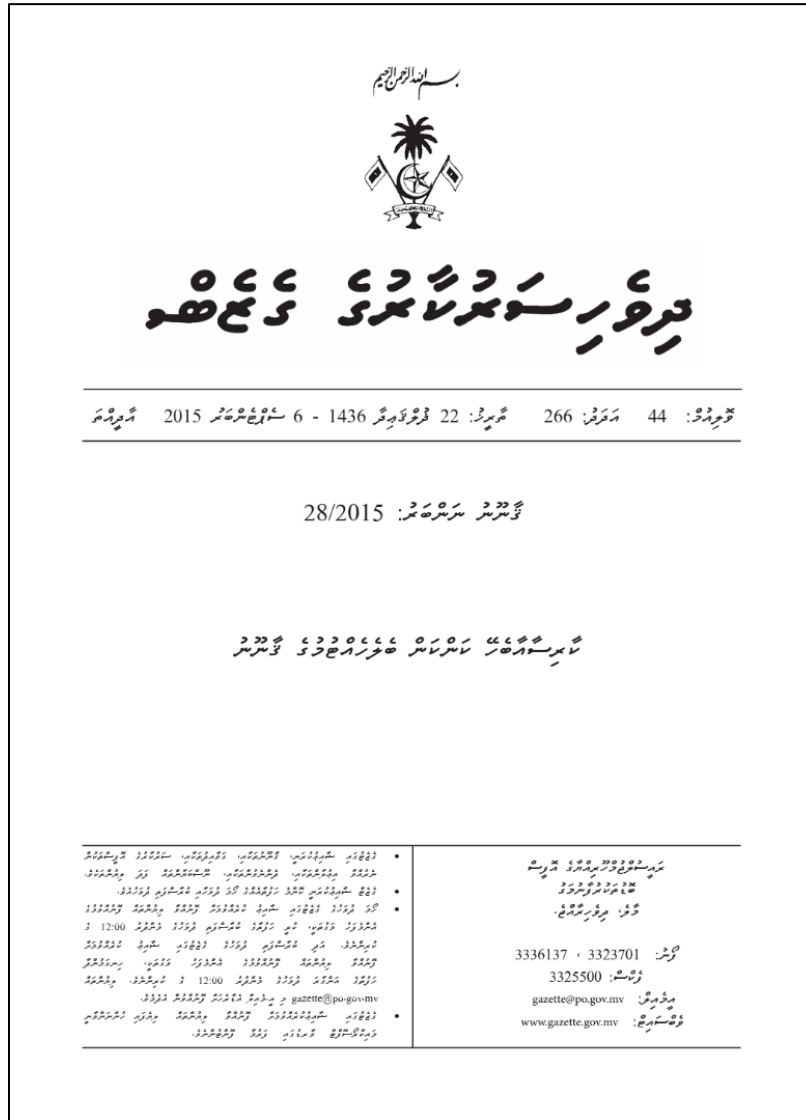
However, there are nine islands where Community Emergency Response Teams (CERT) have been established, and the majority of them are currently active. Their primary mission revolves around delivering a swift, effective, and efficient emergency response during local community disasters until official assistance arrives on-site. The few islands equipped with CERT face inadequacies in resources and have limited capacity. In islands lacking any initial response units, the responsibility falls on the Island Council and the local community to handle the incident until they receive support from neighboring islands, the Atoll Council, or the national government.

CHAPTER 5

LEGAL

The legal foundation for institutions and organizations involved in disaster risk reduction and emergency response activities in the Maldives is established by the following Acts and Ordinances.

MALDIVES DISASTER MANAGEMENT ACT (28/2015)



This legislation focuses on the government's responsibility to safeguard its citizens, protecting their health, welfare, property, and the environment from natural and human-induced disasters. Given the susceptibility of the Maldivian territory to various risks and emergencies, there is a need for proactive measures to reduce vulnerability. This involves not only responding to disasters but also actively mitigating their impact. To address these concerns, a comprehensive national emergency response guideline is essential, covering disaster preparedness, relief efforts, and the protection of lives and property⁴.

Figure 9: Maldives Disaster Management Act

The aim is to seek support for providing essential needs, ensuring national coordination, and integrating disaster mitigation standards into sustainable development projects, communities, international collaborations, and relevant legislation.

⁴Disaster Management Act of Maldives, <https://ndma.gov.mv/storage/uploads/NAq7Loeg/ptwnmgsc.pdf>

Purpose of the act

- Ensure the protection of individuals from both natural hazards and man-made disasters.
- Integrate guidelines addressing disaster risk mitigation and preparedness.
- Minimize disaster risk through the adoption of a comprehensive national strategy, identifying responsible entities for managing disaster risk and outlining their respective duties.
- Provide support during emergency situations and coordinate relief efforts, incorporating guidelines for effective coordination.
- Define the roles and responsibilities of City Councils, Atoll Councils, and Island Councils in reducing disaster risk and facilitating mitigation during emergencies.
- Raise public awareness on reducing disaster risk and enhancing coping capacity in emergency situations, incorporating guidelines for safeguarding individuals and promoting resilience.
- Integrate disaster risk reduction policies into sustainable national development projects.
- Foster individual responsibility and accountability in disaster risk reduction and mitigation efforts.

DECENTRALIZATION ACT (7/2010)

Article 24 of the 2010 Decentralization Act stipulates that the Island Councils are entrusted with the duty to create a mechanism for delivering an efficient response in the event of a disaster.

ARMED FORCES ACT (1/2008)

Article 7 (d) of the Armed Forces Act grants authority to the Armed Forces to take the lead and collaborate with pertinent government agencies in efforts to rescue and safeguard the lives of individuals and property during hazards and disasters. Article 7 (e) pertains to transporting and rescuing people and property during fires, while Article 7 (f) involves aiding individuals in maritime incidents and protecting lives and property during land or maritime hazards and disasters.

POLICE ACT (5/2008)

Article 6 (11) of the Police Act outlines the duties of the police during hazards or disasters, requiring them to rescue and protect the lives of individuals, households, and property in the event of natural or other disasters. Additionally, the police are obligated to aid victims of hazards and disasters and provide assistance in maritime incidents and other emergencies.

MALDIVIAN RED CRESCENT ACT (7/2009)

As per the objectives outlined in the Maldives Red Crescent Act, Article 3 (a) emphasizes the main goal, which is to offer humanitarian assistance and mitigate and alleviate human suffering.

INSTITUTIONAL

In the Maldives, an atoll serves as an administrative unit within the government system, comprising multiple islands with varying numbers and sizes. The specific mandates for individual atolls are derived from the Act on Decentralization of the Administrative Divisions of the Maldives. Atoll Councils are entrusted with overseeing and implementing developmental programs and projects across the islands within their respective atolls. The Local Government Authority, established as a national institution under the Act on Decentralization of the Administrative Divisions of the Maldives, is responsible for monitoring and coordinating the activities of these councils.

Currently, the NDMA serves as the national authority and institution with the mandate to lead disaster management and disaster risk reduction in the country.

NATIONAL EMERGENCY OPERATION PLAN (NEOP)

The National Emergency Operations Plan (NEOP) provides a roadmap for response and responsibilities during disaster management in the Maldives.

A strategic framework of action, policies and regulations that contains the blueprint of effective emergency response and management. Empowered by the Disaster Management Act of Maldives- 28/2015- Article 11 (d) which states that a National Emergency Operations shall be compiled and approved by the National Disaster Management Council of Maldives.

OBJECTIVE

The objective of establishing a NEOP is to provide a robust system of resources, capabilities and guiding principles, with the collaboration of all relevant stakeholders, for responding to a disaster or emergency situation if and when they occur, in order to save lives, property and environment and immediate recovery of affected essential services.

STRUCTURE OF NEOP

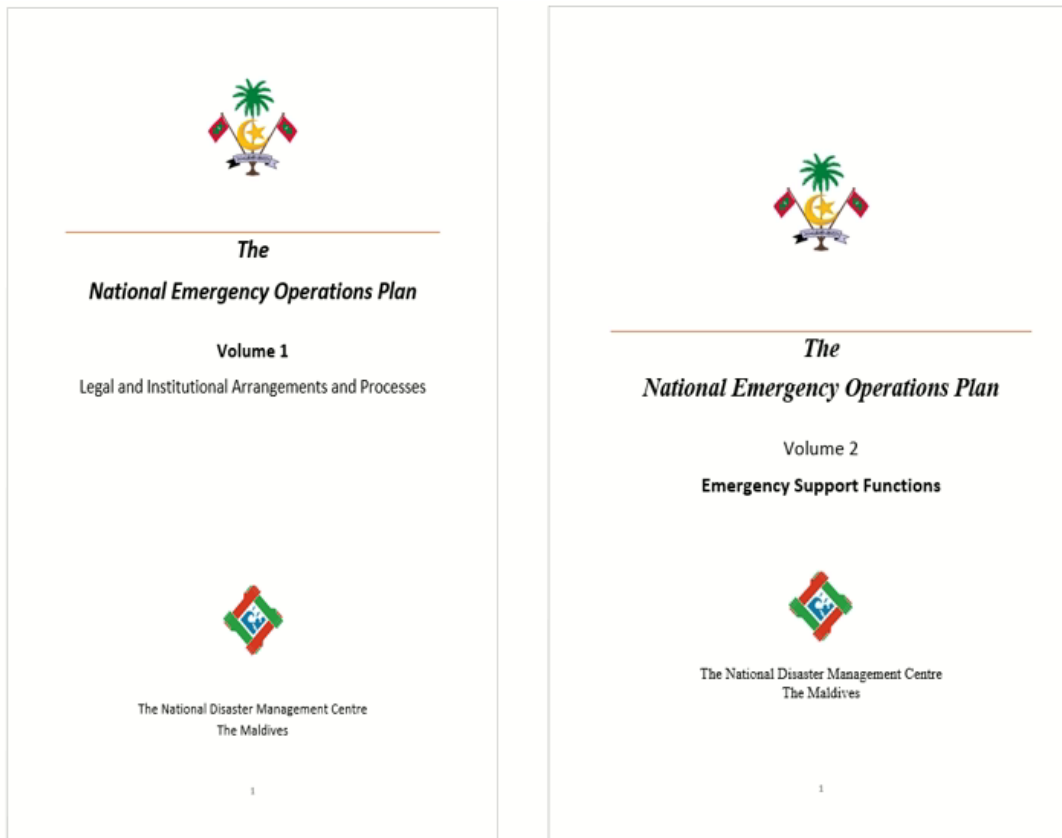


Figure 10: NEOP volume 1 and volume 2

The National Emergency Operation Plan (NEOP) plays crucial roles in guiding and directing disaster mitigation, prevention, preparedness, response, recovery, rehabilitation, and crisis management in the Maldives. The Disaster Management Act mandates the creation and maintenance of this plan. Following the identification of deficiencies in NEOP Volume 2, work is currently underway on the drafting process of Volume 3 to address and rectify these gaps.

Additionally, the Strategic National Action Plan (SNAP) for Disaster Risk Reduction (DRR) and Climate Change Adaptation (CCA) aims to foster collaboration among policymakers, experts, and practitioners in disaster risk reduction and climate change adaptation across the country, promoting a comprehensive risk management approach. Other plans include establishing a national early warning system, developing a disaster management plan for the tourism sector, creating a Safe Island Strategy, and integrating climate change adaptation and disaster risk reduction into resilient island development planning in the Maldives.

Furthermore, as part of national disaster risk reduction efforts, various important frameworks, guidelines, and local-level plans have been developed. These encompass the National Framework for Community-Based Disaster Risk Management, National Framework for Managing Internally Displaced People, Guide for School Emergency Operation Plan, Island Disaster Management Plans, Public Health Emergency Plan, and Island Development Plans.

CHAPTER 6

TRAININGS FOR THE RESPONSE TEAM

Training sessions on disaster management awareness are provided to government officials and private sector organizations.

MALDIVES NATIONAL DEFENCE FORCE (MNDF)

A training session on emergency management is underway for the Maldives National Defense Force team at the Maldives National Defense Force Non-Commissioned Officers Academy (MNDF NCO Academy). This training is conducted twice a year.



Figure 11: Training session to MNDF in the NCO Academy

MALDIVES POLICE SERVICE

A training session on emergency management is underway for the Maldives Police Service team at the Police Academy. This training is conducted twice a year.

COMMUNITY EMERGENCY RESPONSE TEAM (CERT)

Emergency Response Teams have been established on islands, with a current count of 09 islands having CERTs. These teams undergo training in disaster management, including specialized courses covering Fire and Rescue Service, maritime and safety training, standard first aid, and psychosocial support. These teams will respond to any disastrous event in the island under the supervision of the island council president.



Figure 12: Training session to CERT

CHAPTER 7

RISK PROFILE OF JAPAN

Japan, situated in the western Pacific Ocean, is an island nation with a total land area of approximately 377,727 square kilometers. The country comprises a total of 6,852 islands that stretch along the Pacific coast of East Asia. Positioned between latitudes 24° and 46°N, and longitudes 122° and 146°E, Japan

includes various islands. The primary islands, listed from north to south, consist of Hokkaido, Honshu, Shikoku, and Kyushu. Tokyo serves as the capital⁵.

Japan encounters a range of common natural hazards, including earthquakes, tsunamis, typhoons, volcano eruptions, floods, landslides, occasional heavy snowfall, and torrential rains. The prevalence of earthquakes, tsunamis, and active volcanoes is attributed to Japan being situated within the Circum-Pacific Seismic Belt, often referred to as the Pacific Ring of Fire.

Japan, due to its natural conditions, faces the risk of nearly every type of natural disaster. Throughout its history, the nation has encountered various destructive natural events, presenting significant challenges to Japanese society. The unfavorable geographical, topographical, and meteorological features of the country contribute to its status as one of the world's most disaster-prone nations. Despite occupying only 0.25% of the planet's land area, Japan experiences approximately 20.5% of earthquakes with a magnitude of 6 or higher, and it hosts 7% of the world's active volcanoes within its territory.

The country is prone to frequent natural disasters, including typhoons, heavy rainfall, substantial snowfall, earthquakes, and tsunamis, owing to its geographical, topographical, and meteorological characteristics. Japan faces significant annual losses in terms of both human lives and property due to these natural disasters.

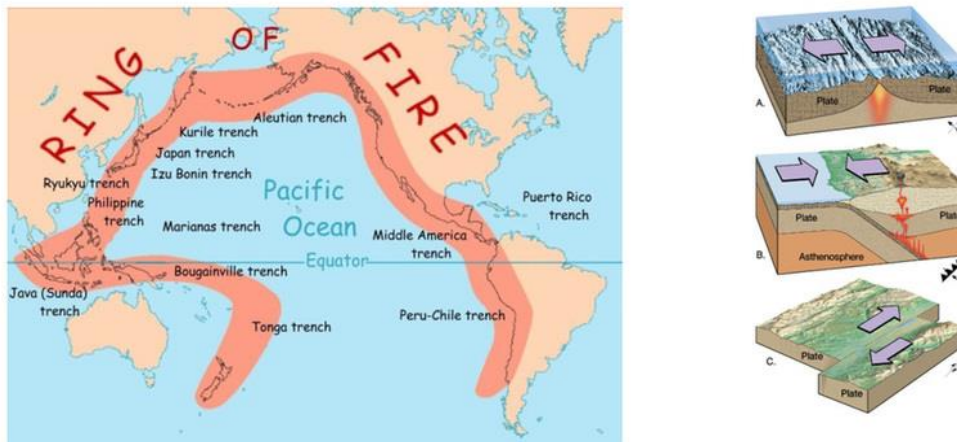


Figure 13: Pacific Ring of Fire and showing Divergent, Convergent, Transform plate boundaries

⁵ Ministry of Land, Infrastructure, Transport and Tourism website, “the Disaster Risk of the Land of Japan” https://www.mlit.go.jp/river/basic_info/english/land.html

Japan is positioned at the convergence of four tectonic plates: the Eurasian Plate, North American Plate, Pacific Plate, and Philippine Sea. This geological arrangement is responsible for the elevated seismic activity in the region. Tsunamis in Japan are typically initiated by powerful earthquakes occurring at the ocean floor or significant landslides near the coastline.

Storm and flood disasters in Japan are primarily instigated by typhoons and rain fronts. Approximately 10 typhoons impact Japan, inducing storms, tidal waves, and high tides, predominantly between May and October, with a peak in August and September. The year 1959 marked a pivotal moment in typhoon preparedness, following the devastating Isewan typhoon that claimed over 5000 lives. Subsequently, the Japan Meteorological Agency (JMA) implemented a series of measures and adopted new technological advancements, resulting in a significant decline in the number of casualties or missing individuals due to typhoons⁶.

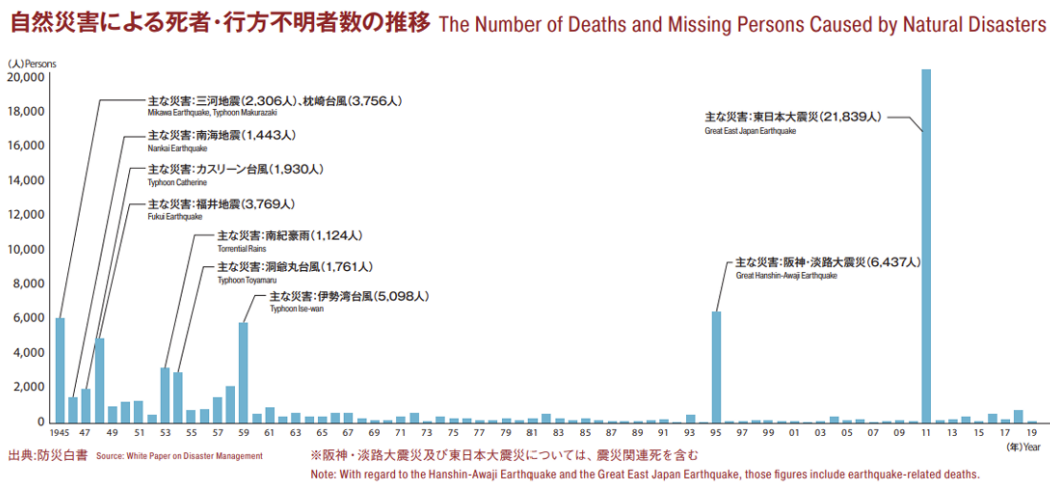


Figure 14: Number of deaths and missing person caused by natural disasters in Japan

A distinctive characteristic of Japan's climate is the pronounced temperature variations across the four seasons. Despite its relatively modest size, the climate exhibits regional differences, ranging from subarctic to subtropical. The areas facing the Sea of Japan experience considerable winter snowfall due to seasonal winds from Siberia. Additionally, a majority of regions encounter a rainy season between May and July, influenced by seasonal winds from the Pacific Ocean.

⁶ Ministry of Land, Infrastructure, Transport and Tourism, Water and Disaster Management Bureau website, Overview of River Administration in Japan 2005.

Japan's rivers demonstrate disruptive natural characteristics due to the country's challenging topographical and meteorological conditions. These rivers are characterized by being narrow, steep, and short, rendering them susceptible to flooding. The ratio of peak flow discharge to the basin area is notably high, ranging from 10 to 100 times. Water levels exhibit rapid fluctuations, and there is a substantial volume of sediment runoff.

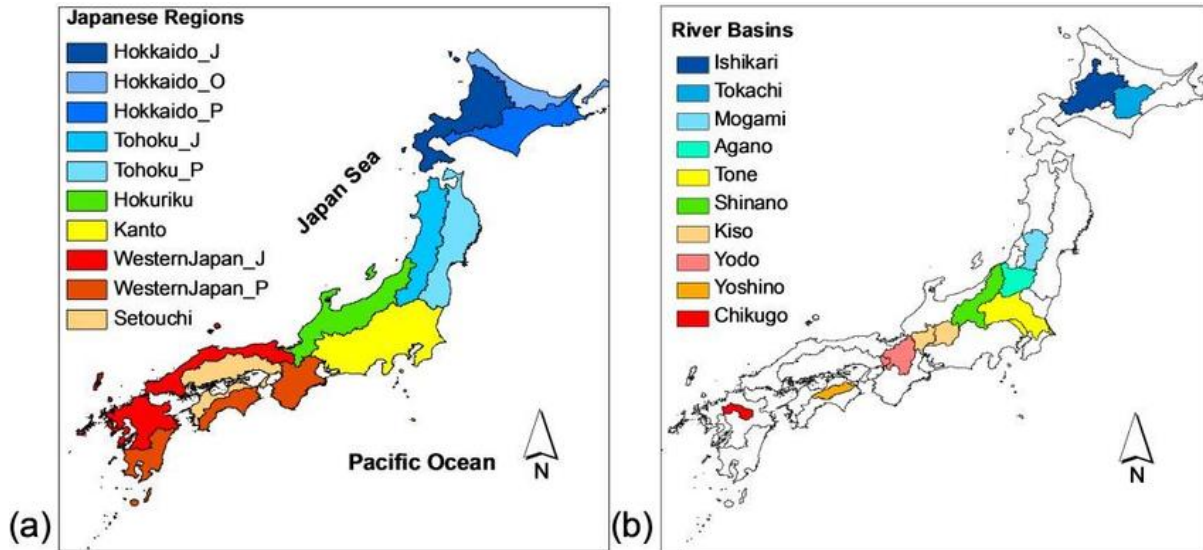


Figure 15: Japan's regions and river basins

Japan faces a notable susceptibility and risk of fires, primarily attributed to extensive forest coverage, accounting for approximately 70% of its total area, alongside highly advanced chemical and high-technology industries. The close proximity of buildings in densely populated areas further contributes to the elevated fire risk. Wildfires in Japan typically occur during dry seasons, particularly in the summer.

Additionally, the aftermath of tsunamis and earthquakes poses the potential for large-scale fires. Notably, around 7000 fire incidents were recorded in the immediate aftermath of the Great Hanshin-Awaji earthquake in 1995.

MAJOR DISASTERS IN JAPAN

Japan faces a considerable risk of natural disasters, particularly earthquakes, as demonstrated by the devastating Great Hanshin-Awaji Earthquake in 1995, causing a loss of over 6,400 lives. Additionally, the Great East Japan Earthquake (GEJE) in 2011 resulted in the tragic loss of more than 22,000 lives and left numerous individuals missing. The ongoing probability of experiencing significant earthquakes, such as the Nankai Trough Earthquake and the Tokyo Inland Earthquake, remains high, presenting a substantial threat to the nation's safety and security. The following provides a condensed overview of major disasters that have occurred in Japan:

GREAT HANSHIN-AWAJI EARTHQUAKE (January 1995)

An earthquake with a magnitude of 7.3 on the Richter scale occurred on Awaji Island in Hyogo Prefecture, Western Japan, on January 17, 1995. This disaster resulted in the loss of 6,434 lives and injured 43,792 individuals. Additionally, 104,906 houses were destroyed, while another 144,274 were partially damaged. Furthermore, 390,506 houses sustained some degree of damage. The fire that broke out as a result of the earthquake also caused 835,858 square meters of land to be consumed by the flames⁷.



Figure 16: Response to Hanshin Awaji earthquake in 1995

⁷ World Bosai Forum, <https://worldbosaiforum.com/en/news/detail---id-91.html>

GREAT EAST JAPAN EARTHQUAKE (MARCH 2011)

A massive earthquake of magnitude 9.0 struck the northeastern region of Japan on March 11, 2011, making it the largest earthquake to ever hit the country. Its epicenter was located off the coast of Sanriku, and its effects were felt from the coasts of Iwate Prefecture to Ibaraki Prefecture. In particular, the eastern regions of Japan experienced intense shaking, with a Japanese intensity scale of 7 recorded in the north of Miyagi Prefecture. Additionally, this earthquake, also known as a trench-type earthquake, occurred near the boundary between the Pacific Plate and the plate beneath the Tohoku region, resulting in significant seafloor movement and the generation of a massive tsunami. According to the National Police Agency, the earthquake and tsunami caused unprecedented human suffering, with 15,870 deaths, 2,814 missing persons, and 6,114 injuries. There was also extensive property damage, with 129,472 completely destroyed buildings, 255,977 partially destroyed buildings, and 702,928 buildings with collapsed walls or roofs. The total cost of damage to social infrastructure, housing, and corporate facilities was estimated at 16.9 trillion yen, and the disaster had a significant impact on Japan's economy⁸.

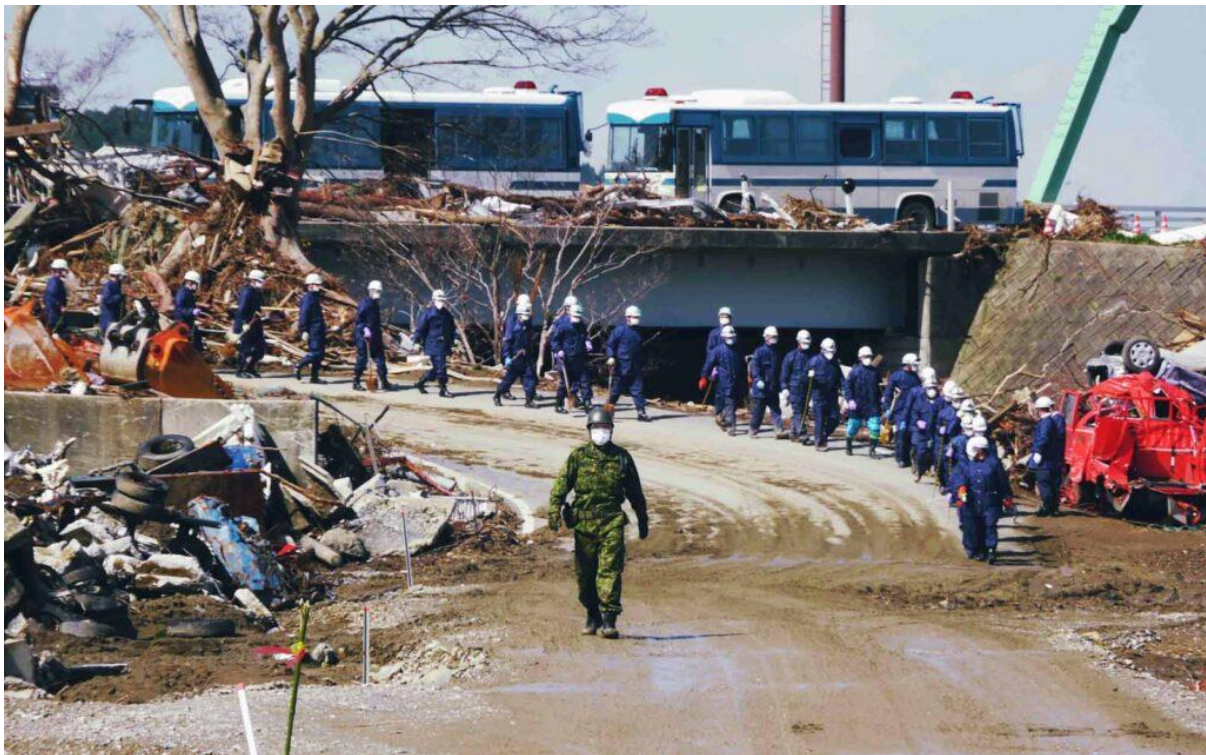


Figure 17: Response to Great East Japan Earthquake in 2011

⁸ Tohoku Earthquake and Tsunami 2011, <https://www.ncei.noaa.gov/news/day-2011-japan-earthquake-and-tsunami>

CHAPTER 8

DISASTER MANAGEMENT SYSTEM IN JAPAN

It is a national priority to protect national land as well as the livelihood of the community, and property from the natural disasters. The turning point for strengthening the disaster management system came into effect in response to the immense damage caused by the Typhoon Isewan in 1959, which led to the enactment of the Disaster Countermeasures Basic Act in 1961, which formulates a comprehensive and strategic disaster management system. Thereafter, the disaster management system has been continuously reviewed and revised following the lessons learned from large-scale disasters such as the Great Hanshin-Awaji Earthquake and 2011 Great East Japan Earthquake and the nuclear disaster. Response mechanisms to emergencies are specified in the Basic Law on Natural Disasters as well as the series of contingency related laws.

LEGAL BASIS FOR DISASTER RISK MANAGEMENT IN JAPAN

To address all aspects of disaster management, encompassing prevention, mitigation, preparedness, emergency response, recovery, and rehabilitation, various laws and regulations have been put in place. These include the Basic Act on Disaster Management (1961), Disaster Relief Act (1947), Building Standard Law (1950), Landslide Prevention Act (1958), River Act (1964), and Act on Special Measures for Large-scale Earthquakes (1978).

Japan's legislation regarding the disaster management system comprehensively covers all phases, including prevention, preparedness, emergency response, recovery, and reconstruction. The roles and responsibilities of both national and local governments are clearly outlined for each phase. The legislation emphasizes the necessity for collaboration between entities in the public and private sectors to effectively implement diverse disaster countermeasures.

Clearer definition of the philosophy and the responsibilities for disaster management.

Clarification of basic principles of disaster countermeasures: Clarification of basic policies including the concept of disaster reduction

Responsibilities of the government, prefectures, municipalities, and designated public institutions: Formulation and implementation of the plan for disaster management, mutual cooperation

Responsibilities of residents: Self-preparedness for disaster, stockpiling of basic necessities, voluntary participation in disaster preparedness activities

<p>2. Organization: Development and promotion of comprehensive disaster management administration</p>	<p>3. Planning system: Development and promotion of systematic disaster management measures</p>
<p>National government: Central Disaster Management Council, major (extreme) disaster management headquarters</p> <p>Prefectural and municipal governments: Local disaster management headquarters</p>	<p>National Disaster Management Council: Disaster Management Basic Plan</p> <p>Designated local government organizations and public institutions: Local Disaster management plan</p> <p>Prefectures and municipalities: Local disaster management operation plan</p> <p>Residents: Community disaster management plan</p>
<p>4. Promotion of Disaster Countermeasures</p> <p>Definition of the roles and responsibilities to be performed by each actor in each stage of prevention, preparedness, response and recovery</p> <p>Primary disaster response procedures including evacuation order by the head of municipalities taking over emergency</p>	<p>5. Protection of affected people and their livelihood</p> <p>Prior preparation of the lists of the people requiring assistance in the case of disaster</p> <p>Clarification of the standards for evacuation centers and facilities in the case of disaster</p> <p>Improvement and expansion of protection measures for affected people through</p>

Figure 18: Outline of the Basic Act on Disaster Management

CHAPTER 9

DISASTER RESPONSE MECHANISM IN JAPAN

THE CABINET OFFICE

As part of a comprehensive overhaul of the central government system in 2001, the role of Minister of State for Disaster Management was introduced to consolidate and synchronize disaster risk reduction policies and actions across various ministries and agencies. Within the Cabinet Office, tasked with ensuring cooperation and collaboration among diverse government entities on extensive matters, the Director-General for Disaster Management is specifically assigned to formulate fundamental disaster management policies, address significant disasters, and oversee overall coordination.

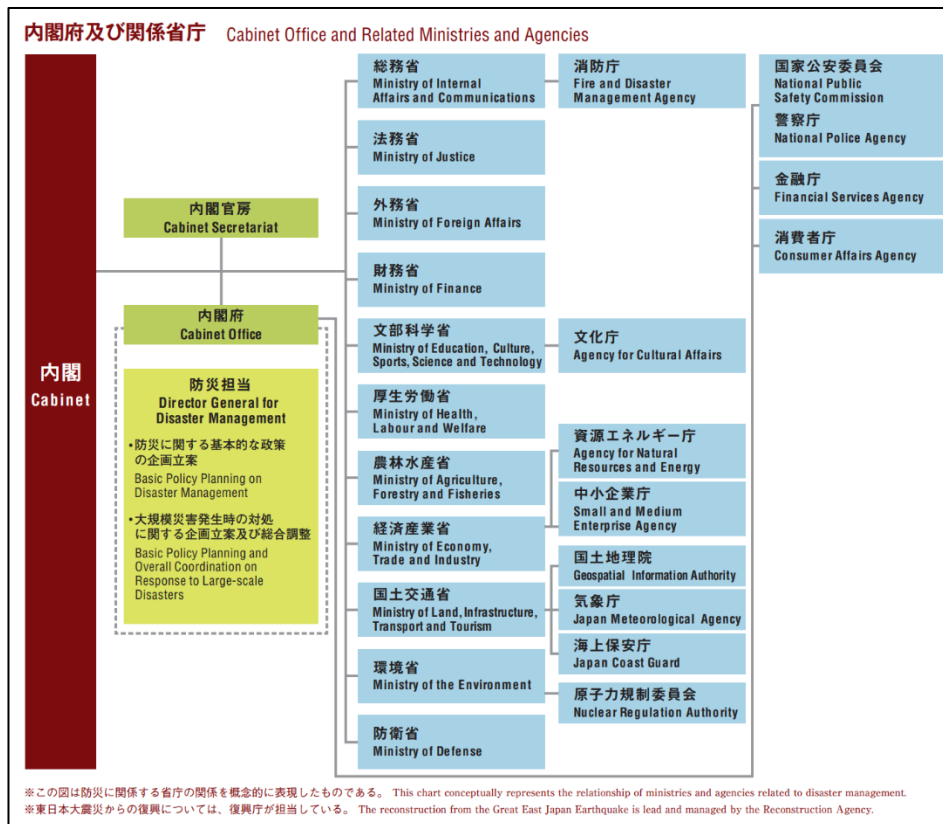


Figure 19: Cabinet Office, related ministries and agencies in emergency response

In anticipation of disasters, the Central Disaster Management Council, led by the Prime Minister and comprising all Cabinet members, formulates disaster management strategies for the national government. The implementation of these strategies is delegated to the relevant ministries and agencies. In the occurrence of a significant disaster, the Cabinet Office assumes responsibilities such as gathering and sharing accurate information, providing reports to the Prime Minister, setting up emergency activity systems, including the Government's Disaster Management Headquarters, and coordinating comprehensive disaster response measures on a wide scale.

CENTRAL DISASTER MANAGEMENT COUNCIL

The Central Disaster Management Council, a vital body handling key policies of the Cabinet, is instituted within the Cabinet Office according to the Disaster Countermeasures Basic Act. Comprising the Prime Minister as the chairperson, all Cabinet members, heads of major public corporations, and experts, the Council is responsible for formulating the Basic Disaster Management Plan, setting fundamental disaster management policies, and actively advancing comprehensive disaster countermeasures. It also engages in

deliberations on significant disaster management issues as requested by the Prime Minister or Minister of State for Disaster Management.

ORGANIZATION OF CENTRAL DISASTER MANAGEMENT COUNCIL

In readiness for disasters, the formulation of national government disaster management policies is the responsibility of the Central Disaster Management Council. These policies are subsequently implemented by the relevant ministries and agencies. The Central Disaster Management Council, positioned within the Cabinet Office according to the Disaster Countermeasures Basic Act, is among the key councils addressing vital Cabinet policies.

Comprising the Prime Minister as the chairperson, all Cabinet members, heads of significant public corporations, and experts, the Council is responsible for crafting the Basic Disaster Management Plan and formulating fundamental disaster management policies. Additionally, it actively advances comprehensive disaster countermeasures, including engaging in discussions on crucial issues related to disaster management when requested by the Prime Minister or Minister of State for Disaster Management.



Figure 20: Organization of central disaster management council

The responsibilities of the Central Disaster Management Council include:

- Developing and advocating for the implementation of the Basic Disaster Management Plan and Earthquake Countermeasures Plans.
- Crafting and promoting the implementation of urgent measures plans for significant disasters.

- Examining vital issues related to disaster reduction, as requested by the Prime Minister or Minister of State for Disaster Management. This encompasses formulating basic disaster management policies, overseeing comprehensive coordination of disaster countermeasures, and determining the declaration of a state of disaster emergency.
- Providing perspectives on crucial disaster reduction matters to the Prime Minister and Minister of State for Disaster Management.



Figure 21: Outline of the Disaster Management System

The Cabinet Office, serving as the secretariat for the Central Disaster Management Council, designates the Minister of State for Disaster Management as the Minister State for Special Missions on this matter. The Minister is supported by the Department of the Cabinet Office Director-General for Disaster Management, responsible for planning and centralized coordination pertaining to fundamental policies on disaster risk reduction. Additionally, the department oversees matters related to disaster countermeasures in the event of a significant disaster.

CHAPTER 10

DISASTER MANAGEMENT PLANS IN JAPAN

Japan follows a three-tiered administrative system comprising the national government, prefectures, and municipalities. Similar to a national structure, the leaders at each level bear complete responsibility for their respective jurisdictions. Comprehensive disaster prevention plans are formulated, aligning with the specific roles assigned to each stage. The following outlines the disaster management planning system in Japan.

DISASTER MANAGEMENT PLANNING SYSTEM

The Basic Disaster Management Plan; serves as the fundamental blueprint for disaster management activities and is formulated by the Central Disaster Management Council in accordance with the Disaster Countermeasures Basic Act.

The Disaster Management Operation Plan; is devised by each designated government organization and designated public corporation, aligning with the guidelines of the Basic Disaster Management Plan.

Local Disaster Management Plan; created by Prefectural and Municipal Disaster Management Councils, tailored to local conditions and rooted in the Basic Disaster Management Plan.

Community Disaster Management Plans; developed at the community level, are collaborative efforts involving residents and businesses on a voluntary basis.

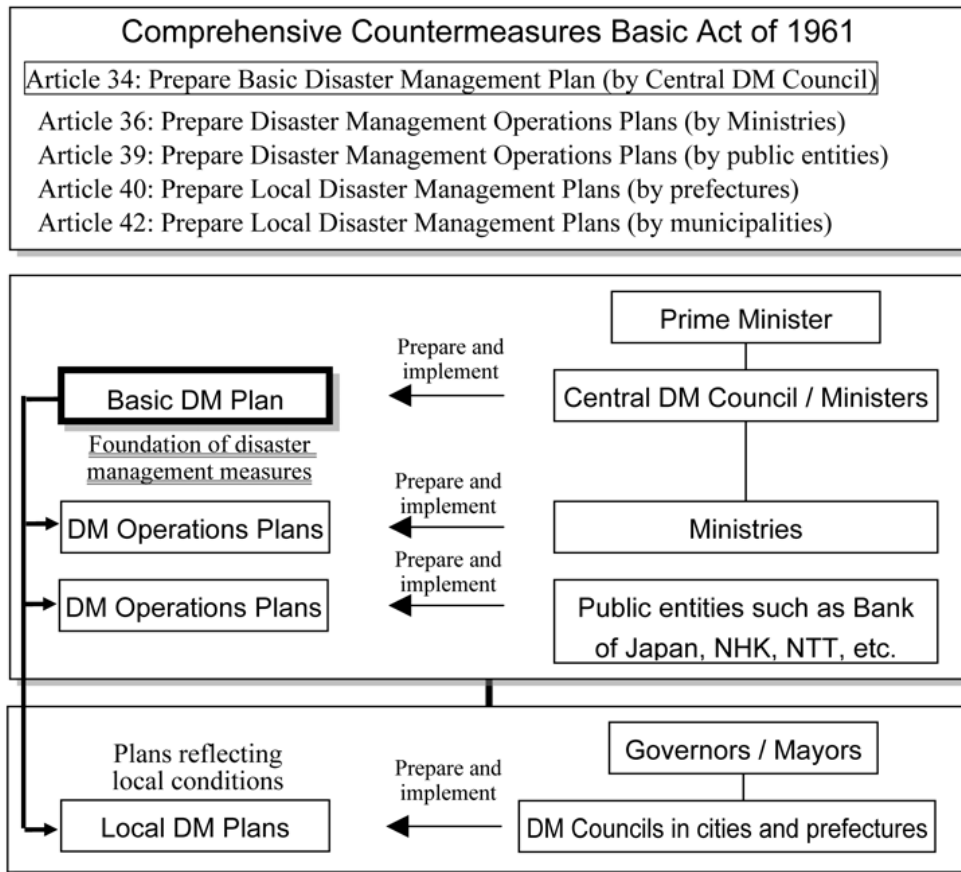


Figure 22: Structure of Disaster Planning System

BASIC DISASTER MANAGEMENT PLAN

The Basic Disaster Management Plan is an extensive and enduring disaster management blueprint that serves as the cornerstone for both the Disaster Management Operations Plan and the Local Disaster Management Plan. It outlines provisions for instituting the disaster management system, advancing disaster management measures, expediting post-disaster recovery and reconstruction measures, and promoting scientific and technological research in the field of disaster management.

In 1995, the plan underwent a comprehensive revision, influenced by the lessons learned from the Great Hanshin-Awaji Earthquake. It delineates the responsibilities of entities at both the national and local levels, including public corporations and other organizations. The plan comprises distinct strategies for various types of disasters, outlining specific measures to be implemented by each entity in accordance with the different phases of disaster management, encompassing prevention and preparedness, emergency response, as well as recovery and reconstruction.

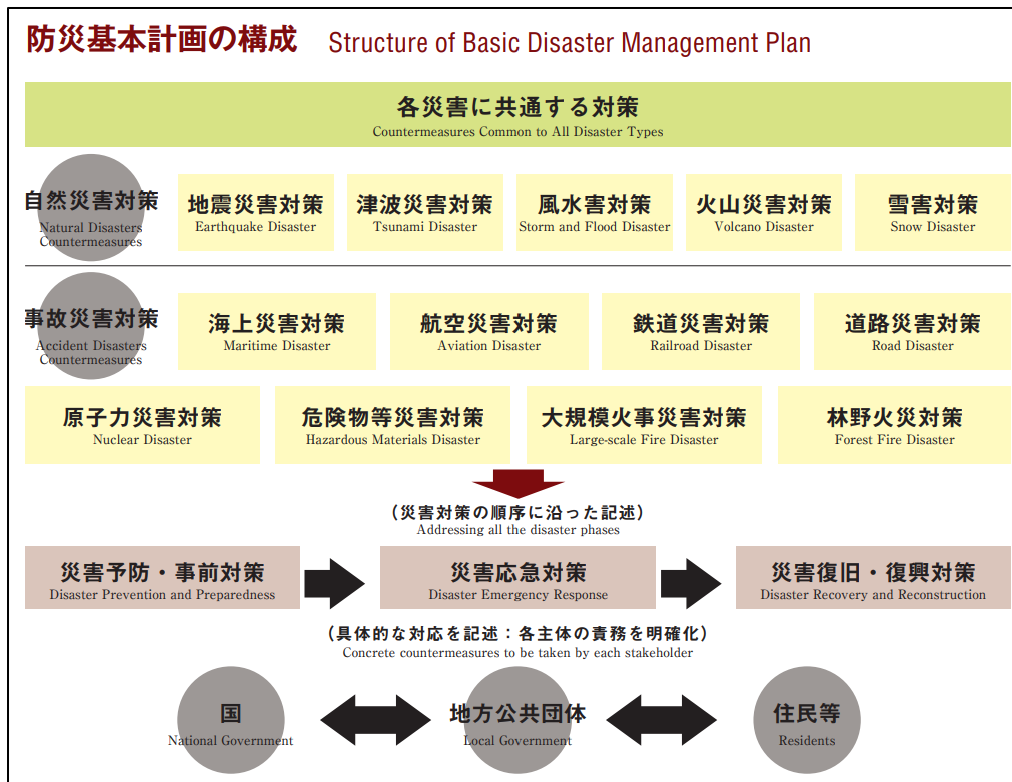


Figure 23: Structure of basic Disaster Management Plan

In May 2021, the Basic Disaster Management Plan underwent revision in alignment with the amendments made to the "Basic Act on Disaster Management." This update incorporates advancements in recent disaster management measures, drawing from the experience gained in responding to the COVID-19 pandemic. The revised plan includes provisions for measures against infectious diseases at shelters and the enhancement of stockpiling partitions. Additionally, it addresses the promotion of disaster response initiatives from a gender perspective.

CHAPTER 11

JAPAN'S EMERGENCY RESPONSE TO DISASTERS

In the event of a calamity, swift coordination occurs between national and local authorities to promptly gather and disseminate information about the disaster and its impact. They also establish secure communication channels to facilitate efficient execution of emergency tasks, including rescue operations and medical interventions.

Using this information, local authorities establish a disaster management center, and affiliated organizations develop their own operational mechanisms.

The national government continuously gathers disaster-related information through the Cabinet Information Collection Center, operating 24/7. In the event of a significant disaster, a rapid response team comprising the heads of relevant ministries and agencies assembles promptly at the Crisis Management Center in the Prime Minister's Official Residence. Their task involves comprehensively assessing the disaster situation and reporting findings to the Prime Minister. Meetings on disaster management, at ministerial or high-ranking senior official levels, are convened as needed. Depending on the severity of the damage, the government might establish either the Major Disaster Management Headquarters (led by the Minister of State for Disaster Management) or the Extreme Disaster Management Headquarters (headed by the Prime Minister). These entities formulate policies for disaster mitigation and coordinate emergency measures across various organizations.

Moreover, to assess the conditions in the affected region, a government inquiry team led by the Minister of State for Disaster Management could be deployed. Alternatively, if urgent and coordinated on-site emergency actions are required, the government may institute a disaster management on-site headquarters.

SUPPORT SYSTEM



Figure 24: Government Investigation team planning to respond to a Landslide and Headquarters for Major Disaster Management.

In instances of extensive disasters surpassing the capacity of the impacted local government, diverse support mechanisms are activated by the National Police Agency, such as the Disaster Response Units, the Fire and Disaster Management Agency, including the Emergency Fire Rescue Team, and the Japan Coast

Guard. Additionally, the Self-Defense Forces can be deployed for emergency response tasks upon the governor's request in the affected prefecture.

Furthermore, Disaster Medical Assistance Teams (DMATs) are sent to deliver broad medical services, utilizing Self-Defense Forces vehicles and aircraft to transport critically injured individuals to hospitals beyond the affected area.

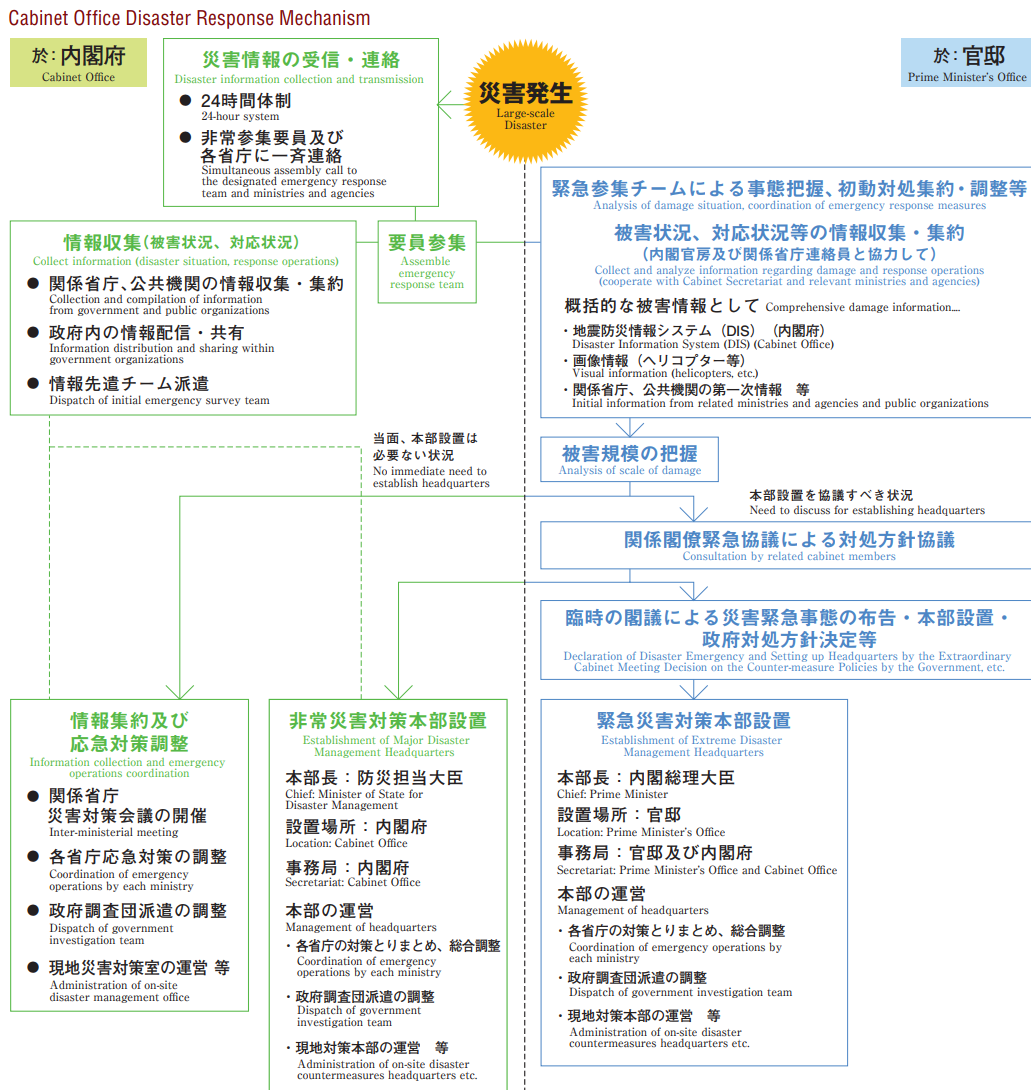


Figure 25: Cabinet Office Disaster Response Mechanism

JAPAN'S COORDINATION SYSTEM

In times of disaster, municipalities play a key role in immediate emergency responses due to their proximity to residents. When more extensive measures are required, prefectural administration becomes involved. In

cases of significant disasters surpassing the capacities of affected local entities, the national government intervenes to assist and facilitate mutual support among these local entities.

At the national level, either the Extreme Disaster Management Headquarters or the Major Disaster Management Headquarters is established to swiftly gather information about the disaster from pertinent ministries and affected local public entities. This central authority ensures comprehensive coordination for rescue operations, initial medical assistance, and the provision of emergency supplies as deemed necessary and appropriate. Additionally, an on-site disaster management headquarters might be instituted to promptly coordinate efforts among affected local entities, collect information and requests from relevant prefectures, and effectively carry out emergency response activities, taking into account the specific needs of the affected population.

On-site disaster management headquarters were established in affected regions during incidents such as the Great East Japan Earthquake in 2011, the substantial snowfall in 2014, the heavy rainfall in August 2014, and the volcanic eruption of Mt. On take in 2014. Through collaborative meetings with the disaster response headquarters organized by local entities in the impacted areas, the national government and local entities coordinate actions based on their mutual understanding, serving as the government's primary and centralized point of contact for requests from affected local entities. Consequently, the significance of the on-site disaster management headquarters is growing.

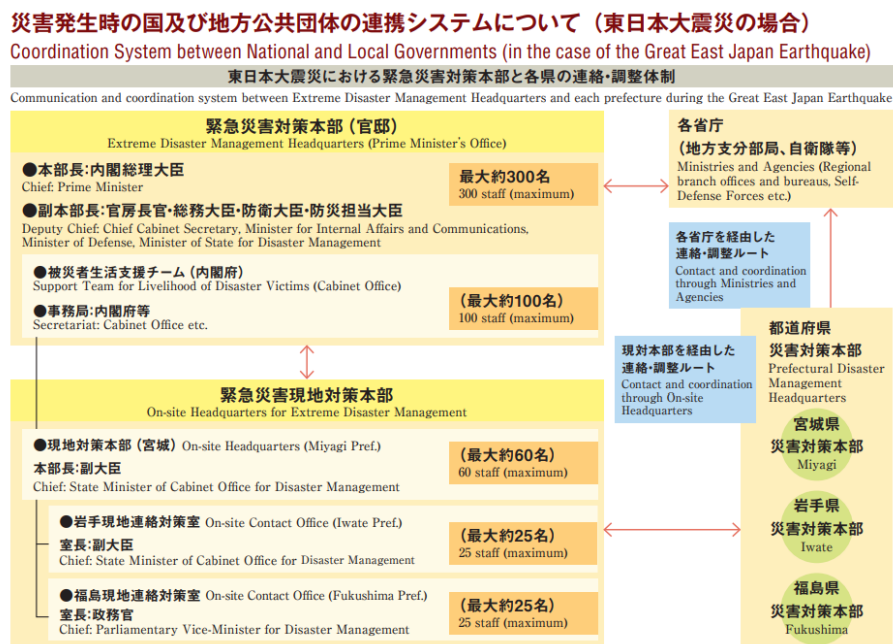


Figure 26: Coordination system between National and Local Government (Great East Japan Earthquake)

MEETINGS FOR NATURAL DISASTER RESPONSE AND COORDINATION TEAM

To facilitate prompt and effective initial responses and emergency measures following a significant disaster, it is crucial for regular and direct communication to be established between the Deputy Chief Cabinet Secretary for Crisis Management and the Director-General overseeing government disaster management. This ongoing relationship ensures proper role allocation and fosters mutual collaboration and cooperation.

To achieve this objective, gatherings known as the "Meetings for Immediate Natural Disaster Response and Coordination Team" have been conducted since 2020, serving as forums for the exchange and dissemination of information among relevant stakeholders.

Moreover, in the occurrence of extensive disasters like the Heavy Rain Event of July 2018 and Typhoon Hagibis in 2019 (T1919), the government instituted an interdisciplinary team under the oversight of the Deputy Chief Cabinet Secretary (Administrative Affairs). The purpose was to enhance the precision, immediacy, and robustness of assistance provided to those affected, focusing on livelihood support. Through this collaborative team, the government efficiently restored power and water services in the initial phase, evaluated the specific needs of the affected populace, and delivered proactive assistance such as water, food, cardboard beds, and partitions. Efforts were directed towards improving living conditions in shelters, deploying personnel to impacted municipalities, securing housing, and coordinating a comprehensive set of measures to swiftly aid in rebuilding the lives and livelihoods of the affected regions.

Drawing lessons from these experiences, the Basic Disaster Management Plan has explicitly outlined, starting from Fiscal Year 2020, that in the occurrence of a substantial future disaster, a dedicated "team to support the lives and livelihood restoration of the affected" will be formed. The aim is to ensure swift and seamless assistance for the lives and livelihoods of those affected, and the establishment of such a team has been formally mandated.

Following the extensive rainfall on July 1, 2021, a dedicated "team to support the lives and livelihood restoration of the affected for the Heavy Rain in July 1, 2021" was established on July 6th. Subsequently, on July 30th, the team formulated an "Immediate Support Measures Package for the Heavy Rains of July 1, 2021" as an urgent initiative to expedite the recovery of lives and livelihoods in the affected regions.

Training Programs for the Head and Staff of Local Governments

The effectiveness of timely and precise disaster response relies heavily on the expertise and experience of local government leaders and personnel. To address this, the Cabinet Office initiated the "Training of Disaster Prevention Specialists" for local government staff starting from the Year 2013. The purpose is to cultivate professionals capable of responding promptly and accurately to crisis situations while fostering networks between national and local governments.

The "Ariake Hill Training Program" was implemented in two phases: from September to October 2021 and from January to March 2022. This comprehensive program encompasses a range of knowledge and skills essential for effective disaster management operations. It covers the fundamentals of disaster management, including relevant laws and regulations, and extends to disaster management governance.

Additionally, the "Training Program for Local Governments" took place in seven different locations across Japan. The aim was to support independent human resource development in local governments by tailoring the program to address the specific demands and realities of each region, as identified by the hosting prefectures.

To further enhance the skills and strengthen the human network of those who completed the Ariake Hill Training Program, a "Follow-Up Training Program" was conducted. This initiative aimed to provide additional training for participants, ensuring continuous improvement in their skills and fostering stronger connections within the disaster management community.

Furthermore, an "e-Learning for Disaster Management Specialists" initiative was introduced through a dedicated website. This platform caters specifically to support staff engaged in on-site disaster management operations, offering a quick and efficient way for them to acquire essential skills relevant to their roles.

To ensure the effectiveness of these training programs, a planning study group comprised of experts in disaster management was formed. This group played a crucial role in the development and execution of the programs, continuously reviewing and enhancing them. Feedback from these experts, informed by current social conditions and needs, was incorporated to refine and improve the training initiatives.

In the event of a large-scale disaster, it is crucial for local government leaders and crisis management authorities to take proactive measures and provide swift and accurate disaster responses, collaborating closely with the national government and other local entities. To enhance the decision-making capabilities of mayors from towns and villages across the country, the Cabinet Office and the Fire and Disaster

Management Agency jointly organized the "National Seminar on Disaster and Crisis Management for Heads of Local Government." Please note that seminars for mayors of cities and wards were canceled in FY2021 due to the COVID-19 pandemic. This initiative aims to support the improvement of precise decision-making at disaster sites.

Simultaneously, the Cabinet Secretariat, the Cabinet Office, and the Fire and Disaster Management Agency collaborated to host the "Special Training Program in Disaster and Crisis Management" for heads of departments and chiefs responsible for crisis management in prefectures. Additionally, they conducted the "Training Programs for Supervisors at Local Governments in Crisis and Disaster Management," specifically designed for supervisors in municipalities. These programs are structured to provide comprehensive knowledge about crisis and disaster management, enabling participants to enhance their skills and expertise at various stages, including the initial response and disaster recovery.

These training initiatives contribute significantly to fostering strong interpersonal relationships during ordinary times, forming a valuable "face-to-face relationship" among stakeholders involved in disaster and crisis management⁹.

DIGITAL TECHNOLOGY IN DISASTER MANAGEMENT

The Initial Response Verification Report for the 2016 Kumamoto Earthquakes (Cabinet Secretariat and the Cabinet Office, 2016) and the Working Group for IAEA and Livelihood Support Measures (the Cabinet Office, 2016) identified challenges in comprehensively grasping the situation in affected municipalities during the disaster response to the Kumamoto Earthquakes in 2016.

This included difficulties in understanding the movements of evacuees and the status of relief supplies. The reports emphasized the need to establish a pre-existing system for a disaster information hub involving relevant organizations. This would involve creating protocols for the handling, sharing, and utilization of various types of information to ensure a more effective response to similar events in the future¹⁰.

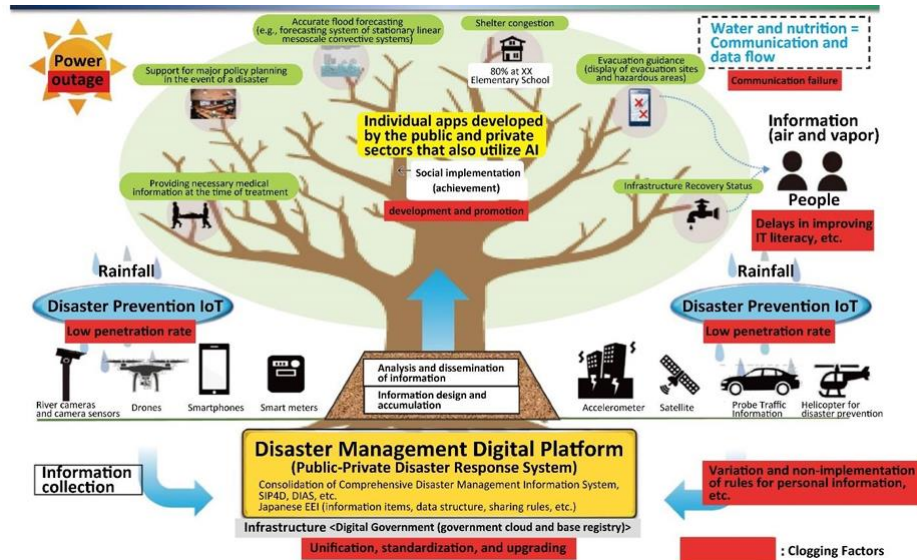


Figure 27: Japan's Disaster Management Digital Information Data Flow Chart

⁹Disaster Management in Japan- Cabinet Office, https://www.bousai.go.jp/1info/pdf/saigaipanf_e.pdf

¹⁰ White Paper Disaster Management in Japan 2022

CHAPTER 12

IMPROVEMENT PATHWAYS FOR MALDIVES RESPONSE COORDINATION SYSTEM

Improving the coordination system for disaster response in the Maldives based on Japan's response coordination mechanism involves several key steps. Japan is known for its efficient and effective disaster management strategies, and adopting some of these practices can enhance the Maldives' coordination system. As part of the ongoing efforts to strengthen disaster response coordination in the Maldives, I have thoroughly examined Japan's coordination mechanisms and identified potential improvement pathways that could be adapted to Maldives' context.

Here are some improvement pathways:

Developing a National Disaster Management Plan (NDMP): An NDMP helps in identifying and assessing potential risks and vulnerabilities, allowing authorities to develop proactive measures to mitigate these risks. It ensures that resources and capacities are in place to respond effectively to various types of disasters.

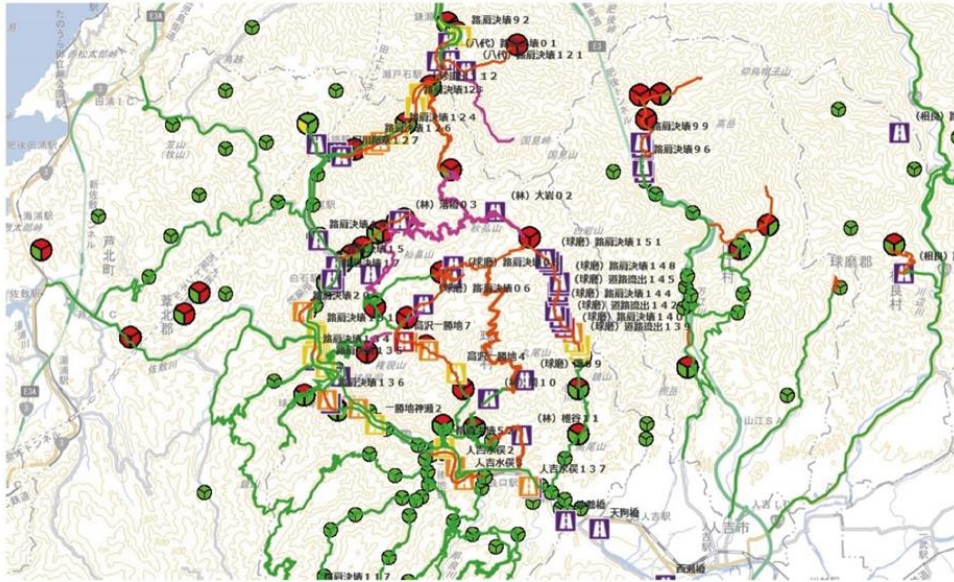


Figure 29: Japan created a sample map in the aftermath of the heavy rain event in July 2020 (Supporting map for eliminating isolated communities)

Early Warning Systems: Japan has demonstrated success in implementing advanced early warning systems, leveraging technology and community engagement. Exploring similar technologies and fostering community awareness can enhance the Maldives' ability to provide timely alerts and responses.

Invest in early warning systems for various types of disasters, such as Tsunami, surges, storms, and floods. Ensure that the public is well-informed and educated on how to respond to early warnings, including evacuation procedures and safety measures.

Interagency Collaboration: Japan's disaster response framework emphasizes seamless collaboration among various agencies.

Enhance collaboration among different government agencies, NGOs, and international organizations. Conduct regular joint training exercises to improve communication and coordination among the various entities involved in disaster response. And provide ongoing training for emergency response teams, including first responders, medical personnel, and support staff.

Public-Private Partnerships: Japan has effectively engaged with the private sector to enhance disaster resilience. For example, Japan collaborates with other agencies to get a map of the disaster site to get a clear picture of the damage and identify the optimal response.

Establishing partnerships with local businesses and industries in the Maldives can ensure a more comprehensive and resourceful response, leveraging both public and private resources.

Case: Japan's collaboration with Weather News Inc (WNI)

Weather News Inc operates as a private company with branches in various countries. As per Japan's "Basic Act on Disaster Management," there is a provision for government collaboration with private entities in disaster risk reduction (DRR). In this context, the Japan Meteorological Agency, a government office, partners with Weather News Inc. The collaboration involves the Japan Meteorological Agency furnishing weather forecasts to WNI, while WNI, in turn, disseminates disaster risk reduction (DRR) information to the community in various platforms.

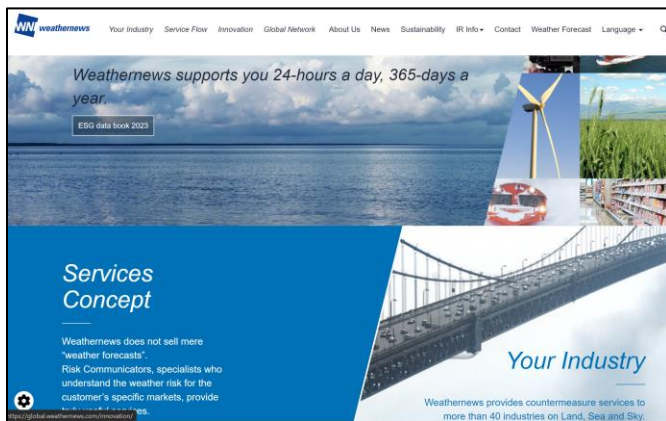


Figure 30: Weather News Inc web page

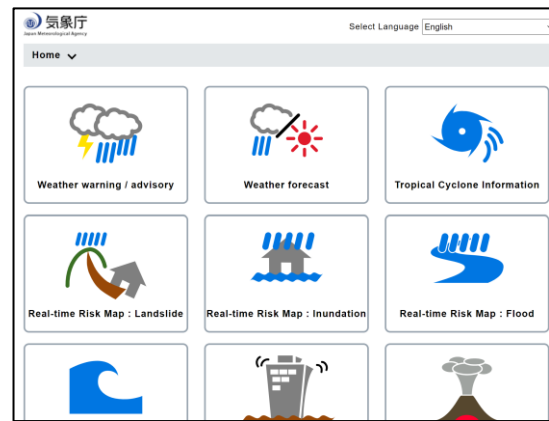


Figure 31: Japan Meteorological Agency webpage

Documenting Past Disaster Responses: While outcomes may not precisely align with predetermined plans, Japan consistently records the details of its disaster responses, capturing the decisions made during these events. This practice serves as a valuable tool for refining future responses.

Even within the Maldives, decisions made during critical moments in disaster response are essential to document, whether at the island, atoll, or national level. Maintaining records of response initiatives provides a detailed account of the Emergency Operation Center's (EOC) decisions in coordinating responses. This documentation serves as a valuable resource for gleaning insights that can inform and enhance future coordination efforts among various stakeholders.

Regularly reviewing and revising the coordination system is crucial, drawing from lessons learned in past experiences and incorporating advancements in technology. Perform post-disaster assessments to pinpoint areas that require enhancement and apply corrective measures accordingly.

CONCLUSION

Drawing inspiration from Japan's well-established coordination mechanisms, the Maldives has the opportunity to implement significant improvement pathways.

By formulating a robust National Disaster Management Plan (NDMP), fostering community engagement, and leveraging advanced technologies, the Maldives can fortify its resilience and response capabilities.

The integration of community-based emergency management plans, with comprehensive training programs, and the establishment of a centralized coordination system, and periodic reviews incorporating lessons learned will further refine and optimize the Maldives' response mechanisms.

By fostering collaboration, investing in training and technology, and consistently evaluating and refining response plans, the Maldives can pave the way for a more resilient and coordinated approach to disaster management.

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