

## **DISASTER MANAGEMENT IN JAPAN: LEGAL AND POLICY FRAMEWORK**

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### **ABSTRACT**

The Japanese archipelago being prone to many kinds of disasters is also subjected to close scrutiny on its ability in disaster management and risk reduction. The readiness of the Japanese Government to handle disaster situations has reflected in its handling of disasters, both natural and accidental, with its disaster preparedness being cited as one of the best systems in the world. Japan has a robust legal framework with regard to disaster management and mitigation and has a long history of disaster management law enacted from time to time. The major legislations related to disaster management covers prevention, emergency responses, recovery and reconstruction, as well as community preparedness to effectively counter the disasters. In its emergency preparedness, early-warning systems and response system, Japan is arguably a leader in the world. Although disasters occur because of natural causes depending upon the geographical and climate conditions, the impact depends upon various factors, such as the magnitude of the disaster, a society's capacity to endure, disaster management strategy and framework, country's disaster risk reduction policies, and the socio-economic conditions of the people. For Japan, rebuilding after the disaster is taken as an opportunity to "Build Back Better". This chapter looks at the disaster management governance, legal framework, best practices and other issues of concern in Japan from disaster management perspective.

*Keywords: Disaster Management, Risk Reduction, Early Warning, Emergency Response, Earthquake, Japan Disaster Laws, Disaster Countermeasures Basic Act, Volcanic Eruptions.*

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## I. Introduction

One of the biggest manmade disasters has been the dropping of atom bombs ‘Little Boy’ and ‘Fat Man’ on Hiroshima and Nagasaki during the last leg of Pacific War. With both the cities belonging to Japan, the country witnessed unprecedented devastation due to the biggest manmade disaster till date. Japan has also been at the receiving end of natural disasters with frequent earthquakes and tsunami causing widespread damage across the country, so much so that the word ‘tsunami’ traces its origin to Japan which means ‘seismic waves caused by underwater disturbances from earthquake and volcanic eruptions’. The horrors of Great East Japan Earthquake that measured 9.0 in the Richter scale off the Pacific coast of Tohoku, Japan on March 11, 2011 is still afresh. This was the largest magnitude ever recorded in Japan and the fourth largest in the world. This also generated a huge tsunami that caused severe damages in the Honshu region of Japan and created a serious nuclear crisis with nuclear meltdown of the Fukushima Dai-Ichi Nuclear Power Plant operated by Tokyo Electric Power Company (TEPCO). This was later designated as a level 7 nuclear event the highest level on the International Nuclear and Radiological Event Scale (INES) equivalent to the Chernobyl disaster in USSR. On September 27, 2014, volcanic eruption in Mount Ontake of Central Japan led to hot lava flowing downward causing immediate chaos in the area. Anthropologist Eric J. Cunningham noted, ‘Otaki’ a village at the base of Mount Ontake is “confronting its own existence.”<sup>1</sup> More recently in July 2022, one of the most active volcanoes in Japan, Sakurajima in Kagoshima prefecture erupted and a level 5 warning for public evacuation was issued. With Japan lying at the convergence of four of the Earth’s tectonic plates, it remains a disaster-prone state with frequent earthquakes and volcanic eruptions. Other than this, there are flood, typhoons, tsunami and heavy snowfall because of Japan’s geographic, tropological and meteorological conditions.

Japanese archipelago being prone to many kinds of disasters is also frequently subjected to undergo scrutiny on its ability in disaster management and risk reduction. The readiness of the Government to handle disaster situations is also scrutinized from time to time. In its emergency preparedness, early-warning systems and response system, Japan has been arguably a leader in the world. For Japan, rebuilding after the disaster is taken as an opportunity to “Build Back Better” as remarked by Government of Japan in 2015 at UN

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<sup>1</sup> Eric J Cunningham, “Nature Interrupted: Affect and Ecology in the Wake of Volcanic Eruption in Japan” 16 *Conservation and Society* 41-51 (2018).

World Conference in Sendai.<sup>2</sup> Japan also sets example for the rest of the world in terms of public awareness and efforts towards public preparedness for disasters. September 1, the day of Great Kanto Earthquake<sup>3</sup> is observed as “Disaster Prevention Day to raise awareness about disaster prevention and preparedness. Schools, Colleges, Organisation across Japan conduct evacuation drills on this day. The impact could be seen during 2011 tsunami, where the most trained population was the Japanese children. With the siren indicating the warning around coastal schools, the children were aware about the highest point in their locality and soon reached there with safety, and many young lives were saved.

Japan had a long history of disaster response. Lessons learnt from past disasters, experience of disaster management, a robust disaster law framework, continuous revision based on experience and lesson learnt, and government and society’s willingness to adapt to the dark reality of many more disasters to come, make Japan an enlightening case for study of disaster management around the world.

## II. Overview of System of Governance and Processes

Japan is a constitutional monarchy with parliamentary system of governance. Fundamental structure of the Government of Japan includes the *Tenno* (Emperor), *Kokkai* (Diet), *Naikaku* (Cabinet) and *Saibansho* (Court). Emperor is the symbol of unity of the people of Japan and performs symbolic duties on the advice of the Cabinet. Legislative power is vested on the Diet which is a bi-cameral legislature consisting of House of Representatives and House of Councilors. Cabinet is the highest executive organ and is collectively responsible to the Diet. Judicial power rest with the Supreme Court and inferior courts such as High Courts, District Courts and Family Courts. Japan is a unitary state consisting of 47 administrative divisions called *to*/*dō*/*fuken* (Prefectures). Three tiers of governance include the national government, prefectural government and municipalities. Prime Minister heads national government. Directly elected Governors head the prefectural governments. Moreover, directly elected Mayors head municipalities.

In term of institutions linked with disaster management, the Cabinet Office of Japan takes the lead for risk management in terms of assessment, prevention and mitigation, preparedness and response, crisis management and recovery and reconstruction. However, in the governance structure, there is a degree of autonomy for the local governments against the

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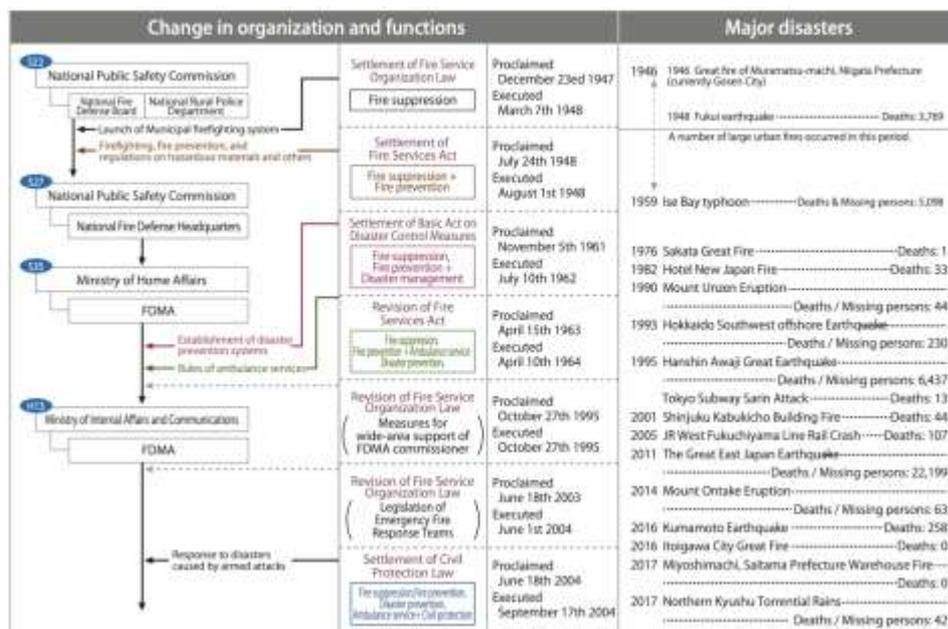
<sup>2</sup> Ganesh Kumar Jimjee, Kimiro Meguro and Amod Mani Dixit, “Learning from Japan for Possible Improvement in Existing Disaster Risk Management System of Nepal” 8 *Open Journal of Earthquake Research* 85-100 (2019).

<sup>3</sup>Earthquake with magnitude of 7.9 struck the Honshu region of Japan on 1<sup>st</sup> September 1923 that had widespread damages in Tokyo and throughout the Kanto region.

national government and have full responsibility in their jurisdiction. Accordingly, they prepare their own disaster prevention plans and define activities to be performed at different stages of disaster.

The Fire and Disaster Management Agency (FDMA) of the Ministry of Internal Affairs and Communication is the nodal agency for disaster prevention and rebuilding efforts. Following the 1946 Great fire of Matsumura-cho in the Niigata prefecture, Fire Service Organization Law was proclaimed on December 23, 1947. Fire-Defence Agency and National Rural Police Department under the National Public Safety Commission were assigned the responsibilities of protection and policing respectively. Subsequently, Fire Service Act was proclaimed on July 24, 1948 and prevention was added to policing and protection. Fire-Defence Agency under National Public Safety Commission was assigned responsibilities for firefighting. Later Basic Act on Disaster Control Measures was proclaimed on November 5, 1961 and a disaster prevention system was formally established as Fire and Disaster Management Agency under the Ministry of Home Affairs came into existence. With Civil Protection Law proclaimed on June 18, 2004, Citizen Protection was added to address disasters due to armed attacks<sup>4</sup>. The change in organization and function of Fire and Disaster Management Agency is shown in chart below.

**Change in Organization and Functions of Fire and Disaster Management Agency**



<sup>4</sup>Outlines, organizations and responsibilities, Fire and Disaster Management Agency, Ministry of Internal Affairs and Communications, Japan, available at: [https://www.fdma.go.jp/en/items/en\\_10.pdf](https://www.fdma.go.jp/en/items/en_10.pdf) (last visited on October 31, 2022).

Figure 1 – Source: Official website of Fire and Disaster Management Agency, Japan

As per the Fire Defense Organization Law, Fire and Disaster Management Agency coordinates the dispatch of emergency response teams in case of disasters. The Commissioner of Fire request mobilization of Emergency Response Team and reinforcement to Prefecture Governor and Mayors of other Municipalities not having disaster. With regard to public help in communication to residents the Cabinet Office and Fire and Disaster management Agency disseminate information through Central Disaster Management Radio. Prefectures, Fire and Disaster Management Agency use Fire, Disaster Management Radio to transmit to the satellites. Likewise, Municipalities and Prefectures use Prefectures Disaster Management Radio to transmit.

Other than the existing institutional framework, the Government also takes special measures during the time of national disasters. The Fukushima triple disaster from earthquake, tsunami and nuclear accident led to the establishment of an Emergency Disaster Response Headquarter under direct supervision of Prime Minister. Similarly, local disaster response offices were established in prefectural office of Miyagi, Iwate and Fukushima. A team in charge of assisting the rescue of disaster victims under the Minister of Disaster Management was put in place for liaison between ministries and agencies. A Nuclear Emergency Response Headquarter under the chairmanship of Prime Minister was established with local response headquarter at Fukushima prefectural office. A team was also put in place for assisting the victims around the nuclear power plant. A Reconstruction Design Council was also set up to promote reconstruction and the Cabinet Secretariat was tasked with preparing bills on reconstruction of affected areas.

Depending upon the nature of the disaster, extreme disaster management headquarters or major disaster management headquarters are established. In post-war period Extreme Disaster Management Headquarters were established during 1995 Kobe Earthquake in and 2011 Tohoku Earthquake under the direct supervision of Prime Minister. In case of Major disasters like Typhoon *Hagibis* of 2019, Mount *Ontake* volcanic eruption of 2014, Torrential Rain of August 2014 and other such cases, major disaster management headquarters were established under the control of Minister of State for Disaster Management. In some earlier cases like 1993 Torrential rains, 1993, *Hokkaido* Earthquake and during the early phase of 1995 Kobe earthquake, Director General of National Land Agency used to manage these Major Disaster Management Headquarters. In specific cases like Diamond Grace Oil Spill Major Disaster of

September 1997 that resulted in the oil release in the Tokyo Bay, Minister of Transport used to manage the Headquarter. Other than this, Government Investigation Team is also deployed for surveying the extent of damage under the leadership of Director General of National Land Agency, Parliamentary Vice-Minister of National Land or Minister of State for Disaster Management in a case-to-case basis.

In the disaster management governance processes, the Disaster Countermeasures Basic Act of 1961 sets out the comprehensive and long-term plans for disaster risk reduction and accordingly a planning system has been established. Under the Act, the Central Disaster Management Council with Cabinet Office as its Secretariat is established. Members of this Council includes Prime Minister as Chairman, Cabinet Ministers including Minister of State for Disaster Management, Chief of Designated Public Corporations and people of experience or academic standings (figure 2). The Central Disaster Management Council is tasked with preparation and promotion of implementation of Basic disaster management plan and urgent measures for major disasters. The Council also deliberate on important matters pertaining to disasters management upon request from Prime Minister and/or Minister of State for Disaster management and offers opinion to them.

**Organization of Central Disaster Management Council**



Figure – 2: Source: Official website of Cabinet Office<sup>5</sup>

The Disaster Countermeasures Basic Act also provides for disaster management plans at national, prefecture, municipality and community level as shown in figure 3. Central Disaster Management Council in accordance with the Countermeasures Basic Act develops a Basic

<sup>5</sup>Cabinet Office, Government of Japan, available at:[http://www.cao.go.jp/en/pmf/pmf\\_5.pdf](http://www.cao.go.jp/en/pmf/pmf_5.pdf). (last visited on November 01, 2022).

Disaster Management Plan. This Plan outlines the role and responsibilities of national and local governments and public corporations in implementation of the countermeasures such as preparation, emergency response, recovery and reconstruction during pre-disaster, disaster and post-disaster period.

**Disaster Management Planning**



Figure –3: Source: Analysis from official website of Cabinet Office of Japan

Public offices including banking institutions, utility companies and private sectors are obliged to participate in the Disaster Risk Reduction operation plans as per the Basic Plans. There are various academic institution and organisation dealing with research and academic activities related to disaster risk reduction and management. The National Institute for land and Infrastructure Management (NILIM) under the Ministry of Land, Infrastructure and Transport conducts comprehensive research related to housing and infrastructure technology in the use, development and conservation of national land. Meteorological Research Institute (MRI) analyzes and predicts meteorological phenomenon and promote cooperation with domestic and overseas research institutions. National Research Institute for Earth Science and Disaster Prevention (NIED) focuses on creating safe living environment and accelerate product promotion to contribute national disaster mitigation measures. Headquarters for Earthquake Research Promotion under Ministry of Education, Culture, Sports, Science and Technology (MEXT) promotes research on earthquake focusing of reduction of damages and casualties. Earthquake Research Institute (ERI) of University of Tokyo deals with investigation into volcanic eruptions and earthquakes. Disaster Prevention Research Institute

(DPRI), Kyoto University is engaged in research in disaster prediction, prevention and management.

With regard to institutional preparedness, another addition is the Reconstruction Agency, established in the aftermath of Great East Japan Earthquake for the accelerated reconstruction process and coordinating reconstruction strategy between various branches of governments at national, prefectural and local level. This agency is headed by Minister for Reconstruction and acts directly under the control of cabinet. The sole responsibility of Minister for Reconstruction is to administer reconstruction activities. The agency was initially expected to be functional for a period of 10 years, but, recently, the Cabinet has accorded a further extension of another 10 years, i.e., until FY 2030 in view of the ongoing rehabilitation and reconstruction process under the agency. Presently, the agency is headquartered at Tokyo and has bureaus at Iwate, Miyagi and Fukushima prefecture which were heavily affected by the 2011 Earthquake.<sup>6</sup>

### **III. Disaster and Geographical Perspective of Japan**

Japan lies in the circum-Pacific mobile belts at the intersection of four tectonic plates – Eurasian Plate, North American Plate, Pacific Plate and Philippine Sea Plate, with frequent occurrence of seismic and volcanic activities. The country covers only about 0.25% of the earth's landmass, however number of active volcanoes in Japan is 111, which is about 7.1% of the total active volcanos in the world, and earthquake above the magnitude of 6.0 is about 20.5% of the world. The figure 4 from Japan Meteorological Agency based on the US Geological Survey's earthquake data shows the worldwide hypocenter distribution for earthquake larger than magnitude 6 in the Richter scale and maximum are concentrated around the plate boundaries around Japan.

#### ***Worldwide Hypocentre Distribution 2011-2020***

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<sup>6</sup>The Reconstruction Agency – the Control Tower, *available at*: [https://www.reconstruction.go.jp/english/topics/About\\_us/](https://www.reconstruction.go.jp/english/topics/About_us/) (last visited on November 01, 2022).

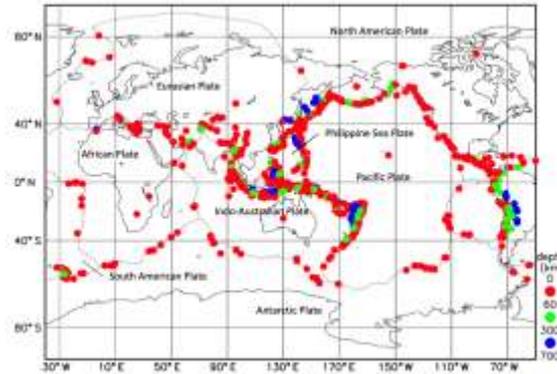


Figure – 4: Source: Government of Japan<sup>7</sup>

Being an island country located in the Pacific, Japan is also prone to tsunamis and typhoons. Japan’s climate is temperate and the season change in temperature is distinct. The Climate ranging from subarctic in the north to subtropical in the south and are different between Pacific side and the Sea of Japan side. It receives good amount of rainfall, the rainy season is concentrated around June to July, and it frequently suffers from Typhoon from July to September. Numerous mountains and rivers flowing from the mountain range coupled with the heavy rainfall it receives, Japan is also susceptible to flood and landslides.

Studies suggest that Typhoons are the most frequent natural hazard in last three decades in Japan (figure 5). Typhoons constitute about 58% of the natural hazards in the period between 1985-2018. This is due to the warming of the Pacific Ocean. Earthquakes and Floods in the second and third position respectively follow typhoons. Landslides and Volcanic eruptions are the other types of natural hazards frequently seen in this period.

**Relative Frequency of Natural Hazards in Japan, 1985-2018**

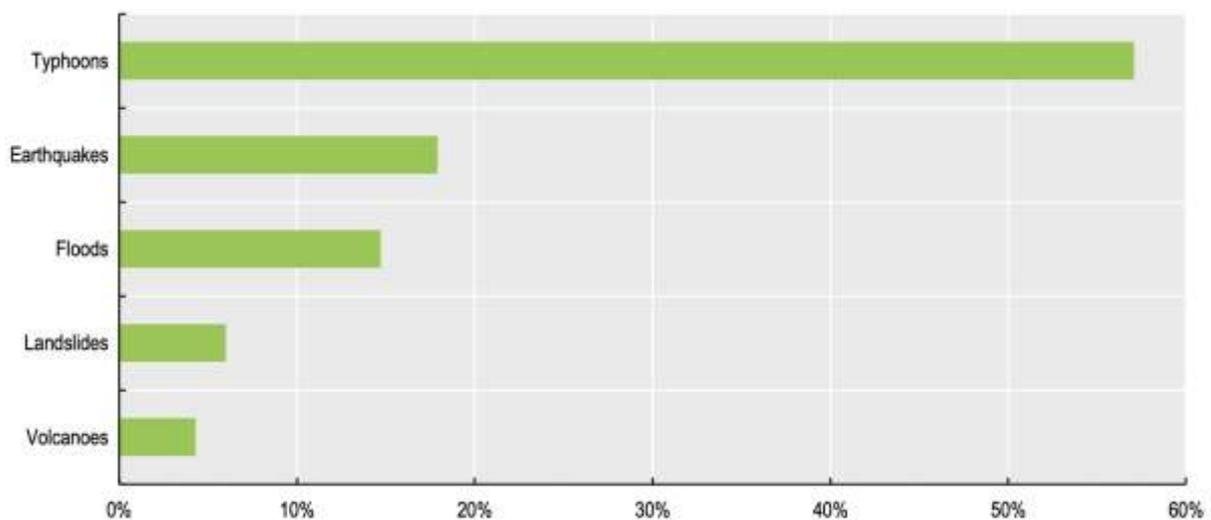


Figure – 5: Source: OECD Food, Agriculture and Fisheries<sup>8</sup>

<sup>7</sup> Government of Japan, “White Paper on Disaster Management in Japan” (Cabinet Office, 2021).

Every year these natural hazards causes loss of human life and property. With the increased capacities of the society to respond to the disasters the number annual casualties are in a decline trend. Top 10 disasters in terms of casualties only include the 2011 and 1995 Earthquakes, whereas the rest being prior to 1960 (Table 1). However, in terms of economic cost of the disasters, the recent disasters have been huge with all disaster post-1990 among the top 10 with the 2011 Great East Japan Earthquake causing an estimated damage of about US \$ 253 Billion (Table 2).

**Top 10 Disasters in Terms of Casualties Since 1900**

Year	Disaster Type	Location	Total Deaths
1923	Earthquake	Kanto plain (Yokohama,Tokyo)	143000
2011	Earthquake	Hokkaido, Akita, Aomori, Yamagata, Miyagi, Iwate, Fukushima, Tokyo, Ibaraki, Gunma, Saitama, Kanagawa, Nagano provinces	19846
1995	Earthquake	Kobe, Osaka, Hyogo, Kyoto prefecture	5297
1948	Earthquake	Fukui	5131
1959	Storm	Entire nation	5098
1917	Storm	Honshu	4000
1945	Storm	Kyushu, Kanto	3746
1927	Earthquake	Tango, Honshu	3022
1934	Storm	Muruto	3006
1923	Storm	Honshu	3000

Table – 1: Source: The International disaster database<sup>9</sup>

**Top 10 Disasters In Terms of Economic Cost Since 1900**

<sup>8</sup>Makiko Shigemitsu and Emily Gray, “Building the Resilience of Japan’s Agricultural Sector to Typhoons and Heavy Rain” *OECD Food, Agriculture and Fisheries*(May 2021).

<sup>9</sup>The International Disaster Database, CRED, EM-DAT, CRED / UCLouvain, Brussels, Belgium *available at*: [www.emdat.be](http://www.emdat.be)(last visited on November 13, 2025).

Year	Disaster Type	Location	Total Damages, Adjusted (Billion US\$)
2011	Earthquake, Fire, Industrial Accident	Hokkaido, Akita, Aomori, Yamagata, Miyagi, Iwate, Fukushima, Tokyo, Ibaraki, Gunma, Saitama, Kanagawa, Nagano provinces	253.0
1995	Earthquake, Fire	Kobe, Osaka, Hyogo, Kyoto prefecture	177.8
2004	Earthquake, Fire, Slide (Land, mud, snow, rock)	Ojiya, Nagaoka, Tokamachi districts (Niigata province)	40.2
2016	Earthquake	Kumamoto, Fukuoka, Saga, Oita, Miyazaki provinces	22.6
1991	Storm	Hiroshima, Kure districts (Kyushu Isl.)	19.9
2019	Storm Flood	Tokyo, Fukushima, Miyagi, Shizuoka, Kanagawa, Nagano, Saitama, Gunma, Ibaraki, Tochigi	18.0
2007	Earthquake, Tsunami/Tidal wave, Fire	Niigata, Nagano, Toyama provinces	16.3
2018	Storm, Flood	Osaka, Wakayama, Hyogo	13.5
2004	Storm, Transport accident	Fukuoka, Kagoshima, Kumamoto, Miyazaki, Nagasaki, Ooita, Saga provinces	12.9
2000	Flood Slide (land, mud, snow, rock)	Aichi, Shizuoka, Mie, Gifu provinces	11.7

Table – 2: Source: The International disaster database<sup>10</sup>

#### IV. Types of Disasters Faced by Japan

As per the Cabinet Office of Japan’s basic disaster management plan, natural disasters include earthquakes, tsunamis, water hazards, volcanoes and snow hazards. Accidental disaster includes maritime disasters, aviation disasters, railroad disasters, road disasters, nuclear disasters, hazardous material disaster, large scale fire disaster and forest fires disaster. Since the Great Hanshin Earthquake of 1995, following are the major types of natural disasters on the basis of human casualties, houses damaged and economic impact.

##### *Earthquake*

The oldest recorded earthquake is from the 869 Sanriku Earthquake at Japan with an estimated magnitude of 8.6. This also resulted in tsunami. Japan has suffered a great deal from earthquakes such as the Great Hanshin Earthquake of 1995 and the Great East Japan Earthquake of 2011. More recently, the Kumamoto Earthquakes in April 2016 caused 50

<sup>10</sup>*Ibid.*

deaths and an estimated US \$ 20 billion damages.<sup>11</sup> Since the Great Hanshin Earthquake of 1995, 29 earthquake occurred in Japan, with 18 of them with Magnitude 7 and above, cumulatively resulting in more than 20000 casualties.<sup>12</sup>

### ***Storm***

Japan receives heavy rain with high frequency and the scale of typhoons and cyclone have been unprecedented in recent years. The cyclone Mireille in September 1991 in Hiroshima and other parts of Kyushu region of Japan caused 66 deaths and about US \$ 10 billion in damages.<sup>13</sup> Torrential rain in Northern Kyushu in July 2017 resulted in severe damage in Fukuoka and Oita Prefecture and left 42 people either missing or dead.<sup>14</sup> The typhoon Hagibis in October 2019 caused over US \$ 15 billion in damages, making it one of the most expensive weather-related disasters in the world.<sup>15</sup> Since 1995 there are about 95 recorded storms with 15 of them being convective storm and 72 are tropical cyclones.<sup>16</sup> About more than 1000 people are killed since 1995 as a result of storm and associated disaster like flood, slide (land, mud, snow, rock). This also causes significant agricultural damages and losses to the farmers.

### ***Flood***

Hydrological disasters like flood are also very common in Japan with the subtype being coastal flood, riverine flood and flash flood. Most of the time the floods originate with heavy rain, tropical storm, and torrential rain. July 2018 heavy rain left more than 200 people dead or missing and about 500 people injured. More recently, July 2020 saw heavy rain with the total precipitation in a week exceeding half of the normal annual precipitation. This resulted in death of 86 persons and about equal number of injured.<sup>17</sup>

### ***Heavy Snowfall***

Heavy snowfall in Japan since 1995 has resulted in about 1500 people dead or missing since 1995 with fatalities every year till 2020. 10 of these snowfalls were declared major disaster.<sup>18</sup>

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<sup>11</sup>OECD, “Risk Governance Country Factsheet,C 138” (Japan, 2017) *available at*: <https://www.oecd.org/gov/risk/risk-governance-country-factsheet-japan.pdf> (last visited on November 13, 2025).

<sup>12</sup>*Supra* note 9.

<sup>13</sup>*Supra* note 11.

<sup>14</sup>*Supra* note 9.

<sup>15</sup>*Supra* note 8.

<sup>16</sup>*Supra* note 9.

<sup>17</sup>*Supra* note 7.

<sup>18</sup>*Ibid.*

Recently in 2020-2021 heavy snowfall due a strong winter pressure system mainly on the Sea of Japan side.

### ***Volcanic Eruptions***

Japan has about 111 active volcanoes and is frequently affected by earthquakes and tsunamis. 50 of these volcanoes are continuously monitored. The Volcanic eruption of Mount Unzen in 1991 resulted in 41 deaths. Mount Ontake along the borders of Nagano and Gifu prefecture erupted in September 2014, killing 63 people.<sup>19</sup>

### ***Accidental Disasters***

There are also accidental disasters. Accidental disasters can be triggered by natural causes like the tsunami caused the nuclear accident in Fukushima, it can also be man-made like the Tokaimura Criticality Accident in 1999. In a fuel reprocessing plant at Tokai in the Ibaraki Prefecture, few workers were exposed to high doses of radiation because of excessive uranium enrichment. Many people who responded to the crisis were exposed to high level of radiation. Because of its highly industrialised nature, large number of thermal power plant and large forest cover, Japan is also susceptible to fire hazards.

Other than these disasters, Japan also faces other disasters like landslide, drought, heat wave, epidemic and wildfire. The International Disaster Database of the Centre for Research on the Epidemiology of Disasters (CRED) Brussels records 380 natural disasters since 1900 and 93 of them took place after the Great East Earthquake of March 2011. Similarly, there are total 74 counts of technological disaster since 1900 that includes, transport accident, industrial accident and miscellaneous accident like fire, water and air explosion, poisoning, gas and radiation leakages. With the high frequency of disasters, mostly from natural causes, Japan has ample experience of “building back” and has very robust Disaster Risk Management framework by investing heavily infrastructure and other measures to build resilience.

## **V. Legal Frameworks to Tackle Disaster in Japan**

Japan has a robust legal framework with regard to disaster management and mitigation and have a long history of disaster management laws dating back to the Meiji Era. There are total

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<sup>19</sup>From the determination to “protect people and community”, Fire and Disaster Management Agency, Ministry of Internal Affairs and Communications, Japan, *available at*: [https://www.fdma.go.jp/about/items/post/all\\_ej.pdf](https://www.fdma.go.jp/about/items/post/all_ej.pdf) (last visited on November 13, 2025).

of 46 major Acts, till date, related to disaster management covering prevention, emergency response, recovery and reconstruction.<sup>20</sup> One of the earliest disaster management laws in Japan in the post-war period is the Disaster Rescue Law of 1947. This provides for rescue activities including shelter, food and water, providing basic necessities, medical services and rescuing people from the dangerous place. Firefighting Organization Law of 1947 provides for protection of lives, bodies and properties of citizens from fire, earthquakes and other disaster. Under this law the National administrative organ is Fire and Disaster Management Agency, which was established as an external bureau of the Ministry of Internal Affairs and Communications. Matters related to planning, drafting rules, prevention system, investigations, standards setting, training, information, guidance and dissemination are under the purview of this agency.

While the Firefighting Organization Law talks about the administrative organs, organisation of local governments, municipal fire services and coordination between agencies, the Fire service Law 1948 deals with the prevention of disaster, warning and protecting lives, properties and reduction in damage caused by disasters. This law deals with the dangerous goods, hazardous material security, firefighting equipments, inspections, precautions, investigations and the provision for penalties for violating specific provisions. The Firefighting Facility Reinforcement Promotion Law, 1953 was promulgated to promote the strengthening of municipal firefighting facilities and the national subsidies for purchase or installation of facilities. Law of Public Work Accident Compensation and Welfare Services for Fire Brigade Members was promulgated in 1956. This is concerning the welfare of the fire brigade members who remain essential for any disaster mitigation activities.

However, the principal legal instrument for disaster risk reduction remains the Disaster Countermeasures Basic Act, 1961(Act 223 of 1961), which details the basic principles of disaster prevention, stipulates responsibility for protecting lives and properties and establishes systems through national and local governments and public institutions. This covers disasters like storm, tornado, heavy rain, heavy snowfall, flood, landslide, debris flow, storm surge, earthquake, tsunami, large scale explosion or any other similar disaster in terms of degree of damage. The Act specifies national, prefectural and municipal responsibilities in times of disaster and also provides for mutual cooperation and collaboration between nation and local governments. Article 11 of the Act provides for establishment of Central Disaster Prevention Council by Cabinet office. The Council shall formulate basic disaster prevention

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<sup>20</sup>*Supra* note 7.

plan and deliberate on important matters concerning disaster prevention and advise the Prime Minister and/or the Minister in Charge of disaster prevention. It shall be composed of several members including experts nominated by Prime Minister from among the relevant administrative agencies and academics. The Prime Minister heads the Council. Likewise, there are provisions for Prefectural and Municipal Disaster Prevention Council for formulation and implementation of disaster prevention plan in prefectures and municipalities respectively. The Countermeasure Act also provides for establishment of specific Disaster Response Headquarters during the time of emergency. These agencies manage the matters related to the creation of targeted plans for the accurate and prompt implementation of disaster emergency measures.

A special inclusion in the article 7 of the Countermeasure Act is the community responsibilities. Local communities most of the time becomes the first responders during the time of emergency and can be of great help before the assistance arrives. The Act provides for public bodies within local areas and other persons and defines their responsibilities during the disasters. The Act calls for stockpiling of food, drinking water and other daily necessities by the local residents under the monitoring of local governments.

The 1978 Act on special measures for large-scale earthquake countermeasures provides for the designation of areas for enhanced earthquake prevention measures, development of seismic observation systems and other matters concerning prevention system. There is a law on Petroleum Industrial Complex Accident Prevention of 1975 to promote comprehensive measures to prevent the occurrence of disaster related to petroleum industrial complex.<sup>21</sup> Likewise, there is an Act on Special Measures Concerning Nuclear Emergency Preparedness of 1999.<sup>22</sup> This details the nuclear emergency response guidelines, obligation of nuclear operators concerning prevention of nuclear disasters, post-nuclear disaster measures and penal provisions. Compensation for Nuclear Damage was enacted in 1961 when Japan started nuclear development for civilian nuclear energy purposes.<sup>23</sup> Following the Fukushima nuclear disaster, Nuclear Damage Compensation Facilitation Corporation Act, 2011<sup>24</sup> and Act on Promotion of Support Measures for the Lives of Disaster Victims to Protect and Support Children and Other Residents Suffering Damage due to Tokyo Electric Power

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<sup>21</sup>Fukio Nakane (ed.), *Petroleum Kombinat etc., Disaster Prevention Law*, (Eibun-Horeisha Law Bulletin Series, Japan, 1979)

<sup>22</sup>Special Measures Concerning Nuclear Emergency Preparedness Act, 1999 (Act 156 of 1999).

<sup>23</sup>Compensation for Nuclear Damage Act, 1961 (Act 147 of 1961).

<sup>24</sup>Nuclear Damage Compensation Facilitation Corporation Act, 2011 (Act 94 of 2011).

Company's Nuclear Accident, 2012 were promulgated.<sup>25</sup> Both the Act helped and ensured prompt and appropriate compensation for nuclear damages, and risk of radiations released due to the nuclear accident.

## VI. Other Legal Provisions

Japan also has a very robust legal framework for disaster waste management. Guidelines for Disaster Waste Management were framed in 1998 following the 1995 Kobe Earthquake that is also known as Great Hanshin Earthquake. However, with the large amount of debris accumulated after the Great East Japan Earthquake and ensuing Tsunami, the Ministry of Environment ordinance had to amend for easing the 30-day advance notice, that is required for non-industrial waste management.<sup>26</sup> Likewise though dumping waste in the Ocean is prohibited, Ministry of Environment amended its notification to allow dumping of rotten seafood items.<sup>27</sup> In August 2011, Japan enacted the Comprehensive Disaster Waste Management Act to adequately manage disaster waste and the national government was allowed to process the disaster waste instead of local governments. Local government to also accept disaster waste outside its area of control and process it at the national government's expenses.<sup>28</sup> Handling of the nuclear waste is far more critical than the debris accumulated by Tsunami. Accordingly, Japan promulgated Special Measures Concerning the Handling of Radioactive Pollution Act also in August 2011 to specify the basic approach of disposing waste contaminated by radioactive materials.<sup>29</sup>

### *Building National Resilience*

Another aspect of disaster management is building national resilience. The Basic Act for National Resilience along with the Countermeasures Basic Act are the important pillars of Japan's Disaster management legal framework. In terms of building national resilience, Japan follows four basic policies according to the Basic Act for National Resilience Contributing to Preventing and Mitigating Disasters for Developing Resilience in the Lives of the Citizenry, 2015. These are...

- (i) Prevent human loss by any means

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<sup>25</sup> Promotion of Support Measures for the Lives of Disaster Victims to Protect and Support Children and Other Residents Suffering Damage due to Tokyo Electric Power Company's Nuclear Accident Act, 2012 (Act 48 of 2012).

<sup>26</sup> Japan: Legal Responses to Disaster Waste Management Issues, 2012, Library of Congress, *available at*: <https://www.loc.gov/item/global-legal-monitor/2012-03-23/japan-legal-responses-to-disaster-waste-management-issues/> (last visited on November 14, 2022).

<sup>27</sup> Japan: Legal Responses to the Great East Japan Earthquake of 2011, *The Law Library of Congress*(2013).

<sup>28</sup> *Ibid*; Special Measures Act on Disaster Waste Management, 2011(Law 99 of 2011).

<sup>29</sup> *Ibid*.

- (ii) Avoid fatal damage to important functions for maintaining administration as well as social and economic systems
- (iii) Mitigate damage to property of the citizenry and public facilities
- (iv) Achieve swift recovery and reconstruction<sup>30</sup>

Other than this, there are provincial orders, regulations, decree and guidelines which also govern various aspects of disaster management in Japan. The legal and regulatory framework of Japan provides for disaster management involving many parties starting from the topmost office of *Kantei* (Prime Minister Office) to the local residents. Disaster management legal framework also includes Prefectural, Municipal and Local administration in addition to the involvement of national government. Community empowerment through legislation helps in active participation of local residents in pre-disaster, disaster and post-disaster periods. The laws and regulations are diverse and specific in regulating the handling of disasters and protocols are comprehensive and very clear with regard to responsibility and accountability. Japanese laws are also very adaptive to situations arising out of disaster management. An example of adaptiveness is the amendment of Disaster Countermeasures Basic Act in 2012 for need to reopen roads for emergency response. Likewise, the Building Standard Law and Seismic Retrofitting Promotion Law were amended further to enhance the structural resilience, structural integrity and design review process. This also mandated seismic diagnosis of large public buildings.<sup>31</sup> This legal framework on building safety is a gradual effort since the early 1900.

### ***International Cooperation***

With vast experience in managing natural and man-made disasters, Japan has been at the forefront in supporting other countries in effectively managing and responding to various types of disasters. Japan's Disaster Relief Law (JDR Law), 1987 have institutionalised its goals of human security and activism and its efforts to create international standards for disaster risk reduction. Since then, disaster relief teams have been dispatched to all over the world, especially the developing countries for humanitarian assistance in rescue operations, medical care, rehabilitation activities and emergency relief.<sup>32</sup> The Government of Japan's

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<sup>30</sup> Japan Basic Act for National Resilience Contributing to Preventing and Mitigating Disasters for Developing Resilience in the Lives of the Citizenry, 2015.

<sup>31</sup> Shoko Takemoto, Naho Shibuya *et.al.*, "Learning from Mega disasters: A Decade of Lessons from the Great East Japan Earthquake" *The World Bank* (2021).

<sup>32</sup> Ministry of Foreign Affairs of Japan, Government of Japan, *available at*: <https://www.mofa.go.jp/policy/disaster/21st/3.html> (last visited on February 13, 2023).

effort in promoting international cooperation in disaster assistance and emergency relief can be categorised into- (i) dispatch of JDR Teams, (ii) provision of emergency relief goods, (iii) emergency grant in aid, (iv) technical cooperation such as providing training courses for experts to other disaster prone countries, and (v) multilateral cooperation through UN organisations. Considering the need for specialised teams and non-recognition of its financial assistances in managing the Gulf war damages, the Japanese Diet, in 1992, revised the JDR law to allow the units of Self Defense Force to be used in disaster relief activities<sup>33</sup>. Japan's contribution has been highly recognised in assistances during the Great Sumatra Earthquake and Indian Ocean Tsunami relief works where it dispatched nearly 14 JDR Teams to the affected regions. Similarly, it played an active role in relief works during the 2010 earthquake in Haiti, 2011 earthquake in Christchurch, New Zealand, 2013 typhoon in the Philippines, 2015 Earthquake in Nepal, and so on<sup>34</sup>. As of August 2021, Japan's international cooperation in disaster management and relief is evident from the fact that, as on August 2021, it has dispatched 160 specialised disaster relief team around the world since the promulgation of JDR Law in 1987.<sup>35</sup> Japan has also become active in the pioneering of norms and best practices by hosting several major conferences including the World Conference on Disaster Reduction and partnering with UN on International Decade for Natural Disaster Reduction (IDNDR).

### ***Beyond the Preparedness***

Disaster Risk Reduction is deeply entrenched in Japan's overall legal framework. Japan has also shown to the world time and again, why it is the true leader in disaster preparedness and mitigation. However, the Great East Earthquake of 2011 was so extreme that it way beyond the expectation and hence exceeded the coping capacity of Japan's disaster management. The disaster management and mitigation preparedness were on predication and expectation. But the extreme nature of the devastation caused by the 2011 earthquake, it felt like Japan was not prepared enough. The scale of destruction to lives, housing, infrastructure, industry, agriculture particularly in Fukushima, Iwate and Miyagi Prefectures was very extreme. A decade has passed, and the regions are returning to a sense of normalcy. Damaged

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<sup>33</sup>Japan International Cooperation Agency, "Disaster Relief and JICA: Striving to Make a Difference" *available at*: [https://www.jica.go.jp/jdr/library/ku57pq00001nkq0x-att/disaster\\_relief\\_and\\_jica.pdf](https://www.jica.go.jp/jdr/library/ku57pq00001nkq0x-att/disaster_relief_and_jica.pdf) (last visited on February 17, 2025).

<sup>34</sup>*Ibid.*

<sup>35</sup>Japan International Cooperation Agency, "Emergency Disaster Relief" *available at*: [https://www.jica.go.jp/english/our\\_work/types\\_of\\_assistance/emergency.html](https://www.jica.go.jp/english/our_work/types_of_assistance/emergency.html) (last visited on February 22, 2025).

infrastructures are restored including new units for public housing. But this raised questions about preparedness of Japan for mega disaster as much of the responsibility in the existing system and legal framework are at the hands of municipality to take action. The scale of Great East Earthquake was huge for even Japan to handle. The areas affected included municipalities which lost its total function and local capacities in some other municipalities could not cope with the scale of the disaster. In the absence of or inability of municipality, national government stepped in assuming full responsibility, so this is a take away for Japan to plan differently for mega-disasters.

In terms of basic necessities like providing energy, food, water and medical supplies and services could not cope of with the requirements. Water supply disruption in Sendai city showcased the vulnerability of basic infrastructure to disasters and is a case for making the basic infrastructure resilient. Nuclear source of energy was the major source of power supply system. There were two type of back-up power supply available in the Fukushima nuclear power plant. However, the “Backup” power system was as vulnerable as the primary sources, considering the location in the coastal and earthquake prone region.<sup>36</sup> It was felt, that a major tsunami was not in the plan of the designer and operator. In the nuclear crisis, efficient decision making was delayed due to delay in information sharing. There were questions regarding coordination between the government (emergency response headquarters), the Tokyo Electric Power Company, and the nuclear and industrial safety agency.<sup>37</sup>

The Tokyo Subway Sarin Gas attack also exposed the fault line within the disaster management system of Japan. Tokyo Subway transport system is considered as safest transportation in the world. However, in March 1995, Tokyo Subway came under sarin gas attack which represented the worst disaster caused by nerve gas in the peacetime history. Before to this, terrorists attacking with chemical weapons was incomprehensible. This Tokyo Subway Sarin Gas attack reconfirmed the problem with local delegation is a problem. For example, all response to the Sarin gas attack in Tokyo Subway was relegated to the Governor of Tokyo. The agencies of Tokyo Metropolitan offices conducted their role without central coordination. Basically, the disaster planning makes each metropolitan areas, cities, towns and villages responsible for regional disaster planning and its management. Even in the legal framework, After the Great East Japan Earthquake, the Disaster Rescue Law, 1947 which primarily made prefectures and municipalities responsible for rescue operation was felt

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<sup>36</sup>Okada Norio, Tao Ye, *et.al.*, “The 2011 Eastern Japan Great Earthquake Disaster: Overview and Comments” 2 *International Journal of Disaster Risk Science* 34-42 (2011).

<sup>37</sup>*Ibid.*

inadequate because of the scale of disaster. Accordingly, the national government announced that it would take initiative for rescue activities not covered under the Disaster Rescue Law and cover all the financial responsibilities.

Likewise in terms of medical treatment, Sarin Gas attack also revealed another problem associated with the Emergency Life-Saving technician (ELST). ELST under the law are prohibited to carry out advanced medical treatment like airway management without permission of a medical doctor. In spite of heaving large number of ELSTs with technical ability to optimize patient ventilation, the severely ill patients received intubation and adequate ventilation only after admission to hospitals<sup>38</sup> because of unavailability of doctors to accord permission. During an attack like the Sarin Gas attack, there is no field response system in Tokyo in which a doctor would respond to disaster site in an emergency vehicle. Likewise, the Japanese Self Defense Forces (SDF) cannot act spontaneously without the consent of the Prime Minister. In an emergency situation, they entering the disaster area to carry out rescue only after they have received a request from the local governments and the consent of Prime Minister. Even though the SDF had wide knowledge of chemical warfare and decontamination ability, their deployment was delayed due to complicated procedure which was also seen in the case of Kobe earthquake.<sup>39</sup>

Another problem is with regard to the building standard and management of building codes in Japan. Though the building codes are effective to reduce the risk of the damage, the penalty system does not yield the desired effect as the number of building officials to clamp down on violation in comparison to the number of new buildings is very less. So, in many case the poor construction and non-conformity goes unchecked. Japanese earthquake insurance is also not well designed.<sup>40</sup> While the insurance premium takes into account the seismicity of each region, the housing condition is not taken into account.<sup>41</sup> Collapse rate of old building is also high as the Building Standard Law does not apply retrospectively and in rebuilding.<sup>42</sup>

## VII. Poverty, Mitigation and Human Rights Issues

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<sup>38</sup> Tetsu Okumura, Kouichiro Suzuki, *et.al.*, “The Tokyo Subway Sarin Attack: Disaster Management, Part 1: Community Emergency Response” 5 *Academic Emergency Medicine* 613-617 (1998).

<sup>39</sup>*Id.* at part 3, pp. 625-628.

<sup>40</sup>Norio Maki and Haruo Hayashi, “Building Codes and Tradeoffs for Earthquake Risk Reduction: Disaster Management for Housing” 12 *WCEE2000* available at: <https://www.iitk.ac.in/nicee/wcee/article/2556.pdf> (last visited on November 11, 2025).

<sup>41</sup>*Ibid.*

<sup>42</sup>*Ibid.*

The diverse kinds of disasters, natural and accidental, have had severe impacts on the lives and livelihoods of the population. However, any disaster influencing the environmental, economic, and social surrounding of a large number of populations has varied impact on different communities depending on their economic and social standings. Economically weaker sections in the society are more vulnerable to forced change, irrespective of the nature of disaster, due to relative lower capacity to cope with the change. The impact of disasters on the lives and livelihoods also significantly endangers their capacity to basic human rights of health, sanitation, and education resulting in long-term negative impact of such disasters. Changes in social behaviour and environment, outbreak of diseases, undernourishment, and over-dependency on governmental benefits are few of the social effects of disasters. Economic losses include the disruption of development programmes as well as forced occupational changes, economic resources including infrastructure and communications. Since the economically vulnerable sections mostly rely on a healthy environment for their livelihoods, environmental losses have the most significant impact on them. Social injustice and discrimination often complement to the sufferings of these groups.

### ***Poverty***

Poverty being a multi-dimensional problem has severe impact on the social, economic, and political roles of the individuals. Economic depravity renders people vulnerable to disasters and at the same time disasters cause poverty and other related issues with loss of livelihood opportunities. Major issues of rehabilitation, resettlement, and socio-cultural deprivations demand a holistic and humanitarian approach to study the impact of the disasters. Such an approach will offer an integrated explanation of the various factors leading to poverty and its diverse implications for the social and economic lives of individuals in the society. Protection of human rights in the face of disasters are ensured through various legal safeguards. The importance of upholding basic human rights during the process of prevention, mitigation, and management of disasters has been highlighted in the Sendai Framework for Disaster Risk Reduction 2015–2030 and several draft articles as adopted by the International Law Commission.

### ***Mitigation***

The 2011 Fukushima Triple Disaster again holds significance as it exposed the state's inability to counter the natural and nuclear disaster in forms of radiation risks, contamination

of environment, economic and political impacts on various groups. Categorization of areas into ‘Difficult-to-return-area’, ‘Restricted-residence-area’, and ‘Evacuation-order-cancellation-preparation-area’ created classifications of population as ‘Mandatory Evacuees’ and ‘Self-Evacuees’.<sup>43</sup> There has been certain ambiguity with respect to breach of human rights in the events of natural or manmade disasters though the UN Committee on Economic, Social, and Cultural Rights (CESCR) acknowledged the adverse impacts of such disasters on the rights as enshrined in article 11 (Right to an adequate standard of living) and 12 (Right to highest attainable standard of health). Therefore, the consequences of the 2011 Great East Japan Earthquake and the breach in Fukushima nuclear power plant need to be looked at from a human rights perspective.

Ten years after the devastating Fukushima tragedy, thousands of individuals are still experiencing severe contamination-related effects that continue to negatively impact their physical and emotional health, way of life, and livelihood. The government has not recognised more than 40,000 Fukushima residents as internally displaced people (IDPs) despite the fact that they are still evacuees. This figure includes purported voluntary evacuees from regions that weren't formally identified as evacuation areas. As a result, IDPs do not receive the proper degree of financial, housing, medical, or other help. Many evacuees still believe they are being compelled to return to dangerous locations.

Japan continues to struggle in containing the safety hazards and exposure, particularly radiation exposure to children and other vulnerable populations. Children are more susceptible to radiation and have a higher chance of developing some tissue tumours as a result. They are also more prone than adults to be exposed to higher quantities of internal and external radiation. The absence of public involvement in decision-making processes, the obscurity surrounding the nature of the risks posed by the contaminated water, and the effects of its disposal only serve to further anger the affected populations. Local communities and civil society organisations have not been sufficiently involved in consultations on the suggested method of water disposal.

### ***Human Rights Issues***

The right to an acceptable standard of life, which includes the right to appropriate housing, is significantly impacted when people are displaced from their homes with a forced change in

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<sup>43</sup> Miki Ishimori, “Right To Housing After Fukushima Nuclear Disaster: Through A Lens of International Human Rights Perspective”, *IFRC Disaster Law*, October 31, 2017 available at: [https://disasterlaw.ifrc.org/sites/default/files/media/disaster\\_law/2021-01/Right%20to%20housing%20after%20Fukushima%20nuclear%20disaster.pdf](https://disasterlaw.ifrc.org/sites/default/files/media/disaster_law/2021-01/Right%20to%20housing%20after%20Fukushima%20nuclear%20disaster.pdf) (last visited on November 13, 2025).

their livelihood options. Therefore, it is pertinent to understand how the relocation of residents from Fukushima's inhabitable land owing to radioactive pollution would threaten their right to residence. According to the institutional structure for the post-disaster response in Japan, the government allocates emergency shelter homes and temporary housing facilities for the victims who have lost their homes in a disaster. The Disaster Risk Reduction (DRR) provisions also supports the affected population through disaster recovery assistance for immediate survival and sustenance. The victims also possess rights to claim support from the government in order to ensure right to life and adequate standard of living as guaranteed by the Japanese Constitution.

In case of 2011 Earthquake, the nuclear evacuees endured severe hardships in relocating from emergency shelters to a permanent housing facility. According to Akira Imai's surveys, "nuclear evacuees from Fukushima tended to move frequently, by average, 3.3 to 4 times in 3 months after the nuclear accident, and 20% of the respondents moved again one year after the accident".<sup>44</sup> The post-disaster provision of private rental housing provided immediate relief to the victims, however, it also created geographical dispersion of the evacuees due to frequent mobility from one facility to another. It resulted in several administrative and social complications as it excluded them from governmental needs-assessment surveys and limit their participation in decision-making with regard to housing and resettlement policies. Due to the delay in building permanent public housing, low-income and elderly households often remain in publicly owned temporary housing units with short lifespans and deteriorating habitability over time. As part of its obligations, the State may gradually realise the elements that make up adequate housing by taking the necessary actions in the shortest amount of time and in accordance with the resources that are most readily available. These actions may include a combination of public and private sector actions, as necessary. It may be difficult to claim that Japan did not even fulfil the bare minimum of its responsibility to address and meet the most pressing humanitarian needs, such as the provision of adequate housing and shelter, given the extraordinary measures it took to acquire private rental units.<sup>45</sup>

### VIII. Attitude of Government

The Japanese government has developed a comprehensive disaster management framework that aims at minimizing the impact of natural disasters on the population. The key features are government's focus on prevention and preparedness. The government has established a

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<sup>44</sup>Akira Imai, "Third Survey of Inhabitants who were Evacuated from the Nuclear Power Plant Disaster" 402 *Monthly Review of Local Government* 24-56 (2012).

<sup>45</sup>*Supra* note 43.

wide range of measures to reduce the risk of disasters, including building earthquake-resistant infrastructure, improving early warning systems, and promoting public education on disaster preparedness. In addition, the government is also focused on response and recovery. The response system includes its Self Defense Forces, Police and Fire departments, and local disaster response teams. In terms of legal framework, a significant takeaway from study of Japan's disaster management law is Legislatures' reactive nature in framing laws. The Disaster Countermeasures Basic Act of 1961 was framed in the after math of Typhoon Ise-Wan of 1959. Similarly, 1966 Act on Earthquake Insurance after 1964 Niigata Earthquake; Act on Promotion of Earthquake-proof Retrofit of Building after Great Hanshin-Awaji Earthquake of 1995; Act on Special Measures Concerning Nuclear Emergency Preparedness of 1999 following the Tokaimura Criticality Accident; Special Zones for Reconstruction Act, 2011 after the Great East Japan Earthquake; Nuclear Damage Compensation Facilitation Corporation Act, 2011 following the Fukushima Daiichi nuclear disaster; and Comprehensive Disaster Waste Management Act, 2011 again following the Tohoku Earthquake and ensuing Tsunami. The reactive nature of Japan's legislature has led to its legal framework for disaster management being quite comprehensive and covers wide areas such as disaster response, rescue, organisation involved and administrative obligations, special measures for special emergency, waste management, victim support, compensation for damages, regulatory authority, reconstruction, public finance measures and other miscellaneous laws. Japan also uses its disaster experience through enactment of laws like Act on Making Local Areas Resistant to Tsunami, 2011 and amendment in existing laws to overcome the hurdles in managing crisis and be better prepared for future.

With regard to compensation, the country's legal safeguards have been robust in ensuring adequate compensation including for nuclear damages. Initially projecting at least 3 to 5 trillion JPY<sup>46</sup>, the government now anticipates paying out a total of 7.9 trillion JPY<sup>47</sup> to compensate the Fukushima evacuees. The Dispute Reconciliation Committee for Nuclear Damage Compensation (Reconciliation Committee) recommended legislations in favour of a statutory body to deal with generation of finances for compensation and mediation procedures. To expedite a consensual settlement between TEPCO and the evacuees, the mediation programme at the Nuclear Damage Compensation Dispute Resolution Center (ADR Center) began running on August 28, 2011. Victims have three options for pursuing compensation: direct claims to TEPCO, mediation processes, or legal action. ADR Center is

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<sup>46</sup>*Ibid.*

<sup>47</sup>*Ibid.*

criticised for lacking objectivity and dependability while being made up of independent legal officials and specialists. Allegations of political interference arise due to the control of MEXT on the functioning of the ADR Centre and the use of nuclear power plant by the government has led to attempts at avoiding litigations. Additionally, the success of mediation depends on the perpetrator's willingness to cooperate; in fact, TEPCO has engaged in repeated unethical practices, including rejecting direct claims made by victims who submitted applications to both ADR and TEPCO, refusing to compensate in the absence of express and literal listing in the interim guidelines and delaying responses to settlement proposals despite the ADR Center's directive to do so.<sup>48</sup>

The lack of substantial input from affected towns and locals in the formulation of the ADR Center's standards contributes to the victims' perception of unfairness. If the right to appropriate housing has been infringed after a disaster, it is unclear under international law whether a right to compensation exists. The CESCRC mandates proper compensation as the cornerstone barrier against illegal displacement as a part of the commitment to respect. But, achievement of "full and effective compensation," as recommended by international law, is only a symbolic right and is consequently dependent in practise on the local redressal mechanism and its enforcement. Although the nuclear compensation structure assigned TEPCO responsibility for the damage in the Fukushima case, it did not result in the State's duty being acknowledged or TEPCO accepting all compensation claims.

### **IX. Strengthening the Enforcement System**

Japan's experiences with frequent disasters and their mitigations have resulted in resilient disaster management policies enabling the country to become one of the most advanced countries in disaster risk reduction. The history of disasters helps a great deal in coming up with risk reduction strategy. World's foremost earthquake early warning system is also put in place in Japan and is operated by Japan Meteorological Agency. It also detects seismic waves near epicenter, and send out early warnings through national televisions, radio networks and through mobile phones. On the day of 2011 Tohoku Earthquake, alarm was sounded around 80 seconds before the beginning of shaking in Tokyo area.<sup>49</sup> Japan's Tohoku region has been affected by several earthquakes in the past. With the region's improved risk management of earthquake and tsunamis like seismic proof buildings, high seawalls, early warning system and self-evacuation the casualties of 2011 Earthquake could be limited to about 20000

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<sup>48</sup>*Ibid.*

<sup>49</sup>*Supra* note 36.

deaths, though it was the most severe recorded Earthquake to have struck Japan in terms of magnitude.

Japan's disaster responses reflect a continuous and consistent approach with the development of comprehensive disaster management plans, investing in disaster-resistant infrastructure, and strengthening of regulatory and legal frameworks. These plans are responsive to the technological developments as well as disaster experiences of the country, and cover aspects of preparedness, response, and recovery. For example, in view of the rising number of meteorological disasters, in December 2020, the Cabinet approved "a five-year acceleration plan for disaster prevention, disaster mitigation and building national resilience".<sup>50</sup> Roughly 15 trillion yen (110 billion US \$) is earmarked for prioritized measures for a period of five years, i.e., FY 2021 to FY 2025. Three focus areas for immediate measures were identified: measures against increasingly severe storm and flood disasters and impending large-scale earthquakes, measures against the ageing infrastructure to shift to preventive maintenance of infrastructure, and promotion of digitalization and other measures to efficiently promote policies for national resilience<sup>51</sup>. The country has put in place effective communication systems enabling seamless information sharing between government agencies, first responders, and the public. These systems include emergency alerts, social media, and disaster response apps. Japan has invested heavily in disaster response infrastructure including early warning systems, earthquake-resistant buildings and tsunami barriers. It has also designated evacuation routes and evacuation centres in addition to conducting regular disaster drills and exercises to prepare responders and the public for real-life disasters. The government plays a proactive role in creating public awareness and education through community outreach programmes, and disaster education campaigns and also provides emergency guides through private and non-governmental organizations. Adherence to stringent building codes, zoning regulations, and insurance requirements is ensured to minimise the risks.

Despite of Japan's much-accredited disaster response system, certain gaps in implementation remains to be addressed. With a number of disasters of diverse nature, the country, to some extent, lacks a long-term recovery and sustainable plan, with efforts being largely reactionary to immediate threats. It results in significant challenges towards community rebuilding and recovery process post-disaster. It also overlooks the mental health needs of disaster survivors, with the focus being on physical health and safety. Attention to

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<sup>50</sup>*Supra* note 7.

<sup>51</sup>*Ibid.*

vulnerable sections remains a serious challenge for the government, with large number of elderly, disabled, and low-income communities requiring targeted support. The ageing character of Japan's demography further adds to the difficulties. Japan has a significant number of foreign residents, especially in the cities of Tokyo, Nagoya, Osaka, etc. However, disaster management plans often neglect these groups with inadequate support in languages other than the Japanese language. Though several measures have been initiated for inter-governmental and inter-agency coordination, it still remains a major challenge considering the different levels of government involved in disaster management. It leads to confusion and delays during disaster response efforts as well as hassles for the public during compensation and recovery during the post-disaster period.

## **X. Best Practices: Need for a Comprehensive Law**

Japan has been consistently ranked among the top countries in disaster preparedness over the last decade. The World Risk Report, which evaluates countries disaster risk levels and management capacities rank Japan among the top countries because of its advanced risk reduction, early warning system, infrastructure development and emergency response measures. Despite the challenges faced by frequent natural disasters because of its geographic and climatic exposure, the country has done extremely well in coping and adaptive capacities which negated the impacts of these disasters to great extent. The lessons learnt and the best practices discussed here are a model for disaster prone countries in the world in general and Asia in particular to mitigate disasters and minimize damages to human lives and resources in this region.

### ***Comprehensive Law***

The comprehensive laws and institutions discussed earlier are only one element of the risk reduction system. Other than the legislation and institutions, several practices contribute to the efficient disaster management by Japan. There is coordination between government, private sector, mass media, civil society academia for disaster risk reduction efforts. Public institutions are mandated to participate in the Central Disaster Management Council and draft risk reduction operations plan. Academic bodies like universities play major role in carrying out research. Mass Media through news flashes disseminate information about earthquakes, tsunami and other disasters. Volunteer groups are active in fire-fighting and food supply in the community level. Japan has also been a leader in hazard mapping and early warning system. Japan carries out hazard mapping of many disasters and has made significant headways in preparation of dynamic flood hazard maps to identifying flooding patterns. Further the availability of early warning systems for storms, torrential rains, heavy snow, landslides, tsunamis, tidal waves reflect the country's preparedness against future disasters.<sup>52</sup>

### ***Knowledge Management***

It is an essential part of Japan's disaster management efforts. Disaster Risk Reduction Information Sharing Platform is a government system designed to grasp the "big picture" of damage swiftly. Similarly, initiatives mapping climate change including terrestrial, marine and high-altitude weather observations regarding rainfall volume, wind direction, wind speed,

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<sup>52</sup> Government of Japan, "National Report of Japan on Disaster Reduction for the World Conference on Disaster Reduction" (January 2005).

air temperature and other parameters are made using supercomputers.<sup>53</sup> These are also released through mass media for utilization by public. Volcanic eruption, earthquake and tsunami related system are also put in place for comprehensive round-the-clock observation and transmitted through mass media to the public. Other than the government system, there are non-government system like Urgent Earthquake Detection and Alarm System (UrEDAS) used by Japan Railway for tremor detection and automatic shutdown of power supply of the rail system.<sup>54</sup>

### ***Sharing Information***

Information sharing related to evacuation is another best practice in Japan. Any visit to prefectural or municipal or city offices will come across with colorful pamphlets beautifully designed with pictorial and infographics to raise awareness and make the general public including the foreigners to work towards reducing disaster risk at the community level. Various hazard maps are available to the general public which indicates vulnerability of each municipality to disasters. The maps contain evacuation locations, routes to evacuate, areas where past disasters have occurred and some basic facts and knowledges about disasters. Fire and Disaster Management Agency has an e-college for children and general public on disaster prevention and crisis management. This covers information about past disasters, evacuation behaviour, danger of disasters around the locality, self-help and learning to cooperate with each other.

### ***Educational Programmes***

Educational programmes related to disaster risk reduction is very robust in Japanese education system. Disaster education in curriculum is included for preparing the children for any kind of eventualities and constituted the fundamental knowledge of community. Teachers starting from kindergarten to high-school are provided with teaching and reference materials, safety guidance and planning evacuation drills and training materials for holding disaster risk reduction education training sessions.<sup>55</sup> 1<sup>st</sup> September is observed as National Disaster Prevention Day and National Disaster Prevention Week is observed every year from August 30 to September 5 for raising public awareness about disaster risk information and improve preparedness for underlying disasters. Additionally, January 15 to 21 is also observed as Disaster Management and Volunteer Week all over Japan commemorating the important role

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<sup>53</sup> *Ibid.*

<sup>54</sup> *Ibid.*

<sup>55</sup> *Ibid.*

played by volunteers in the 1995 Kobe earthquake. There are several others training programmes and simulation activities targeted at government bodies, police, defense agencies, broadcasting stations, local leaders and officers, officials in charge of disaster management and others on general knowledge, skill required, practical know-how of handling disasters. These training and simulations programmes are organized by Japan Red Cross, Association for the Promotion of Disaster Prevention Volunteers, Japan Bousaisi Society and Fire and Disaster Management Agency. The Government has also started “Program for Developing Disaster Management Specialists” for training people who can promptly and appropriately support disaster management response.

### ***Policy Change***

Prompt policy changes is another best practice adopted by Japan to address the need arising out of large-scale disasters. Being an earthquake prone country, Japan follows the building codes and standards to make these building earthquakes resistant. The Building Code that was enacted in 1920 undergone change in 1924 to increase the mechanical safety factor after the Great Kanto Earthquake of 1923. It was again revised in 2000 after many building in Kobe collapsed in 1995 Earthquake. Following the 2011 Tohoku Earthquake, these codes were further tightened to improve the resistance level. Likewise, the building standard for nuclear reactors established in 1981 undergone change in 2000 after the Tokaimura critical nuclear incident and further enforced the nuclear guidelines after the Fukushima nuclear power plant incident.<sup>56</sup>

### ***Future Planning and Building Resilience***

The culture of safety is part of everybody’s life in Japan. Along with this culture of safety, reliable early warning system, proactive approach, reactive legislation and SOPs for all eventualities are the pillars of excellence of Disaster Management in Japan. Though the main focus of Japanese approach is *Bōsai* or Disaster Prevention, the government, local authorities, and even the communities have given high priority for preparedness against disasters. There is a coordinated effort at creating safe and secure Japan even in the eventuality of any disaster.

Japan’s experience of dealing with disasters since long also highlights the importance of planning. Japan also focused on disaster management by formulation of master plans against large earthquakes, human resource development, educating the citizens, responses to disaster

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<sup>56</sup>RyomaKayano, Virginia Murray *et.al.*, “WHO Guidance on Research Methods for Health Emergency and Disaster Risk Management” Licence: CC BY-NC-SA 3.0 IGO, Geneva (World Health Organisation, 2021).

and support to victims. According to experts, Japan has entered into a seismically active period with the possibility of many high magnitude earthquakes occurring in the next 30-50 years. As per the Central Disaster Management Council, there is wide possibility of a Nankai Trough Earthquake and a Tokyo Inland Earthquake within the next 30 years. The council formulated masterplan outlining countermeasure by review damages based on Great East Japan Earthquake and evacuation plans for tsunami. The emergency management plan for such an earthquake and ensuing tsunami is made up of five categories – emergency transportation routes; rescue, first aid, firefighting; medical care and services; relief supplies of basic necessities; and continuous supply of fuel particularly for important facilities in affected areas.<sup>57</sup> Scenario planning exercises for Nankai, prearranging post-disaster reconstruction are also conducted.

Disasters may be unprecedented but the society should not be left unprepared. Disasters are always unexpected but the expected response can be made with prior planning. Resilience of the society becomes stronger with adaptability and adjustability of policy, regulatory framework and disaster management practices. Delayed response in disaster management, poor coordination among authorities, poor infrastructure often leads to higher casualties and sustained suffering of the people. Key takeaways from long experience of disaster management of Japan are the importance of planning, multi-sectoral approach, prevention is no substitute for preparedness, cooperation among various stakeholders and adaptability for future eventualities.

While Japan is still vulnerable to natural disasters, it has proven to be effective in minimizing the impact and facilitating recovery process. Though unfortunate, but quite possible that large-scale disaster may hit Japan again. Japan appears to have strengthened its infrastructure, preparedness, regulatory framework, resolve to rebuild with the hope that it will be successful in its response to such an occurrence.

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<sup>57</sup>Toshinori Ogata, “Disaster Management in Japan” 59 *Japan Medical Association Journal* 27-30 (2016).