ADRC Visiting Researcher Report

Legal Instruments on Disaster Risk Management (DRM) in Nepal and Japan

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CHAPTER I

Introduction

1.1 Background of the study

Nepal and Japan are highly vulnerable to variety of natural disasters. Earthquake, landslide, slope failure, sediment flow, flood, flash flood, heavy rain, inundation, fire, embankment failure and many other disasters are common for both countries. Additionally, volcanoes, cyclone, typhoon and tsunami are faced by Japan whereas glacier lake outburst flood (GLOF), avalanches, snowstorm, hailstorm, thunderbolt and many anthropogenic disasters are faced by Nepal as well. Climate change further exacerbating the frequency and magnitude of climate and weather related hazards that may continuously increase for the foreseeable future.

Talking about the general features of the countries, Nepal is a land locked country located in South Asia between India and China. It occupies an area of 147,181 square kilometers including both the high Himalayas to the north and plain lands to the south, whereas the population of Nepal as of the census day (June 22, 2011) stands at 26,494,504 showing population growth rate of 1.35 per annum. Sex ratio (number

of males per 100 females) at the national level is 94.2. The total number of households in the country is 5,427,302 with most of the houses made-up of mud-bonded bricks and stones. The employment of the country is agriculture based contributing 27% of GDP. Rest of the GDP amongst 29.8 billion USD is comprised with services 59.5 % and industry 13.5%. The literacy rate of Nepal is 65.9% (CBS, 2011), life expectancy is 70.88 years (UN,2020) and the per-capita income is $1,048 with the Human Development Index 0.579(UNDP,2019) as of 2018. The society of Nepal is very heterogeneous with more than 122 ethnicities and languages.

Whereas, Japan's area is an island country located in East Asia bordered with the Sea of Japan to the west and Pacific Ocean to its east. It occupies an area of 377,975 square kilometers comprising of 5 main islands and 6,852 stratovolcano islands. About 73 % of Japan is forested, mountainous and unsuitable for agricultural, industrial, or residential use. It is a world's most densely populated country with its population 126.3 million (2019). Due to the rugged and mountainous terrain with 66% forest, the population is clustered in urban areas on the coast, plains and valleys. The Japanese population is rapidly aging followed by a decrease in birth rates. The sex ration is 95.5 as of 2015. The number of households in the country is 53.33 million and most of the houses are modern but almost 13% houses (mostly old) are unoccupied (2012). The economy of Japan is industry and services based comprising of 30.1% and 68.7% out of its USD 5.1 trillion of GDP. The literacy rate of Japan is 99% and the life expectancy is 84.55 yrs. (2019) and the per-capita income is $40,847 with Human Development Index 0.915 as of 2018 (Source:wikipedia.org). Japanese society is linguistically, ethnically and culturally homogeneous throughout the country.

Nepal and Japan both the countries have complex rugged topography with many steep inclines and faults with diverse vegetation and landscape. Although this complexity beautifies the country, in incurs many natural and anthropogenic disasters. Complex geology, variable climatic conditions, active tectonic processes are the common hazards for both countries. More over rapid urbanization, unplanned settlements, lack of public awareness, increasing population, weak economic condition and low literacy rate have made Nepal highly vulnerable to disasters. The number of onset disasters in Nepal have made a huge economic and social loss every year. The recent data shows that, in average, Nepal losses 450 lives and 41 million USD every year excluding catastrophic incidents (drrportal.gov.np).

Although Japan has suffered enormous damages due to repeated mega disasters since ancient times, at present the country is considered to be the leader in disaster management because it has increased its resiliency every time a large-scale disaster is experienced. With this, countermeasures against disasters have been strengthened based on lessons learned. Typhoon Ise-wan in 1959 was the turning

point for strengthening the disaster management system and led to the enactment of the Disaster Countermeasures Basic Act in 1961, which formulates a comprehensive and strategic disaster management system. Likewise, the Great-Hansin Awaji Earthquake in January 1995 and the Great East Japan Earthquake in March 2011 prompted the nation to continuously review and revise its Disaster Management (DM) system and strongly pursue building national resilience.

On the other hand, Nepal has not been able to address its natural hazards properly to mitigate and reduce the risk despite of long experience of hit by many catastrophic and onset disasters. With promulgation of new constitution 2015, Nepal started to practice federal governance system. It is good to write that the new constitution itself enshrines the disaster risk reduction and management in it as the common responsibility of all three tiers of governments. Further, to address all forms of disaster Nepal has recently endorsed new act and policies replacing the Natural Calamity (Relief) Act, 1982 and related policies. Disaster Risk Reduction and Management Act 2017, Disaster Risk Reduction National Policy 2018, Disaster Risk Reduction Strategic Action Plan 2018-2030 are the main examples of those policies.

Nepal needs proactive implementation and upgradation of Disaster Management Act and Policy at all levels for disaster risk reduction activities. To materialize the objectives enshrined in the Constitution and the DRRM Act 2017, related general and more specific policies may be required to address the issues of disaster management effectively.

Japan has a long and deep history of disasters and the knowledge of its management at the best possible level. The formulation and implementation of disaster risk management policies in Japan will serve as a guideline. Hence, the researcher believes that this research will help to identify some policy gaps and recommend them to improve legal instruments for managing disaster effectively in Nepal.

1.2 Statement of the problem

This study aimed to identify the additional legal instruments that contributed Japan to be highly resilient against natural disasters in compared to Nepal.

Especially it searched the answer for the following questions:

a) What is the disaster management system in Nepal and Japan?

b) What are the disaster management related legal instruments in these countries?
c) What kind of instruments made Japan more resilient and managed against natural disasters? And how?

1.3 Significance of the study

The result of this study provides a better understanding on the legal instruments that influence Japan's resiliency and capacity against natural hazards as lessons from past major disasters. Further, the findings may give clear view of the disaster management system of Japan and Nepal. Likewise, the result of the study will enable better understanding for the improvements of legal instruments in terms of mechanisms, plans and approaches as lessons from past disasters, as well as good practices and innovations in disaster risk management in Japan for possible replication/adoption in Nepal to further promote resiliency and enhance capacity. The information is not only valuable for the researcher in performing his duties and responsibilities as Civil Service Officer and DRR practitioner/advocate but also to partner-stakeholders in Nepal.

1.4 Objective of the study

The research expected to deliver the following results:

a) Presentation of comparative scenario of DRM legal system of the countries.
b) Identification of national level policy gaps in disaster risk management in Nepal.
c) Prescribing some policy needs in disaster risk reduction for Nepal.

1.5 Scope and limitation of the study

This research lacks the basic or primary data. The report is totally based on the historical analysis, actual experiences, desk study and some observations with conversations with the designated authorities at different disaster management institutions of Japan, some lecture and classes from experts and some official visit. The web addresses of different disaster management related institution both at Nepal and Japan, along with the institutions from south Asian Regions are the main source

of information and findings. This short-term study does not include other factors such as physical, social, economic, motivational/attitudinal aspects that may limit the scope and validity of the findings.

1.6 Definition of the terms

To facilitate a better understanding of the study, the following terms are defined:

Legal Instruments: This is for any formally executed written document that records and formally expresses a legally enforceable act, process, or contractual duty, obligation, or right, and therefore evidences that act, process, or agreement.

Resilience: This term refers to the ability of the system, community or society exposed to hazards to resist, absorb, accommodate and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions.

Capacity: This term is defined as a combination of all strengths and resources available within a community, society or organization that can reduce the level of risk, or effects of a disaster. Capacity may include infrastructure and physical means, institutions, societal coping abilities, as well as human knowledge, skills, tools, systems, processes, appropriate technologies and collective attributes such as social relationships, leadership and management. Capacity may also be described as capability.

Social Institution: This consists of a group of people who have come together for a common purpose. These institutions are a part of the social order of society and they govern behavior and expectations of individuals.

Institutional Mechanism: This term refers to the procedures laid down in the constitution for a particular task. The procedure (as per law) by which a particular task is undertaken is its institutional mechanism. It also refers to the technical aspects of doing something incorporated into a structured and usually well-established system.

DRRM-related Plans: These refer to plans which serve as guide on the activities aimed at strengthening the capacity of the national governments; province level governments and/or the local government units (LGUs) together with partner stakeholders, to build the disaster resilience of communities and to institutionalize arrangements and measures for reducing disaster risks, including projected climate risks and enhancing disaster preparedness and response capabilities at all levels. These plans include National/Regional/Local DRRM Plans, Contingency Plan, Disaster Mitigation/Prevention Plan, Disaster Preparedness Plan, Disaster Response Plan, Disaster Rehabilitation and Recovery Plan, Pre-Disaster Recovery Plan, and others.

Approach: This refers to the method used or steps taken in setting about a task, problem, and others.

CHAPTER II

Literature Review

The literature on the comparative study on disaster management legal instruments between Nepal and Japan is very limited. However, some country-wise studies are found in the cloud. This review gives a scene of the previous studies about the relevant topic instruments and helps to make the study concrete and precious. The main literatures reviewed are as follows:

Learning from Japan for Possible Improvement in Existing Disaster Risk Management System of Nepal: In this study, in 2019, the researchers GK Jimee, K Meguro & AM Dixit described some unique features of DRM in Japan, such as culture of safety, seven times down eight time up, science and technology based solutions and proactive DRM policy environment. The study also mentioned some good disaster prevention measures taken by Japan and provide recommendation to Nepal as well. The study was mainly focused on earthquake disaster.

Disaster Countermeasures Basic Act (Act No. 223 of 15 November 1961; revised June 1997): This act provides for the institutional framework for disaster prevention and management in Japan, including the organization, functioning, powers and responsibilities of the central and the local disaster prevention councils. This act is revised in 1995, 2012, 2013, 2014, 2015, 2016 and lastly in 2018 with the learnings from the disasters and their response.

Japan's Basic Act for National Resilience: Contributing to Preventing and Mitigating Disasters for Developing Resilience in the Lives of the Citizenry (abbreviated to the Basic Act for National Resilience) was enacted on December 11, 2013. It aims to build national resilience, which means to build a country that has the toughness and flexibility to survive large-scale natural disasters in the future, with four goals: protect human lives; avoid critical damage to important functions of the nation and society; minimize damage to the property of the citizenry and public facilities; and contribute to swift recovery and reconstruction.

Policies and Institutions for Disaster Risk Management in Nepal, A review: In this study in 2018, the authors P Nepal, NR Khanal, BP Pangalisharma describe about the DRR policies in Nepal and discuss the strengths, gaps and constraints of the same.

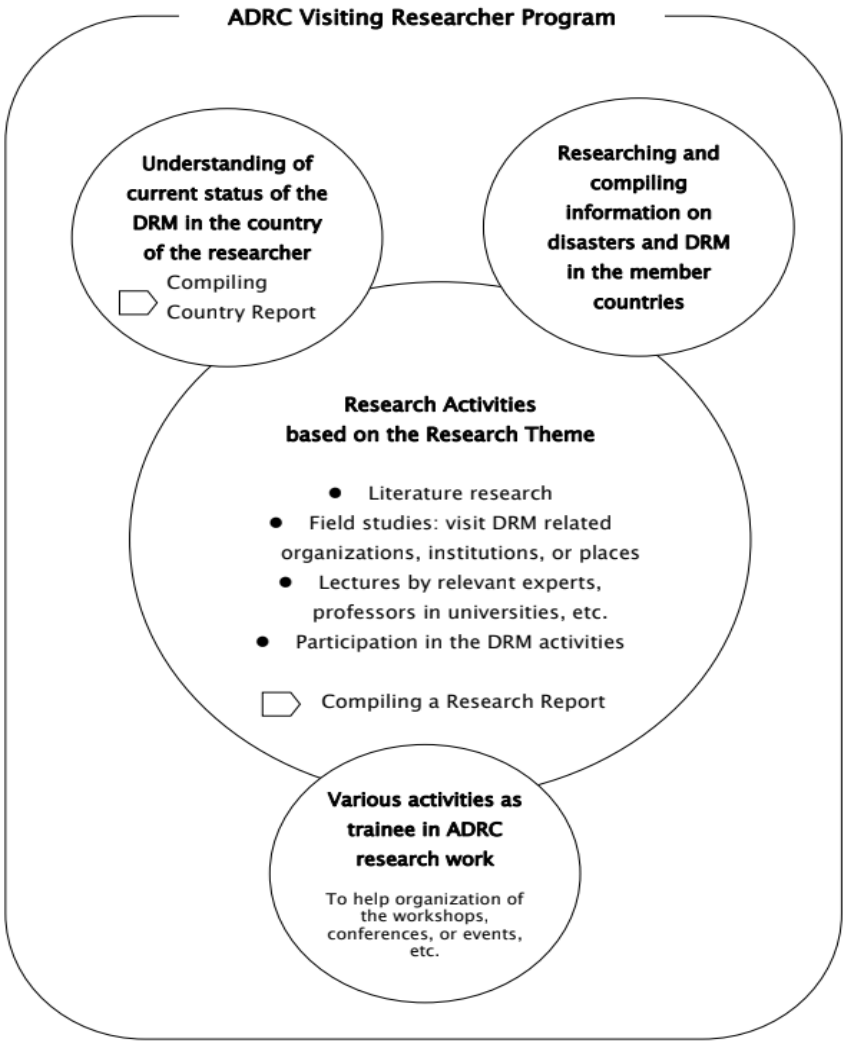
They also mentioned about the regulatory instruments, policies and programmes and the institutional set-ups for the implementations in brief. They have stressed that the arrangements have not focused enough for mitigation and rehabilitation, and also some conflicting overlaps in some provisions such as Water Resource Act 1992, Building Act 1998 and Local Government Operation Act 2017.

There are other publications like white paper by Cabinet Office of Japan, related laws, guidelines were taken in eyes for this study. Regarding Nepal, the publications published from Ministry of Home Affairs, National Planning Commission and other related agencies were also given a glance.

CHAPTER III

Research Methodology

Research methodology, in this study, consists of research design, research locale and data gathering procedures, which are mentioned as follows:



3.1 Research Design

This study has used historical method. In this method previous data, studies, techniques, guidelines that historians have done or already exists in the system are collected and analyzed. Additionally, knowledge from some current observation and

interactions were also taken in consideration to carry it best. The model of these activities is shown in the figure down here.

3.2 Research Locale

This research is a comparative research between two countries, Nepal and Japan. The Federal Democratic Republic of Nepal lies in South Asia. It is newly divided in to seven provinces: namely Province number 1, Province number 2, Bagmati Province, Gandaki Province, Province number 5, Karnali Province and Sudurpashchim Province. There are 77 districts and 753 local levels in the country. Federal, Provincial and Local level governments are active in their capacities. These constitutionally formed three tiers of governments work incoordination to fulfill the expectations of the constitution of Nepal for Nepali people.

On the other hand, Japan is a unitary parliamentary constitutional monarchy system ruled country located in East Asia. It 47 prefectures and 1,724 local units (www.soumu.go.jp/gapei/gapei2.html) as Cities, Villages and Towns. Local jurisdictions largely depend on the national government both administratively and financially(http://countrystudies.us/japan/116.htm). They are established as an act of devolution. Under the Constitution all matters pertaining to the local self-government is allowed to be determined for by law; more specifically, the Local Autonomy Law (source: Constitution of Japan).

This research was done by visiting Cabinet Office Tokyo, Hyogo Prefecture and its relevant offices, Tohoku Municipality Sendai in Japan. Regarding Nepal, the researcher is familiar to the system and various places and the knowledge gained is used for data and their analysis.

3.3 Data Gathering Procedure

As the part of data collection, the researcher gathered some relevant materials while visiting the various DRRM-related institutions in the identified areas and attended briefings/orientations. The questions were raised during the field visits, orientations, and lectures to further to clarify and extract more relevant issues and information relative to the research topic. The data was also gathered from different websites via internet. Some of the materials stored on ADRC folders and publications were also used. Japan International Cooperation Agency also helped a lot for the information. The data is described based on the observation and perception of the researcher and substantiated by related literature and studies.

CHAPTER IV

Presentation and Interpretation of the Data

4.1 The Legal Instruments

4.1.1 Progress

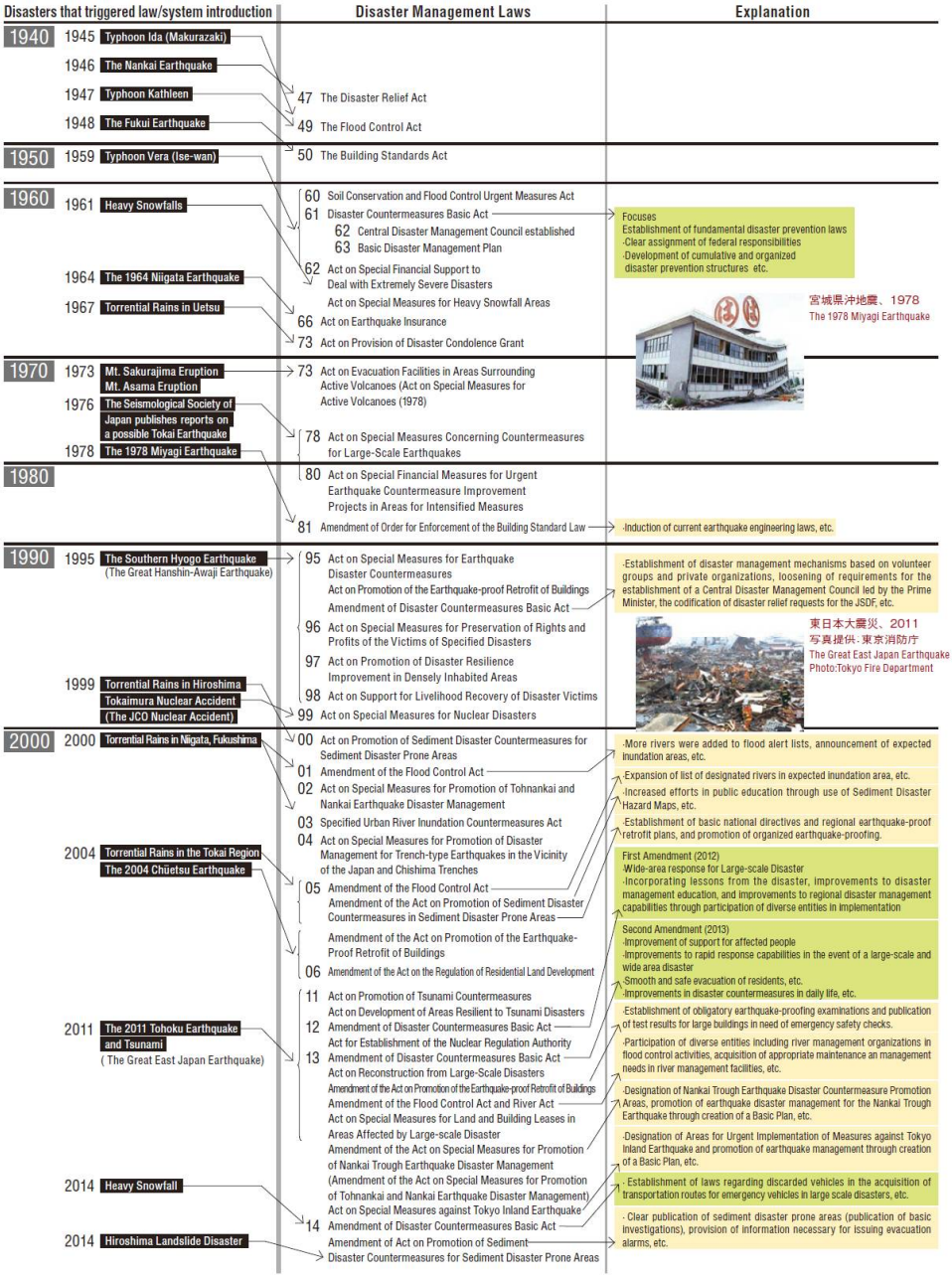
Nepal: It is a national priority to protect citizens' lives, livelihoods and the property from both natural and non-natural disasters. Although, Nepal has a relatively comprehensive body of legislation, developed over many years, the turning point for establishing disaster management system came into effect after the lessons from Bajhang Earthquake 1980. This disaster led to formulate and endorse specific National Calamity (Relief) Act 2039 (1982) on disaster response and relief. There after the disaster management system has been reviewed and revised in span of time. Some additional laws are in place to address various sectors of disaster related issues for different agencies and organizations. The progress can be summarized as on the following table.

Disasters that triggered laws/system introduction	**Disaster Management Laws**	**Explanation**
-Prior 1980	No specified law	Despite of high frequency of different types of disasters in Nepal, there seems no specific legal documents in its management. The needs were fulfilled as per the decision of the government of time on incident basis. At the same time, the community support and cooperation has remained a huge factor for relief and rehabilitation for the long time in history.
1980 M_w 6.5, Bajhang Earthquake	Natural Calamity (Relief) Act 2039 (1982) with amendments 1. Justice Administration Reform Amendment, 2043 (1986) 2. Natural Calamity (Relief) (First Amendment) Act, 2046 (1989) 3. Natural Calamity (Relief) (Second Amendment) Act, 2049 (1992) Source: www.lawcommission.gov.np	The main legal instrument specifically directed towards disaster management. Its focus is on response and reconstruction. It did not provide a sufficiently comprehensive platform for implementation of disaster risk reduction strategies mainly after 2005.

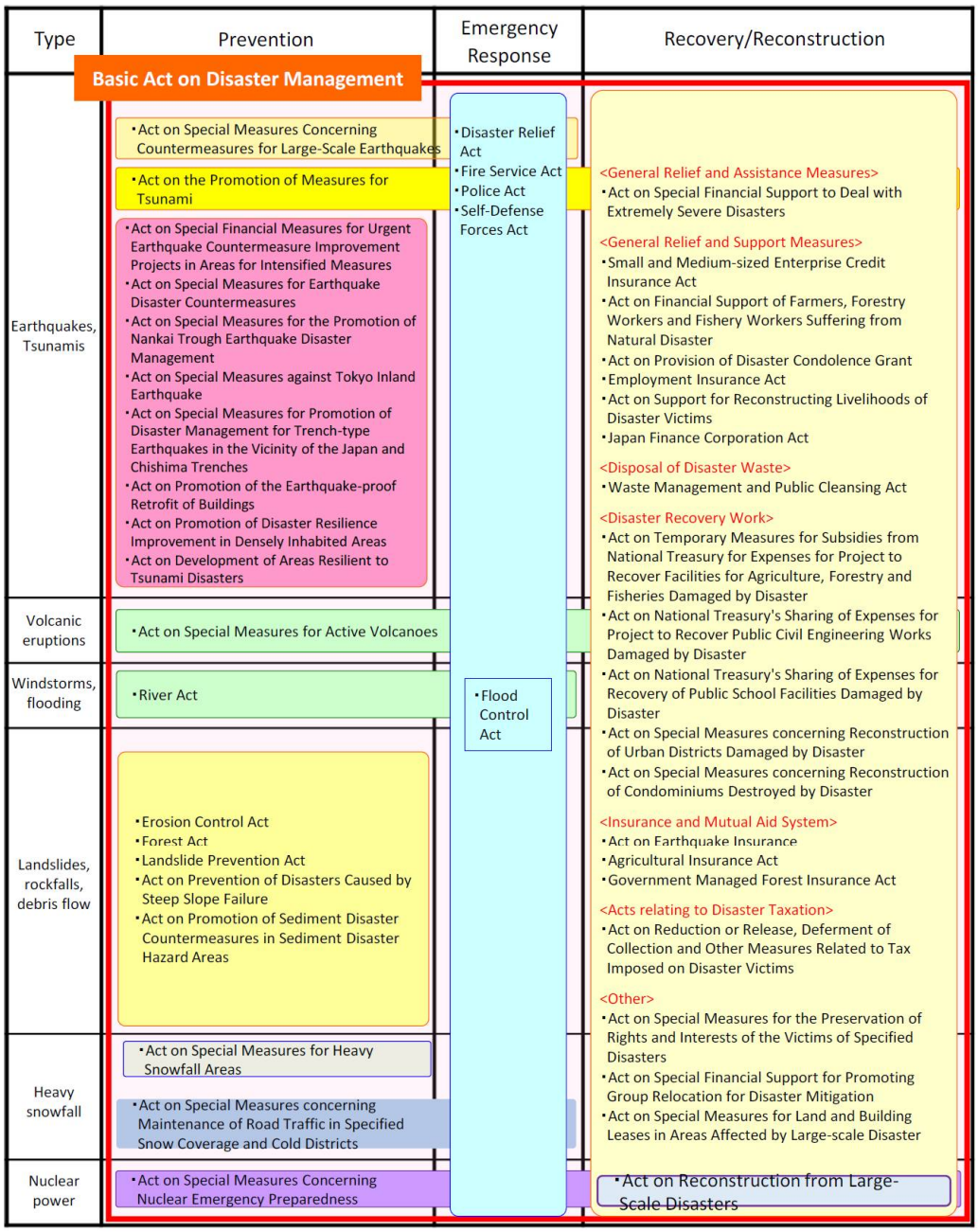
1988 M_L 5.5, Udaypur Earthquake	Nepal Building Act, 2055 (1998), First Amendment, 2064 (2007) Building Regulations 2009. After 1988 earthquake in 1991 Settlement Plan-Aawas Yojana was put in place for reconstruction. In 1994 Building code was also introduced but the implementation to private sector was not compulsory. These learnings triggered the act and regulations.	National Building Codes(Revised), which induce the earthquake engineering law, are administered by the federal level with the coordination to province and local levels. Whereas local levels have the responsibility for implementation in housing construction. There appears to be no specific law concerning the safety of current private buildings. There is also the Construction Business Act, 2055 (1999) and Construction Business Rules, 2056 (2000). This is essentially a licensing scheme for construction business entrepreneurs, which is also intended to ensure qualified technical support. However, it appears that this regime is not used to any significant extent, as it was not mentioned by any of those consulted concerning the regulation of building and construction. Source: Legislative framework for DRR, IFRC Geneva, 2011
2015 M_L 7.6, Gorkha Earthquake	Disaster Management in Constitution of Nepal, 2015	Nepal's Constitution, for the first time, mentions the DRM under Article 51 and Schedules 5 to 9, and has clearly assigned DRM as a concurrent responsibility of the three tiers of government, particularly of the local governments. Article 51 stipulates the policies that the state shall pursue with regard to DRM. For instance, the sub-article G that relates to "policies concerning protection, promotion and use of natural resources," does mention that the state shall formulate policies related to development of sustainable and reliable irrigation through prevention of water-induced disasters and river management(NDR, MoHA,2017).
	An act made to provide for Reconstruction of the Earthquake affected, 2015	This act is only for 5 Yrs. for the reconstruction and revitalization of productive sectors after Gurkha Earthquake 2015. It is also responsible to study and research the science of earthquakes, their impact including damages and effects, and post-earthquake recovery, including reconstruction, resettlement, rehabilitation and disaster risk reduction; and to resettle the affected communities by identifying appropriate sites through National Reconstruction Authority. Source: www.nra.gov.np
	National Disaster Risk Reduction and Management Act, 2017 and Regulations, 2019 (As per this act National Disaster Risk Reduction and Management Authority has been established in 2020)	Repeals and replaces the Natural Calamity Relief Act of 1982. Provides for the cooperation of national and local authorities in the framework of the Disaster Risk Reduction and Management Council in the case of natural disasters in Nepal. Focuses on protecting public life, public and private property, natural and cultural heritages, physical properties and minimising the disaster risk.

	Local Government Operation Act, 2017	This act was indorsed for the execution of new constitution in federal context in Nepal by replacing the Local Self Governance Act, 1999. It identifies the functions for all aspects of disaster risk reduction under the duty, responsibility and rights of rural and urban municipalities. It also included the activities related to grant permission of building construction, monitoring and evaluation as per the National Building Code and Standard including the policy, planning, program formulation, implementation, monitoring, regulation and evaluation etc. regarding DRR to develop safer communities(NDR, MoHA, 2017).
	Other Acts: Public Health Act, 2018.	Public Health Act is the pioneer Act for ensuring effective, regular, quality, and easy access to health care and free basic and emergency health services to all.
	Soil and Watershed Conversation Act, 1982.	Controlling natural calamities such as flood, landslide and soil erosion and maintain convenience and economic interests of the public.
	Environmental Protection Act, 2019.	To maintain balance between development and environment and fight against climate change.
	Prime minister Relief Fund Regulation, 2007	This fund is collection of voluntary donations from people and organizations. It is to provide immediate relief to the disaster victims. This fund cannot be expended for administrative costs.

Japan: The turning point for strengthening the disaster management system came into effect in response to the immense damage caused by Typhoon Ise-wan in 1959, and led to the enactment of the Disaster Countermeasures Basic Act in 1961, which formulates a compressive and strategic disaster management system. Thereafter, the disaster management system has been continuously revised, and the following lesions learned from the large-scale disasters (Source: bousai.gov.jp).



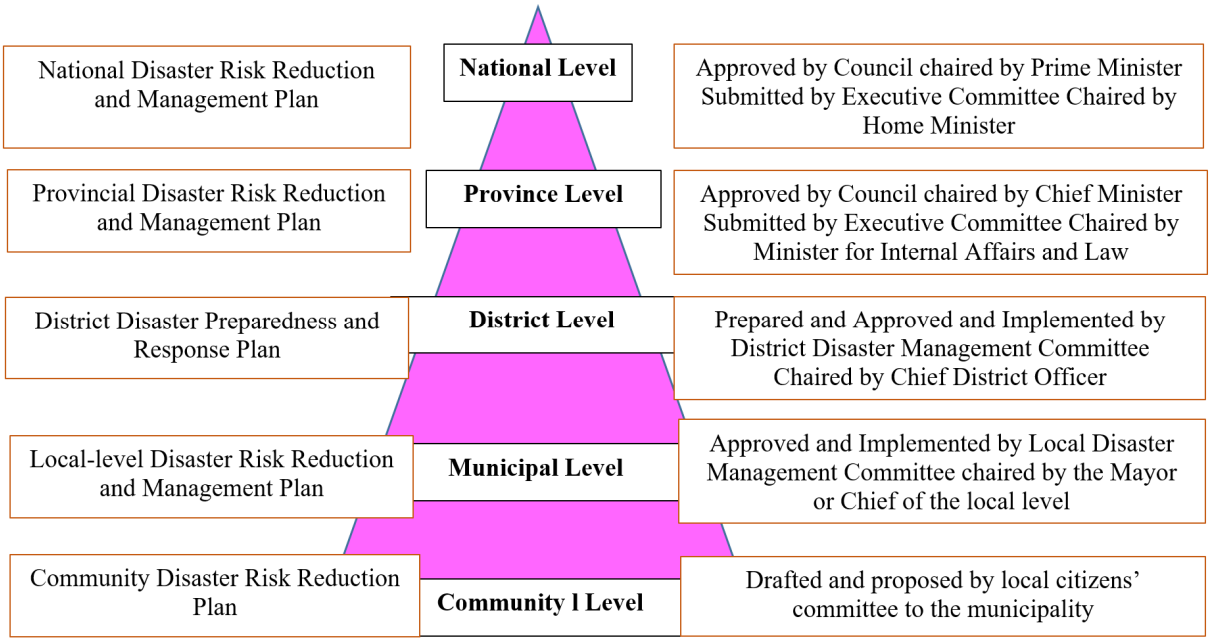
The Basic Act is the main for roles and responsibility for coordination and actions. It is more prevention focused. Emergency response and recovery reconstructions are addressed other acts for technical measures and functional strategies. Some acts are disaster-type specific too. The laws for the types of disasters are presented in the table below.



Source: Cabinet Office

4.1.2 The Policies, Plans, Guidelines and Procedures

Nepal: As per the mandate of the constitution and the laws (Disaster Risk Reduction and Management Act and Local Government Operation Act) the governance power is basically divided into the three tiers of governments- Federal, Provincial and the Local. The district level is more related to immediate rescue, relief and maintenance of peace and order. District level works as an extended wing of federal government in the district. So, as shown in a figure down here, all the respective levels are responsible for formulation and execution of the policies, plans and procedures at their capacity within the umbrella of the national level laws and guidelines.



The main national level policies, plans and guidelines are figured out as bellows;

1. National Policy for Disaster Risk Reduction, 2018.
2. National Disaster Risk Reduction and Management Regulations, 2019
3. National DRR Strategic Plan of Action (2018-2030).
4. The Fifteenth Periodic Plan 2019-2023
5. National agriculture policy, 2004.
6. National shelter policy, 2012.
7. National urban policy, 2006.

8. Similarly, Post Disaster Recovery Framework (2016 – 2020) by National Reconstruction Authority.
9. Emergency Relief Standards for Disaster Affected People, 2007.
10. Standard Operating Procedures of Emergency Operation Center, 2010.
11. District Disaster Preparedness and Response Planning Guidelines, 2011.
12. Search and Rescue Strategic Action Plan, 2014.
13. Guidelines for the Relocation and Rehabilitation of High Risked Settlements, 2018.
14. Standard Operating Procedures of Ware House (National and Provincial), 2018.
15. Dead body Management Guidelines 2011 (amendment 2019),
16. National Disaster Response Framework, 2013 (amendment, 2019),
17. Standard for Emergency Communication System for Tiered Integration and Operation, 2019

Japan:

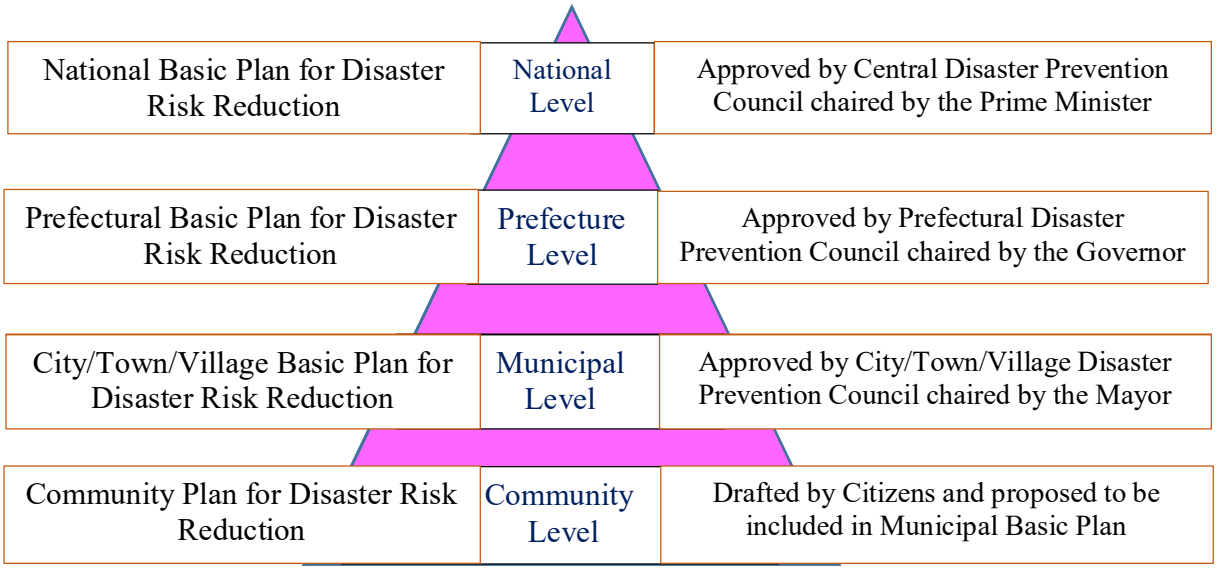
Basic Disaster Management Plan: This plan is the highest-level plan and constitutes the basis for disaster management activities prepared by the Central Disaster Management Council based on the Disaster Countermeasures Basic Act.

Disaster Management Operation Plan: This is a plan made by each designated government organization and designated public corporation based on the Basic Disaster Management Plan.

Local Disaster Management Plan: This is a plan made by each Prefectural and Municipal Disaster Management Council, subject to local circumstances and based on the Basic Disaster Management Plan. Community Disaster Management Plan: This is a disaster management activities plan at the community level which is established by residents and businesses jointly on a voluntary basis (bousai.go.jp).

All the acts and legal provisions are implemented, and continuously revised based on the experiences and lessons from previous disasters. As stipulated in the Basic Act on Disaster Management, there are four levels of basic plans for Disaster Management in Japan, namely, National Basic Plan for Disaster Risk Reduction, Prefecture Basic Plan for Disaster Risk Reduction, Municipality Basic Plan for Disaster

Risk Reduction and Community Disaster Risk Reduction Plan (GK Jimee, 2019). When it is deemed necessary and efficacious among prefectures or among cities, towns or villages to formulate a disaster prevention plan for the designated area of the prefecture, city, town or village, in whole or in part, the prefectures, cities, towns or villages can establish a joint committee of prefectural, city, town of village disaster prevention councils. The upper level basic plan for DRR is followed by the lower level councils to develop their plan for their respective territories.



The Disaster Countermeasures Basic Act of Japan is the legal basis for the establishment of a comprehensive and strategic Disaster Management System in Japan which addresses all of the disaster phases of prevention, mitigation and preparedness, emergency response as well as recovery and reconstruction, clearly defines the roles and responsibilities among the national and local governments, and cooperation of the relevant entities of the public and private sectors in implementing various disaster countermeasures. This act fairly includes the issues like drills, information gathering and transmission, reporting system, alarm transmission, the necessary facilities, precautionary steps and evacuation, emergency measures, debris management responsibility, process of receiving helps and facilities from other agencies, delegation of power, compensation for loss, rehabilitation expenses, financial measures and loans, state of emergency and the penal provisions.

Furthermore, the Disaster Countermeasures Basic Act has been constantly reviewed and amended since its first enactment and from the lessons of Great East Japan Earthquake the following additional provisions are included;

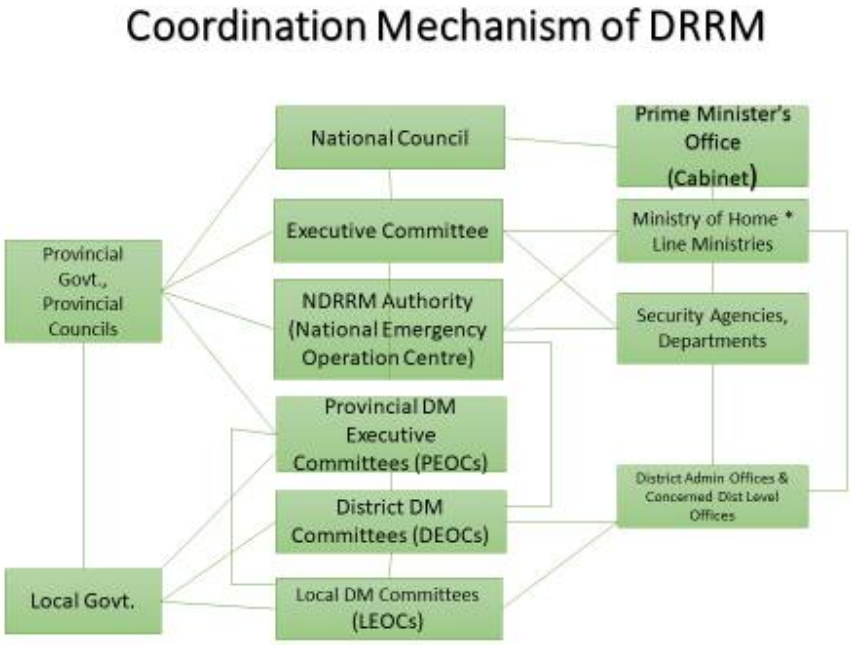
- ✓ Enhancement of the measures concerning support activities mutually done by the local governments in 2012
- ✓ Measures for ensuring smooth and safe evacuation of residents and improving protection of affected people in 2013
- ✓ Strengthening measures against unattended cars in order to promptly clear them from the roads for emergency vehicles in 2014

4.2 The Institutional Arrangements for Disaster Risk Management

Nepal:

The National Council has the authority to endorse the DRRM policies to its implementation at all levels. The National Disaster Risk Reduction and Management Authority (NDRRMA) is to take charge of disaster risk management. There are specialist committees to provide technical expertise on matters related to DRM planning, response and recovery. All tiers of government should have disaster management funds that they manage. There is a need to report DRRM activities on an annual basis and make it public for transparency and reflect the efforts made in DRRM.

The figure clearly revels the proper institution arrangement for disaster management, but this still does not reflect the all cycles of disaster management placing the role of Ministry Health, Federal Affairs and General Administration, Ministry of Urban Development, Ministry of Energy and other relevant ministries as well. At the time of disaster incidents, the local level activates for small scale disaster with coordination to the district level for search as rescue. The higher level always alert for assistance, and they are active when the size of disaster happens beyond the capacity of lower level.



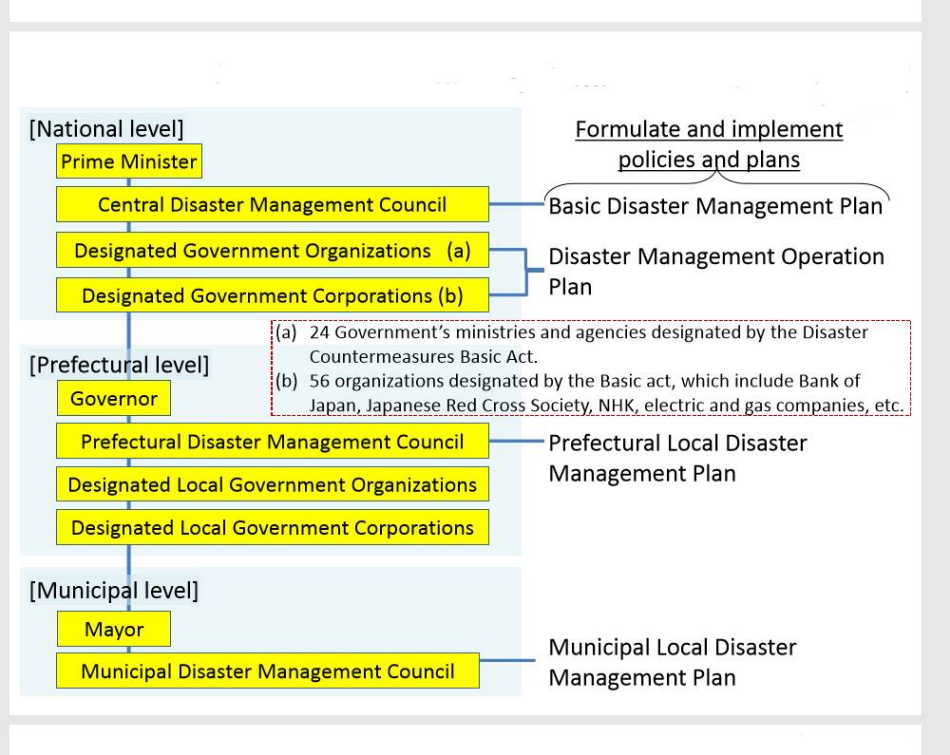
Japan:

Like Nepal, at the time of disaster, municipalities will primarily be engaged in emergency countermeasures. Prefectural administration will get involved when the comprehensive wider-area measures are necessary. In the event of a large-scale disaster beyond the capability of local public entities struck by the disaster, national government will step in to support the local entity and coordinate mutual support among the local entities. At the national level, the Extreme Disaster Management Headquarters or the Major Disaster Management Headquarters is set up to promptly collect the disaster information from relevant ministries and local public entities struck by the disaster, and overall coordination is provided for rescue, first aid, medical and emergency supplies as necessary and appropriate. Also, an on-site disaster management headquarters may be set up to promptly coordinate among the affected local entities and collect information and requests from relevant prefectures and to properly conduct the emergency response activities in consideration to the needs for the affected people. Through joint meetings held in collaboration with the disaster response headquarters organized by the local entities in the affected areas, the national government and the local entities coordinate based on their shared

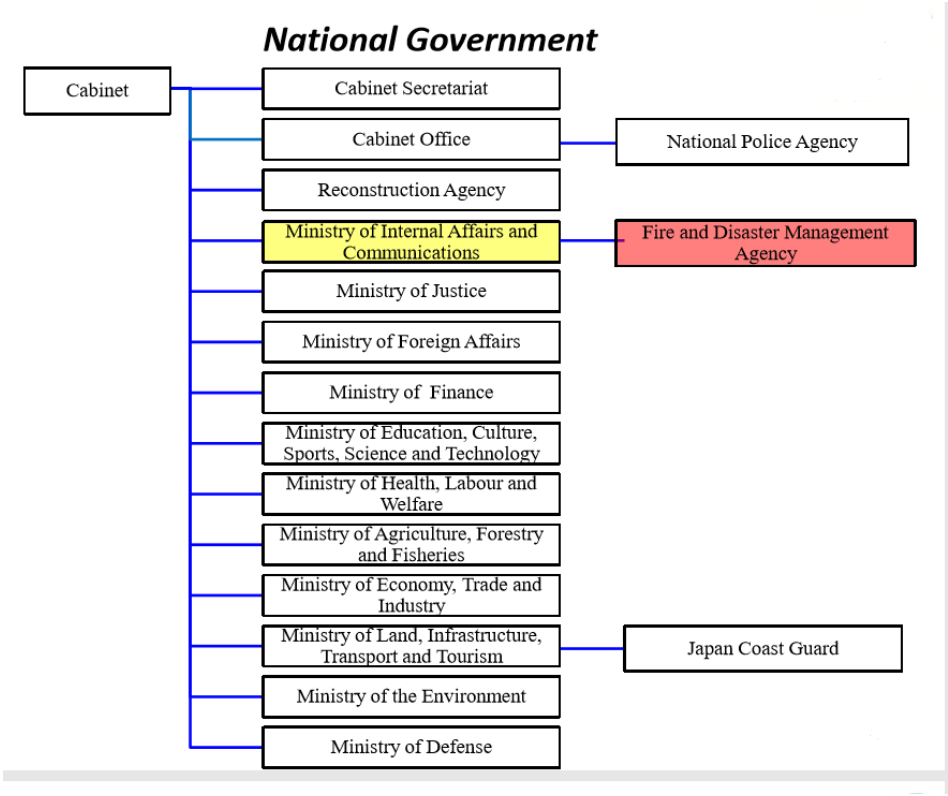
awareness to serve as the government's closest one-stop contact point for requests from the affected local entities. As such, the role of the on-site disaster management headquarters is increasing its importance (bousai.go.jp).

The information sharing and activeness of the central disaster management council plays vital role on the overall management of all kind of disasters in Japan. The flow and functional mechanism is illustrated in the figure here.

The composition of National Government of Japan to fight against disasters in presented here. They all work together for acts and policy development, submission for ratification.



Source: Fire and Disaster Management Agency, Japan



Source: Fire and Disaster Management Agency, Japan

CHAPTER V

Summary and Findings

5.1 Summary

This study aimed to present the comparative scenario of DRM legal systems of the countries Nepal and Japan. In both the countries the disaster management planning and implementation is at four levels. The laws, governance system and practices are different. Japan exercises vertical command system based on delegated authority whereas Nepal has started shared responsibility system of three tiers of governments on the basis of power devolution by constitution and laws. The comparison is presented below:

Comparative Summary between Japan and Nepal			
SN	Descriptions	**Japan**	**Nepal**
1	Area, Location, Geography and Population	377,975 Km^2 located in East Asia bordered with the Sea of Japan to the west and Pacific Ocean to its east comprising of five main and 6,852 stratovolcanic islands. 88% land and 12% water area with altitude from -4m to 3,776m. Population 126.3 million (2019) with negative growth rate.	147,181 Km^2located in South Asia, land-locked by China to the northern Himalayas and by India to other three sides. 83% mountainous and 17% plain area with altitude from 60m to 8,848m. Population is 26.5 million (2011) with 1.35% growth rate.
2	Governance system	Unitary governance system with delegation of power by laws to 47 prefectures and 1,724 local cities, towns and villages. She also exercises multiparty democratic system to elect the legislative and executive as in Nepal.	Federal democratic system with devolution of power to 7 provinces and 753 local levels by constitution. 77 districts are there by laws as the extended hand of the center.
3	Head of the State and the Government	The Emperor and the Prime Minister.	The President and the Prime Minister.

4	Disasters Types	Typhoon, Earthquakes, Tsunami, Cyclone, Flood, Landslides, Sediment flow, Volcano eruption etc.	Landslide, Thunderbolt, Fire, Flood, windstorm, Avalanche, Earthquake, Heavy rainfall, Inundation, Debris flow etc.
5	Average Loss and Damage per year	Deaths: 1845. Economic Loss 10,924.13 Billion Yen (Source:statista.com, calculated with last 10 yrs.' data)	Deaths: 1552. Damage 89.33 Billion Nepalese Rupees (Source:drr.gov.np,npc.gov.np; calculated with last 9 yrs.' data)
6	Disaster Legal Instruments		
	Disaster Counter Measures Basic Act, 1961. The Disaster Relief Act, 1947. The Flood Control Act, 1949. The Building Standards Act, 1950. Soil Conservation and Flood Control Urgent Measures Act, 1960. Act on Special Financial Support, 1962. City Planning Act, 1962 and the land-use regulations. Act on Earthquake Insurance, 1966. Act on Provision of Disaster Condolence Grant, 1973. Act on Special Measures Counter Measures for Large-Scale Earthquakes, 1978. Act on Special Financial Measures for Urgent Earthquake Countermeasures Improvement Projects in Areas of Intensified Measures, 1980. Act on Special Measures for Earthquake Disaster Countermeasures, 1995 Act on Special Measures for Prevention of Rights and Profits of the Victims of Specified Disasters, 1996. Act on Promotion of Disaster Resilience Improvement in Densely Inhabited Areas, 1997. Act on Support for Livelihood Recovery of Disaster Victims, 1998. Act on Special Measures for Nuclear Disasters, 1999. Act on Promotion of Sediment Disaster Countermeasures for Prone Areas, 2000. Act on Special Measures for Promotion of Tohnankai and Nankai Earthquake Disaster Management, 2002. Specified Urban River Inundation Countermeasures Act, 2003.	Envisioned by the Constitution of 2015. An act made to Provide for Reconstruction of the 2015 Earthquake Affected, 2015 Disaster Risk Reduction and Management Act,2017 and the Regulations 2019. Local Government Operation Act, 2017 Nepal Building Act, 1988. Public Health Act, 2018. Soil and watershed conversation act, 1982. Environmental Protection Act, 2019. Land-Use Act, 2019. Prime minister Relief Fund Regulation, 2007 And some frameworks and guidelines The laws and procedures developed by Province Governments and local levels.	

	Act on Special Measures for Promotion of DM for Trench-type Earthquakes, 2004. Act on Promotion of Tsunami Countermeasures, 2011. Act on Development of Areas Resident to Tsunami Disasters, 2011. Act on Establishment of the Nuclear Regulation Authority, 2012. Act on Reconstruction from Large-scale Disasters, 2013. Act on Special Measures for Land and Building Leases in Areas Affected by Large-Scale Disasters, 2013. Act on Special Countermeasures Against Tokyo Inland Earthquake, 2013.		
	Disaster Management Mechanism		
7	Levels/Layers	4 Active levels in **Japan**: Central, Prefectural, City/Town/Village level and Community level	5 Active levels in **Nepal**: Federal, Provincial, District level, Municipal level and Community level
8	Main Person/Agency for Coordination	Director General for Disaster Management, Cabinet Office.	Executive Chief, National Disaster Risk Reduction and Management Authority (NDMA).
9	Councils/Committees	Central Council headed by Prime Minister. Prefectural Council headed by Governor. City/village/Town Council headed by Mayor. Community based disaster prevention organizations/committees headed by citizens (Volunteer and Optional).	National Council headed by Prime Minister and Central Executive Committee headed by Home Minister. Province Council headed by Chief Minister and Province Executive Committee headed by Minister for Internal Affairs and Law in Province. District DM Committee headed by Chief District Officer. Local Level DM Committee headed by Mayor. Community level committees formed by local citizen (Volunteer and Optional).
10	Responsibility	Developing DRR basic plans and their execution	Councils for approval of plans, policies and standards. Committees for DRR plan and their execution.
11	Implementation	By the councils with the help of respective agencies.	By the committees with the help of NDMA and respective agencies.

12	Inspection, Monitoring and Evaluation	At overall it is done by Cabinet Office with the help of respective councils and agencies.	At overall it is done by National council. The respective bodies are responsible at their level as well.

5.2 Findings

Nepal and Japan are countries with different governing systems. Nepal has a federal system and Japan has a unilateral system. Japan is a developed country with high Human Development Index (HDI); it has a very long recorded history of success in various aspects of disaster management. On the other side, Nepal is a developing country with average HDI; the traditional technologies used for disaster management in Nepal were similar to Japan but they were not recorded well. Nepal has no good-recorded history on disaster management. Japan has already well managed recurring disaster affects to its minimal and has focused on catastrophic type disasters. However, Nepal also faces many catastrophic disasters it has not become successful to minimize the effect of small onset disasters too. Therefore, the approaches and procedures for disaster risk reduction and management of these two countries are different. The main points observed during this study can be summarized as follows:

I. The integrated and coordinated practice of comprehensive and strategic Disaster Management System in Japan is brought about by the enactment of the Disaster Countermeasures Basic Act, 1961. This act addresses all of the disaster phases of prevention, mitigation and preparedness, emergency response as well as recovery and reconstruction. Likewise, the law clearly defines the roles and responsibilities of the national and local governments for disaster management. Revisions and amendments of laws, plans and system are made after every disaster based on lessons learned for further improvement. Major amendments of the Disaster Countermeasures Basic Act were made after every major and typical disasters.

   On the other hand, Disaster Risk Reduction and Management Act, 2017 in Nepal is the legal basis for the paradigm shift from just disaster response to disaster risk reduction and management. The law is paving the way for the need to "adopt a DRRM approach that is holistic, comprehensive, integrated,

and proactive in lessening the impacts of disasters and promote the involvement and participation of all sectors and all stakeholders concerned, at all levels. The Local Government Operation Act in Nepal has given special responsibility to the municipal levels for all phases of DRM cycle. Likewise, there are other some acts and guidelines practiced at different levels by different authorities in Nepal. These many acts have created some overlapping and an ambiguity of responsibilities in operation.

II. The disaster laws in Japan are hazard specific and disaster specific. They are much oriented to the roles and responsibilities of the persons and organizations. They are very specific and cover all the phases of disaster management. They are more directive rather than intuitive. Whereas, Nepal disaster laws are much descriptive, open and surficial. Many things in Nepal are unmentioned in laws; they are left open. The disaster laws are not enough in Nepal. For example, it is hard to find who is responsible to the recovery activities at what level and when.

III. Japanese laws do not seek separate budget for DRR, risk reduction measures are mainstreamed in all development concerns and development activities with a regular budge. Japanese legal provisions are more hazard-specific and differ with types of hazards but there are blanket-type legal provisions in Nepal.

IV. Credible plans, guidelines and standards are still lacking in Nepal. Japan follows its basic disaster prevention plans and gets better results. It also makes continue revision of those legal instruments for better result. Their coordination and performance style is more institutionalized and less individualized and Nepal's scenario looks vice-versa.

V. The Chairperson of Disaster Prevention Councils in Japan is free to select the members of the council. They select them on rational basis but Nepal exercises committee members by laws with limited flexibility for selection. In Japan, the committees are with the representation of academia and researchers in most of the cases whereas Nepal practices it rarely.

VI. Lack of well collaboration between and amongst the governments is seemed everywhere. On this aspect, Japan is also looking for the measures to address the issues related to inclusive disaster management and community engagement.

VII. One of the simple but interesting things is that the writing format of laws in Japan starts with functions and ends with the formation of that body, which indicates the priority given to the works rather than meetings and talks. Oppositely, the writing format of Nepali acts or laws, mentioning the responsibility, starts with formation of the committee followed by the jobs.

VIII. Every ear Japan Cabinet Office publishes the 'White paper on disaster risk management', which includes infographics to affect analysis from community level to global. It includes economic sectors like tourism, business loss analysis too. It means, it has very good data gathering, analysis and dissemination system with dedicated team. Nepal has fragmented data; works done are not recorded and analyzed well. The publishing and research in Nepal is rare as compared to Japan.

IX. Recently, Japanese parliament has approved to enable a power to declare and enforce the state of emergency by the prime minister, if needed. Under the current law the government doesn't have the legal power to close schools and cultural events. This has been seen in a handful of municipalities. It indicates that Japan has a prompt performing mentality with actions to fight with disasters like Covid19. On the other hand, Nepal exercises cabinet decisions based procedures or standards rather than the laws ratified by the parliament. It can be understood that Japan takes no long time to endorse or revise laws when it is felt necessary.

X. Like in Nepal, Japan also issues guidelines or standards on many subjects (Example: business continuity plan, handbooks for women and disables) which do not come to be mandatory to the prefectures and local units, but they follow

most of them as per their particular necessity. Whereas, the acceptance capacity of province and local level in Nepal is still building up.

XI. Nepal is facing a complexity for coherence and uniformity between three tiers of governments, there are some overlapping and gaps between them. This type problem in Japan was faced before 1961 and then they issued Basic Act as a solution. The central coordination and command system in Japan is from cabinet office which is the strength of the Basic Act and its effective execution. Nepal's central coordinating authority is of lower profile than ministry, which is good for regular activities but low profile constraints effective command and coordination in case of emergencies.

XII. Good practices on Japan found during this study are mentioned

A) Observation System: The Japan Meteorological Agency (JMA) observes meteorological phenomena that cause storm and flood disasters using the Automated Meteorological Data Acquisition System (AMeDAS), which automatically measures rainfall, air temperature and wind direction/speed, weather radar, and geostationary meteorological satellites. These are used to announce forecasts and warnings to prepare against disasters (weather warnings and advisories for individual municipalities began in May 2010). The rainfall and the water levels in rivers are observed by the Ministry of Land, Infrastructure, Transport and Tourism and prefectural governments utilizing visual observation methods, mechanical observation equipment, and a wireless telemeter system that transmits automatically observed data from remote locations. Flood forecasts and water level information are provided utilizing the Internet and mobile phones.

B) Outline of Storm and Flood Countermeasures: In order to reduce damage caused by severe weather disasters, structural measures such as improving rivers, dams and sewage systems, and non-structural measures such as preparing hazard maps and providing disaster management information must be promoted in an integral manner. As non-structural countermeasures, the warning and evacuation systems for the possible inundation areas and landslide prone areas have been developed in accordance with the Flood

Control Act and the Sediment Disaster Prevention Act. Based on the Flood Control Act, 417 rivers subject to flood warning and 1,555 rivers subject to water-level notifications are designated. Of these, inundation risk areas are currently designated and published for 1,931 rivers (as of March 2014). Moreover, municipalities that include such areas are encouraged to prepare and disseminate flood hazard maps. Currently 1,272 municipalities have published such maps in Japan.

C) Snow Disasters: Japan is a bow-shaped archipelago filled with steep mountain ranges. When cold winds blow in from Siberia in winter, the warm current flowing up the coast from the south brings heavy snowfalls to the Sea of Japan side of the country. Among the seasonal problems that result every year are falls by people removing snow from their roofs, avalanches, and obstruction of traffic and city functions due to snow accumulation. In the winter of 2006, the death toll by heavy snow reached 152. In the years between 2010 and 2012, death toll of snow related incidents amounted to more than 100 each winter. Most of such death is a result of accidents during the snow-plowing activities and mostly the victims were aged people. Outline of Snow Disaster Countermeasures Measures are being taken to prevent accidents that result in injury, improve the avalanche warning system, and remove snow for securing road traffic networks at the time of heavy snowfall. Against avalanches, comprehensive measures including avalanche prevention projects for protecting communities, risk communication efforts about dangerous locations among residents, and improvement of the warning and evacuation system are taken. Furthermore, as heavy snowfall areas account for approximately half of the national land, based on the Act of Special Measures for Heavy Snowfall Areas, measures have been introduced to secure traffic and communications, protect agricultural and forestry industries, and improve living environmental facilities and national land conservation facilities. Based on the trend of recent disasters, advices have been provided on how to avoid accidents while clearing snow as public-awareness campaigns through various related organizations and agencies, particularly municipal governments.

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

E) Issuing Evacuation Advisory and Order: When a disaster occurs or is imminent, residents may start evacuating on their own volition, and the mayor of the municipality may also issue an evacuation advisory or order. It is effective for municipalities to prepare a manual explaining the criteria regarding disaster situations that require the issuance of evacuation advisories or orders, including under what situation and to what area, thereby helping the mayor's quick decision.

F) Central Disaster Prevention Radio Network: An online system has been built, linking the Japan Meteorological Agency (JMA) with disaster management organizations of the national and local governments and media organizations. Disaster management organizations have also been developing radio communications networks exclusively for disasters, which connects national organizations; the Fire Disaster Management Radio Communication System, which connects firefighting organizations across the country; and prefectural and municipal disaster management radio communications systems, which connect local disaster management organizations and residents. The Cabinet Office has established the Disaster Prevention Radio Communication System to link with designated government organizations, designated public corporations and prefectural governments, providing communications by telephone, fax, data transmission, video conferencing and video transmission of disaster situations from helicopters and other sources. Simultaneous

wireless communications systems using outdoor loudspeakers and indoor radio receivers are used to disseminate disaster information to residents. Tsunami and severe weather warnings are widely provided to citizens via TV and radio broadcasts.

G) Disaster education and learning have very important place in Japans education system. The subject has been penetrated from basic level to universities. Miyagi University of Education, which produces teachers and trains them, has made it a compulsory subject. Every schools have a 'Bosai Shunin' (DRR head teacher) and every region has a senior DRR teacher to work closely with the government and local schools. Local or Prefectural governments should develop and provide DRR safety measures to every schools accordingly. Developing Disaster safety culture through "Iza! KAERU CARAVAN (a disaster survival camp practice)" for the students along with parents has added the values of the way of spreading knowledge from Japan. Additionally as children are the future of Nation, Japan gives more value and priority to the children than the elders and old age people.

H) All most every community organizations for DRR facilitate trainings, conduct simulations drills, and takes care of DRR measures for disables and minorities. They also provide advices to the local government to improve basic plans and other related measures for DRR; it shows the involvement of the citizens to keep Japan safe.

I) Japan has very good land regulations. With the more than hundred years of evidence, hazard maps are developed and followed throughout the country. The building codes are associated with hazard maps and land regulations. The cities, villages and towns are responsible for its implementations.

J) Another good practice in Japan I would like to mention is 'Memorial Museum'. In every big city there are disaster-learning museum/parks, which provide many information to the visitors about the history of disasters, its management, people's efforts, the pathetic scenario of that time and the possibilities of calamities in the future in very real and practical manner. Up to some extent, these museums are developed and conducted on 'forgive but do not forget' principle as well.

CHAPTER VI

Conclusions and Recommendations

6.1 Conclusions

There is a better way of protecting people from the dire effect of natural disasters, particularly in developing countries like Nepal. By changing the poor setting, we can help people by avoiding worse outcomes. This is possible only if we learn and apply better experiences from the developed countries like Japan.

We should compare *before and after* the disasters with generosity about the generosity of us, ourselves and other partners for continuous improvements. Speaking about what the government did better and what the partners did well and writing the weakness of all will turn early warning for early actions

Provide protection rather than relief. For this, we have to convince the political leaders by showing the figures and evidence of effectiveness of risk reduction than the response and reliefs.

Progress has been made on various research and technological developments for all types of disastrous phenomena. Moreover, the situation has been improved by the increased capability of computers and through the use of new technology such as geographical information systems. Improved awareness and knowledge about the disasters are extremely important.

Additionally, in my findings, I have mentioned many better practices in Japan and lacks of them in Nepal. Disaster education is the foundation for future; we should start working on it. The discrepancies and overlapping between and amongst the governments and institutions should be addresses by the laws.

6.2 Recommendations

- ✓ Nepal should learn to adapt mainstreaming disaster risk reduction in all developmental activities from planning to evaluation. For this, a big amendment in DRRM Act is necessary to speak clear roles and responsibilities of positions and institutions with DRR measures.
- ✓ Evidence based land use plan and its implementation plays vital role to minimize damage and loss from disasters. Nepal has endorse a law about it,

but the provisions on this law are not mandatory and sufficient. Supplementary regulations and implementable plans aligned with financial measures are needed at local levels.

- ✓ Our inspection and evaluation system for implementation and improvements DRR measures about legal instruments, developmental activities and strengthening the capabilities is very weak. A very rigorous works for improving all cycle of disaster risk management should be started as soon as possible.
- ✓ Nepal should include academia and researchers in DRR activities. This helps nation to develop 'Safety Culture' as a base of prevention and mitigation. DRR research, idea generation, review and publications of the stories are essential part effectiveness. Getting started is taking first step.

Abbreviations

ADRC	Asian Disaster Reduction Centre
CBS	Central Bureau of Statistics
DRM	Disaster Risk Management
DRR	Disaster Risk Reduction
DRRM	Disaster Risk Reduction and Management
GDP	Gross Domestic Product
GIS	Geographic Information System
GLOF	Glacial Lake Outburst Floods
MoHA	Ministry of Home Affairs
NDRRMA	National Disaster Risk Reduction and Management Authority
NEOC	National Emergency Operation Center
NPC	National Planning Commission
NRA	National Reconstruction Authority
NRs	Nepali Rupees (Currency)

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