ADRC Visiting Researcher Report

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

Mr. Beda Nidhi Khanal Under-Secretary Ministry of Home Affairs Government of Nepal

April 2020

# TABLE OF CONTENTS

CHAPT	ER I	2
1.1	Background of the study	2
1.2	Statement of the problem	5
1.3	Significance of the study	6
1.4	Objective of the study	6
1.5	Scope and limitation of the study	6
1.6	Definition of the terms	7
CHAPT	ER II	9
CHAPT	ER III	11
3.1	Research Design	11
3.2	Research Locale	12
3.3	Data Gathering Procedure	13
CHAPT	ER IV	14
4.1	The Legal Instruments	14
4.2	The Institutional Arrangements for Disaster Risk Management	22
CHAPT	ER V	26
5.1	Summary	26
5.2	Findings	29
CHAPT	ER VI	36
6.1	Conclusions	36
6.2	Recommendations	36
Abbrev	viations	38
Bibliog	Jraphy	39

#### 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 mudbonded 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.

7

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.

9

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.
<b>1980</b> <i>M</i> <sub>w</sub> 6.5,	Natural Calamity (Relief) Act 2039	The main legal instrument specifically directed towards disaster
Bajhang	(1982) with amendments	management. Its focus is on response and reconstruction. It did not
Earthquake	<ol> <li>Justice Administration Reform Amendment, 2043 (1986)</li> <li>Natural Calamity (Relief) (First Amendment) Act, 2046 (1989)</li> <li>Natural Calamity (Relief) (Second Amendment) Act, 2049 (1992)</li> <li>Source: www.lawcommission.gov.np</li> </ol>	provide a sufficiently comprehensive platform for implementation of disaster risk reduction strategies mainly after 2005.

<b>1988</b> <i>M</i> <sub>L</sub> 5.5,	Nepal Building Act, 2055 (1998),	National Building Codes(Revised), which induce the earthquake
Udaypur	First Amendment, 2064 (2007)	engineering law, are administered by the federal level with the
Earthquake	Building Regulations 2009.	coordination to province and local levels. Whereas local levels have
Laitiquake		
	After 1988 earthquake in 1991	the responsibility for implementation in housing construction.
	Settlement Plan-Aawas Yojana was	There appears to be no specific law concerning the safety of current
	put in place for reconstruction. In	private buildings. There is also the Construction Business Act, 2055
	1994 Building code was also	(1999) and Construction Business Rules, 2056 (2000). This is
	introduced but the implementation to	essentially a licensing scheme for construction business
	private sector was not compulsory.	entrepreneurs, which is also intended to ensure qualified technical
	These learnings triggered the act	support. However, it appears that this regime is not used to any
	and regulations.	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
<b>2015</b> <i>M</i> <sub>L</sub> 7.6,	Disaster Management in	Nepal's Constitution, for the first time, mentions the DRM under Article
Gorkha	Constitution of Nepal, 2015	51 and Schedules 5 to 9, and has clearly assigned DRM as a
Earthquake		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,
		МоНА,2017).
	An act made to provide for	This act is only for 5 Yrs. for the reconstruction and revitalization of
	Reconstruction of the Earthquake	productive sectors after Gurkha Earthquake 2015. It is also
	affected, 2015	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	Repeals and replaces the Natural Calamity Relief Act of
	and Management Act, 2017 and	1982. Provides for the cooperation of national and local authorities in
	Regulations, 2019	the framework of the Disaster Risk Reduction and Management
	(As per this act National Disaster	Council in the case of natural disasters in Nepal. Focuses on
	Risk Reduction and Management	protecting public life, public and private property, natural and cultural
	Authority has been established in	heritages, physical properties and minimising the disaster risk.
	2020)	

· · · · · · · · · · · · · · · · · · ·	-
Local Government Operation Act,	This act was indorsed for the execution of new constitution in federal
2017	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 is the pioneer Act for ensuring effective, regular,
Public Health Act, 2018.	quality, and easy access to health care and free basic and emergency
	health services to all.
Soil and Watershed Conversation	Controlling natural calamities such as flood, landslide and soil erosion
Act, 1982.	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	This fund is collection of voluntary donations from people and
Regulation, 2007	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).

1945       System       System       System         1946       The Summark antiquex       47       The Disaster Relief Act         1947       Trystom Kat Makurzzko       49       The Flood Control Act         1950       1959       Trystom Kat Makurzzko       50       The Building Standards Act         1950       1959       Trystom Kat Makurzzko       50       The Building Standards Act         1960       1961       Heavy Snowfalls       60       Soid Conservation and Flood Control Uppet Measures Act         1967       The State Classific Contemessates Bask Act       62       Act on Special Measures for Hangy Sowrth Areas         1967       The State Classific Content Classifier Antogenet Phone Source Classifier Act in Stress Management Phone Source Phone Source Classifier Act in Stress Management Phone Source Phone Act in Stress Management Phone Source Phone Act in Stress Management	tion
1947       Typtions Kultikerin       47       The Disaster Relief Act         1948       The Fluid Earthquike       49       The Fluid Control Act         1950       1959       Typtions Vera (Liesware)       50       The Building Standards Act         1960       1961       Heavy Snovfalls       60       Sale Chaster Management Council established 62       Established 63       Established 64       Esta	
1948       The Folder Control Act         950       1959       Typboon Vers (seewar)       250 The Building Standards Act         960       1961       Heavy Showfalls       60 Soil Conservation and Flood Control Ligent Measures Act         9161       Heavy Showfalls       60 Soil Conservation and Flood Control Ligent Measures Act         9164       The 1864 Nilgate Earthquake       60 Soil Conservation and Flood Control Ligent Measures Act         9167       Torrential Rains in Uses       62 Act on Special Financial Support to Deal with Enternet Server Disaster         9170       1973       ML Staturajuma Englishin Actine Vicanees (176)       73 Act on Provision of Disaster Contelling Contermeasures for Lings-Scela Measures for Actine Vicanees (176)         9170       1973       ML Staturajuma Englishin Actine Vicanees (176)       73 Act on Special Measures for Chapter Actine Vicanees (176)         9180       1976       The Sommore Hypoge Earthquake (176) Act on Special Measures for Carport Actine Vicanees (176)       840 Conspecial Measures for Strathquake Stature reverse of Carlphake Science Financial Measures for Carporal Earthquake Science measures (176) Act on Special Measures for Financial Science Monotenent of Disaster Countermeasures (176) Act on Special Measures for Financial Science Monotenent of Order for Editoremeasures (176) Act on Special Measures for Financial Science Monotenent of Order for Editoremeasures (176) Act on Special Measures for Science Basia Act (176) Act on Special Measures for Carboracial (176) Act on Special Measures for Carboracial (176) Act on Specia	
950       1959       Typtoon Vers (Issues)       250       The Building Standards Act         960       1961       Heavy Showfdits       60       Sel Conservation and Rood Control Lighert Measures Act       Establended Conservation and Rood Control Lighert Measures Act         960       1961       Heavy Showfdits       60       Sel Contra Disaster Management Council establende Go accesses       Establended Tokens reproduct and searce for theory Showf Blances         1964       The 1964 Ningate Entringues       Sel Contra Disaster Contrangement Plan       Establended Tokens reproduct and searce for theory Showf Blances         1967       Torential Rains in Uses       73       Act on Special Measures for Harvy Showf Blances       For Show Show Show Show Show Show Show Show	
950       1959       Typboon Vera (Issuer)       50       The Building Standards Act         960       1961       Heavy Show/dip       60       Soil Conservation and Flood Control Urgent Measures Act         61       Disaster Contermensative State Act       62       Central Disaster Management Concell established         63       Basic Disaster Management Plan       Development of contables and organic Disaster State Act         970       1973       ML Saturaginne Englisher       73       Act on Special Financial Signort to Disaster State Act         970       1976       The Sold Ninguis Englisher       73       Act on Special Measures for Hany Stower Disasters         970       1976       The Sold Ninguis Englisher       73       Act on Special Measures for Urgent         1976       The Sold Ninguis Englisher       73       Act on Special Measures for Urgent         1976       The Sold Ninguis Englisher       74       Act on Special Measures for Create         1978       The Sold Ninguis Englisher       74       Act on Special Measures for Create         1978       The Sold Ninguis Englisher       74       Act on Special Measures for State Act         1978       The Sold Ninguis Englisher       75       Act on Special Measures for State Act         1976       The Sold Ninguis Englisher Manogement Orgenis Constat	
9600       1961       Heavy Snowfalls       60       Soit Conservation and Flood Control Urgent Measures Act 61       Deaster Countermeasures Basic Act 62       Focuse Estimation of Control Active Control Urgent Measures Act 63       Deaster Countermeasures Basic Act 62       Focuse Estimation of Control Urgent Measures Act 63       Deaster Countermeasures Basic Act 63       Deaster Measurement Plan 2000       Plan 2000       Plan 2000       Mit Samme Supports on 2000       Plan 2000       Plan 2000       Plan 2000       Plan 2000       Deaster Measures for Urgent 2000       Plan 2000       Deaster Measures for Urgent 2000       Deaster Measures for Urgent 2000       Deaster Measures for Plan 2000       Deaster Measures for Plan 2000       Deaster Measures for Plan 2000       Deaster Measures for Measures for Plan 2000       Deaster Measures for Plan 2000       Deaster Measures for Plan 2000       Deaster Measures for Plan 2000       Deaster Measures for Measures for Plan 2000       Deaster Measures for Nuclea	
9000       1961       Heavy Snowfalls       Fig. Decade Council established G3 Basic Disaster Management Plan       Fig. 2 Act on Special Financial Support to Deal with Extension established G3 Basic Disaster Management Plan       Fig. 2 Act on Special Financial Support to Deal with Extension established G3 Basic Disaster Management Plan       Fig. 2 Act on Special Financial Support to Deal with Extension Structures ester.         1967       Torrential Rains in Uses       73 Act on Special Measures for Havy Snowfall Areas       Fig. 2 Act on Special Measures for Act on Special Measures for Active Volcances (1978)         1970       1973       ML Sakureijma Eruption       73 Act on Special Measures for Countermeasures for Special Measures for Active Volcances (1978)       Fig. 2 Act on Special Measures for Countermeasures for Large-Scale Enthquakes         1976       The 1978 Mirgs/Earthquake       178 Act on Special Financial Measures for Large-Scale Enthquakes       Fig. 2 Act on Special Measures for Large-Scale Enthquake         1978       The 1978 Mirgs/Earthquake       178 Act on Special Measures for Countermeasures for Large-Scale Enthquakes       Fig. Act on Special Measures for Large-Scale Enthquake         1990       Torrential Rains in Uses       195 Act on Special Measures for Promotion of Buster Voltimo S Disater Voltimak	
1964       The 1954 Minple Earthquake       62       Central Disaster Management Plan         1964       The 1954 Minple Earthquake       62       Act on Special Financial Support 10         1967       Torrential Rains in Useu       66       Act on Special Financial Support 10         1967       Torrential Rains in Useu       73       Act on Special Financial Support 10         1970       1973       ML Sakurajima Eruption       73       Act on Provision of Disaster Condolence Grant         1976       The Solutheringtime Eruption       73       Act on Provision of Disaster Condering Countermeasures for Active Volcances (1978)         1978       The Solutheringtime Eruption       74       Act on Special Financial Measures for Active Volcances (1978)         1978       The Solutherin Hycop Earthquake       78       Act on Special Financial Measures for Carling Countermeasures for Active Volcances (1978)         1978       The Solutherin Hycop Earthquake       95       Act on Special Financial Measures for Earthquake         1999       Torrential Rains in Hiroshima       95       Act on Special Measures for Carlingtian Advances and the Solutheringtian Advanc	
1964     The 1964 Mingrate Earthquake     00 Outset Observed Management management management of an another the system of Basters and System Disasters and System Disaster Condelence Grant     Orevelopment of communities etc.       970     1973     ML Sakuragima Eruption ML Asame Eruption ML Asame Eruption ML Asame Eruption ML Asame Eruption ML Asame Eruption ML Asame Asame ML Asim Provide Asame Asame ML Asim Eruption ML Asim Asame ML Asim Eruption ML Asim Areasin ML Asim ML Asim Amondiane ML Asim Amondiane ML Asim Am	revention laws
1964       The Best Mingelife Relation builds         1967       Torrential Rains in Uetsu       Act on Special Measures for Heavy Stownfal Areas         66       Act on Earthquake Insurance       73         9700       1973       ML-Skoreline Eruption       73         1976       The Samplopical Society of Active Volcances (for Torge-Scale Learthquakes)       74         1976       The Samplopical Society of Active Volcances (for Torge-Scale Learthquakes)       78         1978       The Statement of Colored Society of Seciety of Active Volcances (for Torge-Scale Learthquake)       78         1978       The Statement of Colored Society of Seciety of Earthquake       78         1978       The Statement of Colored Society of Seciety of Learthquake       78         1978       The Statement of Colored Society of Seciet Insuccial Measures for Lange-Scale Learthquake       199         1978       The Statement of Colored Society of Seciet Insuccial Measures for Carthquake       199         1979       The Statement Needer Accident       95       Act on Special Measures for Languake-proof Retrofit of Building Action of Courted Learthquake         1999       Torrential Rains in Hiroshina       99       Act on Special Measures for Promotion of Building Seciet On Statement of Building Act on Special Measures for Promotion of Seciet Action Special Measures for Promotion of State Respinated Trees         1999	lies ed
Act on Special Measures for Heavy Snowfall Areas         9700       1973       ML Sakurajime Eruption         1976       The Sakurajime Eruption         1978       The Sakurajime Eruption         1978       The Sakurajime Eruption         1978       The Soluthern Hypoge Earthquake         1979       The Soluthern Hypoge Earthquake         1999       The Soluthern Hypoge Earthquake         1999       The Soluthern Hypoge Earthquake         1999       Torrential Rains in Hiroshims         1000       2000         1000       2000         1000       Corrential Rains in Hiroshims <td< td=""><td></td></td<>	
970       1973       ML Sakurajima Eruption         1976       1973       ML Sakurajima Eruption         1976       The Seminopleas Society of Active Volcances (Art on Special Measures for Active Volcances (Art on Special Measures for Active Volcances (Art on Special Measures for Large-Scale Earthquakes         1976       The 1978 Miyagi Earthquake         1978       The 1978 Miyagi Earthquake         1978       The 1978 Miyagi Earthquake         1978       The 1978 Miyagi Earthquake         1979       The 1978 Miyagi Earthquake         1970       1995         1978       The Southern Hyogo Earthquake         1995       The Southern Hyogo Earthquake         1999       Torrential Rains in Hiroshina         1999       Tor	宮城県沖地震、1978
970       1973       ML salar Eruption ML assume Eruption 1976       73       Act on Evacuation Facilities in Areas Surrounding Active Volcances (Act on Special Measures for Active Volcances (1978)         1976       The Seismological Society of a possible Tokal Earthquake       73       Act on Special Measures Concerning Countermeasures for Charge-Scale Earthquake         1978       The 1978 Mixpip Earthquake       73       Act on Special Measures Concerning Countermeasures for Charge-Scale Earthquake       Induction of current earthquake         930       1995       The Southern Hyogo Earthquake (The Great Hanshin-Awaji Earthquake)       95       Act on Special Measures for Earthquake Disaster Countermeasures Act on Promotion of the Earthquake program and private organizations, in setablement of Cartral Disaster Mandaer Active Victims       Establement of disaster manageme program and private organizations, in setablement of Cartral Disaster Mandaer Mandaer Monoton of Disaster Countermeasures Basic Act         990       Torrential Rains in Hitrophins Torkamura Nuclear Accident)       99       Act on Special Measures for Preservation of Rights an Provement in Densely Inhabited Areas 99       More rivers were added to flood alar mandaers of the Victimize Management 023       More rivers were added to flood alar management for Tenchrype Earthquakes in the Vicinity of the Japan and Chishina Tenches 103       More rivers were added to flood alar management for Tenchrype Earthquakes in the Vicinity of the Japan and Chishina Tenches 104       Formation of Saster Management for Tenchrype Earthquakes in the Vicinity of the Japan and Chishina Tenches 105       More rivers we	The 1978 Miyagi Earthquai
Mit Assame Eruption       Active Volcances (Act on Special Measures for Active Volcances (1978)         1976       The Setemological Society of Japa publishers eports on a possible Tokal Earthquake       78         1978       The 1978 Miyupi Earthquake       78         1978       The 1978 Miyupi Earthquake       78         1978       The 1978 Miyupi Earthquake       78         930       1995       The Southern Hyogo Earthquake       180         990       1995       The Southern Hyogo Earthquake       181         1999       Torrential Rains in Hiroshims Tokamura Nuclear Accident       95       Act on Special Measures for Earthquake Disaster Countermeasures Basic Act         990       Torrential Rains in Hiroshims Tokamura Nuclear Accident       99       Act on Special Measures for Preservation of Rights an Protein Of the 200 Nuclear Accident         990       Torrential Rains in Hiroshims Tokamura Nuclear Accident       99       Act on Special Measures for Preservation of Rights an Protein Of the 200 Nuclear Accident         0000       2004       Torrential Rains in Hiroshims Tokamura Nuclear Accident       99       Act on Special Measures for Promotion of Staster Starter         0100       2004       Torrential Rains in Hiroshims Tokamura Nuclear Accident       99       Act on Special Measures for Promotion of Staster         02004       Torrential Rains in Hiroshims Tokamura Nuclear	
1976       The Setumological Society of Japp publicities reports or a possible Tokai Earthquake       78       Active Volcances (1978)         1978       The 1978       Myagi Earthquake       78       Action Special Financial Measures for Urgent Earthquake Contermeasures for Large-Scale Earthquakes       Induction of current earthquake engineer         9800       1995       The Southern Hyogo Earthquake       Induction of current earthquake engineer       Induction of current earthquake engineer         9900       1995       The Southern Hyogo Earthquake       95       Action Special Measures for Earthquake proof Retroft of Buildings Amendment of Disaster Countermeasures Basic Act       -Establichment of disaster manageme groups and privation of disaster manageme groups and privation of disaster reliance improvement in Densely Inhabited Areas       -Establichment of a Centra Disaster Minister, the coordination of disaster reliance improvement in Densely Inhabited Areas         1999       Torrential Rains in Hiroshimm Tokaimura Nuclear Accidenti       90       Act on Special Measures for Promotion of Toisaster Set (Internets and Profits of the Vicinity of the Japa and Chishima Tenches       More rivers were added to flood aler fundation of our remet acting and an our special Measures for Promotion of Disaster Set (Internets and Profits in public education of organizations, in Minoshima         10000       20001       Terrential Rains in Hiroshimm       00       Act on Special Measures for Promotion of Toisaster Set (Internets and Profits in public education of the Act on Special Measures for Promotion of Toisaster Minoshima	and a
1978       The 1978 Miyapi Earthquake       78       Act on Special Measures Concerning Countermeasures for Large-Scale Earthquakes         980       180       400 Act on Special Measures for Urgent Earthquake Countermeasure Improvement Projects in Areas for Intensified Measures (Measures Statement of Countermeasure Improvement)       Induction of ourrent earthquake engineer         990       1995       The Southern Hyopp Earthquake       95 Act on Special Measures for Earthquake Disaster Countermeasures Basic Act       Induction of ourrent earthquake proof Retroft of Buildings Amendment of Disaster Countermeasures Basic Act       -Establishment of disaster manageme groups and private organizations, in Mister, the coordination of dosaster designated rives in Densely Inhabited Areas         1999       Torrential Rains in Hiroshima       96 Act on Special Measures for Preservation of Rights and Profits of the Victims of Specified Disasters for Mister (Measures for Vicear Disaster Victims)       More rivers were added to flood ale management of Teaching Disaster Prove Areas         0000       2000       Torrential Rains in Hiroshima       90 Act on Special Measures for Preservation of Toinankai and Nanki Earthquake Disaster Prone Areas       More rivers were added to flood ale management of Teaching the function of toinankai and Nanki Earthquake Disaster Prone Areas         2004       Torrential Rains in the Tokal Region       00 Act on Promotion of Seatter Management for Teaching the Seatter Management for Teaching the Induction of disaster Management for Teaching and Chains, and Aromation do disaster Prone Areas         2004       Torrential R	
980       180 Act on Special Financial Measures for Urgent Earthquake Countermeasure Improvement Projects in Areas for Untensfield Measures 81 Amendment of Order for Enforcement of the Building Standard Law       Induction of current earthquake orgons and private organizations, in standard countermeasures Act on Special Measures for Earthquake Disaster Countermeasures Basic Act         990       1995       The Southern Hyogo Earthquake (The Great Hanshin-Awaji Earthquake)       95 Act on Special Measures for Preservation of Rights and provement in Densely Inhabited Areas         1999       Torrential Rains in Hiroshims Totamura Nuclear Accident)       97 Act on Promotion of Disaster Resilience Improvement in Densely Inhabited Areas         99 Act on Special Measures for Preservation of Rights and Provement of Earthquake       99 Act on Special Measures for Vicelar Disaster         0000       2000       Torrential Rains in Hiroshims Totamura Nuclear Accident)       99 Act on Special Measures for Nuclear Disaster         0100       2000       Torrential Rains in Hiroshims Totamura Nuclear Accident)       99 Act on Special Measures for Nuclear Disaster         02001       Torrential Rains in Hiroshims Totamura Nuclear Accident)       90 Act on Promotion of Sediment Disaster Countermeasures for Sediment Disaster Prone Areas         2004       Torrential Rains in the Tokal Region The 2004 Chinetseu Earthquake       03 Specified Urban River Imaticater Management Of Tannehiment of the Act on Promotion of Disaster Management for Tranchive Earthquake- Toor Rains in Hiroshims       Fist Amendiment (2012) Mide area respons for Larga-scale Di- in	
Earthquake Countermeasure Improvement Projects in Areas for Intensified Measures 31 Amendment of Order for Enforcement of the Building Standard Law       Induction of current earthquake Disaster Countermeasures Act on Promotion of the Earthquake Disaster Countermeasures Basic Act Section Promotion of the Earthquake Disaster Countermeasures Basic Act Section Promotion of Disaster Act Section Promotion of Disaster Resulting Act on Promotion of Disaster Countermeasures for Disaster Victims Disaster Countermeasures for Sectified Disaster S Section Promotion of Disaster Victims Disaster Countermeasures for Disaster Victims Disaster Countermeasures for Sectified Disaster S Section Disaster Victims Disaster Countermeasures for Section Disaster Prone Areas Disaster Prone Areas Disaster Promotion of Sectified Disaster S Sectified Measures for Promotion of Disaster Management Disaster Prone Areas Disaster Prone	
990       1995       The Southern Hyogo Earthquake (The Great Hanshin-Awaji Earthquake)       95       Act on Special Measures for Earthquake Disaster Countermeasures Act on Promotion of the Earthquake-proof Retroft of Buildings Amendment of Disaster Countermeasures Basic Act       Establishment of disaster manageme groups and private organizations, in setablishment of act acturn Disaster Minister Act (The Great Hanshin-Awaji Earthquake)       Establishment of Setablishment of acturn Promotion of the Earthquake-proof Retroft of Buildings Amendment of Disaster Countermeasures Basic Act       Establishment of Greater Basic Act (Set Act on Special Measures for Preservation of Rights and Provements in Disaster Victims         1999       Torrential Rains in Hiroshims Totamura Nuclear Accident (Disaster Accident)       99       Act on Special Measures for Preservation of Rights and Provement of Easter Prone Areas         0000       2000       Torrential Rains in Hiroshims Totamura Nuclear Accident)       99       Act on Special Measures for Promotion of Tohnankai and Narkai Earthquake Disaster Prone Areas       More rivers were added to flood aler increased storts in public education Act on Special Measures for Promotion of Disaster Management for Tenchrype Earthquakes in the Vicinity of the Japan and Chishma Tenches       More rivers were added to flood aler increased storts in public education Act on Special Measures for Promotion of Seaster Management for Tenchrype Earthquakes       Fist Amendment of the Act on Promotion of Disaster Management for Tenchrype Earthquakes         2004       Torrential Rains in the Tokal Region The 2004 Chinetau Earthquake       Of Anendment of the Act on Promotion of Seaster Countermeasures in Sediment Disast	
990       1995       The Southern Hyopp Earthquake (The Great Hanshin-Awaji Earthquake)       95       Act on Special Measures for Earthquake Disaster Countermeasures Basic Act 96	
(The Great Hanshin-Awaji Earthquake)       Disaster Countermeasures Act on Porcotion of the Earthquake proof Retroft of Buildings Amendment of Disaster Countermeasures Basic Act       General Disaster Ministrantons, I groups and private organizations, I actional Measures for Preservation of Rights and Profits of the Victims of Specified Disasters         1999       Torrential Rains in Hiroshims Tokaimura Nuclear Accident Tokaimura Nuclear Accident OO Act on Promotion of Sediment Disaster Countermeasures for Sediment Disaster Prone Areas	ig laws, etc.
1999       Torrential Rains in Hiroshims Tokimura Nuclear Accidenti Tokimura Nuclear Accidenti (The JCO Nuclear Accidenti (The JCO Nuclear Accidenti)       96 Act on Special Measures for Preservation of Rights an Profits of the Victims of Special Measures for Preservation of Rights an Profits of the Victims of Special Measures for Recovery of Disaster Victims       97 Act on Promotion of Disaster Relifeece Improvement in Densely Inhabited Areas         900       2000       Torrential Rains in Nigala, Fidestrins       99 Act on Special Measures for Nuclear Disasters       More there were added to flood aler inucleon of Torona Areas Sediment Disaster Prome Areas         2004       Torrential Rains in Nigala, Fidestrins       90 Act on Special Measures for Promotion of Toinankai and Nanka Earthquake Disaster for Promotion of Toinankai and Nanka Earthquake Disaster for Promotion of Toinankai and Nanka Earthquake Disaster for Promotion of Toisaster Management for Thrench-type Earthquakes in the Vicinity of the Japan and Chishima Ternches       More there were added to flood aler increased difforts in public dicutand in the Japan and Chishima Ternches         2004       Torrential Rains in the Tokal Region Thre 2004 Chivitistu Earthquake       Of Sediment Disaster for Promotion of Sediment Disaster Countermeasures in Sediment Disaster forone Areas Amendment of the Act on Promotion of Sediment Disaster Countermeasures in Sediment Disaster forone Areas Act on Development of Trach-type Earthquakes       First Amendment of advector increased diffort of Building More profit and Relife Development Act on Promotion of Sediment Disaster Countermeasures in Sediment Disaster Prone Areas Act on Development of Area Sesible to Development Act on Promotion of Stamans       First Amendment of Act Prof	t mechanisms based on volunte
1999       Torrential Rains in Hiroshima         1999       Torrential Rains in Hiroshima         1000       2000         2000       Torrential Rains in Hiroshima         1000       2000         2000       Torrential Rains in Hiroshima         1000       2000         2000       Torrential Rains in Hiroshima         100       Act on Support for Livelihood Recovery of Disaster Victims         99       Act on Support for Livelihood Recovery of Disaster Solutions         900       Act on Support for Livelihood Recovery of Disaster Solutions         900       Act on Support for Livelihood Recovery of Disaster Solutions         900       Act on Support for Livelihood Recovery of Disaster Solutions         900       Act on Special Measures for Promotion of Toinankai and Narka Earthquake Disaster Prome Areas         90       Act on Special Measures for Promotion of Toinankai and Narka Earthquake Disaster Management         90       Act on Special Measures for Promotion of Toinankai and Narka Earthquake Disaster Management         90       Act on Special Measures for Promotion of Toinankai and Narka Earthquake Disaster Management         90       Act on Special Measures for Promotion of Toinanki and Narka Earthquake Disaster Management         91       Act on Special Measures for Promotion of Suament Disaster         92       Ac	nagement Council led by the Prin
1999       Torrential Rains in Hiroshims Tokimury Nuclear Academi 98 Act on Support for Livelihood Recovery of Disaster Victims 99 Act on Support for Livelihood Recovery of Disaster Victims 99 Act on Support for Livelihood Recovery of Disaster Victims 99 Act on Support for Livelihood Recovery of Disaster Victims 99 Act on Support for Livelihood Recovery of Disaster Victims 90 Act on Support for Livelihood Recovery of Disaster Victims 90 Act on Support for Livelihood Recovery of Disaster Victims 91 Act on Support for Livelihood Recovery of Disaster Victims 92 Act on Support for Livelihood Recovery of Disaster Victims 92 Act on Support for Livelihood Recovery of Disaster Victims 92 Act on Support for Livelihood Recovery of Disaster Victims 93 Section Bits of Registration of Ist of Registration of Recoverse and Recoverse	frequests for the JSDF, etc. 東日本大震災、2011
1999       Torrential Rains in Hiroshima Tokaimura Nuclear Accidenti (198 Act on Support for Livelihood Recovery of Disaster Victims 99 Act on Support for Livelihood Recovery of Disaster Victims 99 Act on Support for Livelihood Recovery of Disaster Victims 99 Act on Support for Livelihood Recovery of Disaster Victims 90 Act on Special Measures for Nuclear Countermeasures for Sediment Disaster Prone Areas 01 Anendment of the Flood Control Act 03 Speciale Uthans Iter Nogala Falsashima 102 Act on Special Measures for Promotion of Disaster Management for Trench-type Earthquakes in the Vichity of the Japan and Chishima Trenches 05 Amendment of the Flood Control Act 05 Amendment of the Act on Promotion of Seater 06 Amendment of the Act on Promation of Heside Vichity 06 Amendment of the Act on Promation of Heside Vichity 06 Amendment of the Act on Promation of Heside Vichity 06 Amendment of the Act on Promation of Heside Vichity 06 Amendment of the Act on Promation of Heside Vichity 06 Amendment of the Act on Promation of Heside Vichity 06 Amendment of the Act on Promation of Heside Vichity 06 Amendment of the Act on Promation of Heside Vichity 07 Act on Development of Areas Act on Development 06 Amendment of the Act on Promation of Heside Vichity 07 Act on Development of Areas Act on Dev	写真提供:東京消防庁
1999       Intercenting random r	The Great East Japan Earth Photo:Tokyo Fire Departme
Oto 3         99 Act on Special Measures for Nuclear Disasters           0000         2000 Torrential Rains in Nigala, Edustrims         99 Act on Special Measures for Sediment Disaster Prone Areas         More rivers were added to flood aler Increased efforts in public education Annual Earthquake Disaster Prone Areas           2004         Torrential Rains in the Tokai Region         03 Specified Urban River Inundation Countermeasures Act 04 Act on Special Measures for Promotion of Disaster Management         More rivers were added to flood aler Increased efforts in public education Annual Earthquake Disaster Management           2004         Torrential Rains in the Tokai Region         04 Act on Special Measures for Promotion of Disaster Management           015         Annual Chishima Trenches         Establishment of the Flood Control Act           05         Annual Chishima Trenches         Establishment of Sediment Disaster Countermeasures in Sediment Disaster Countermeasures in Sediment Disaster Prore Areas           06         Amendment of the Act on Promotion of Residential Land Development           06         Anendment of He Act on Promotion of Residential Land Development of action of Residential Land Development           06         Anendment of the Act on Promotion of Residential Land Development of collidings           06         Act on Development of Act as Resiliant Or Development of Collidory earthquake           Act on Development of Act as Resiliant Contermeasures         Scood Amendment of the Act on Regulation of Residential Land Development </td <td></td>	
Sediment Disaster Prone Areas         01       Amendment of the Flood Control Act.         02       Act on Special Measures for Promotion of Tohmankai and Nankai Earthquake Disaster Management         03       Special Measures for Promotion of Tohmankai and Mankai Earthquake Disaster Management         03       Special Measures for Promotion of Tohmankai and Management for Tranch-type Earthquakes in the Vicinity of the Japan and Chishima Trenches         05       Act on Special Measures in Formotion of Seaster Management for Tranch-type Earthquakes         05       Amendment of the Act on Promotion of Seaster Countermeasures in Sediment Disaster Prone Areas         05       Amendment of the Act on Promotion of Seaster Countermeasures in Sediment Disaster Prone Areas         06       Amendment of the Act on Promotion of Seaster Prone Areas         06       Amendment of the Act on Promotion of Teaster         07       Act on Promotion of Seaster Prone Areas         06       Amendment of the Act on Promotion of Teaster         06       Amendment of the Act on Promotion of Teaster         07       Act on Overlopment of Tranch Seaster         08       Cond Amendment (2015)         Amendment of the Act on Promotion of Teaster         11       Act on Promotion of Teaster         Act on Overlopment of Tranch Seaster         07       Amendment of the Act Issue Disaster      <	
2004 Torrential Rains in the Tokal Region The 2004 Chivetsu Earthquake O  Act on Special Measures for Promotion of Tohnankai and Nankak Earthquake Disaster Management O  Special Measures for Promotion of Disaster Management for Trench-type Earthquakes in the Vicinity of the Japan and Chishima Trenches Countermeasures in Sediment Disaster Countermeasures in Sediment Disaster Prone Areas Amendment of the Act on Promotion of Residential Land Development Act on Promotion of Staster II Act on Promotion of Texinami Disaster Countermeasures in Sediment Disaster Prone Areas Amendment of the Act on Promotion of Residential Land Development (11 Act on Promotion of Stasters Act on Oevelopment of Areas Resilient to Tsuami Disaster Caustomer in Act on Development of Areas Resilient to Tsuami Disaster	lists, announcement of expect
2004       1000 Act on Special Measures for Promotion of Tohnankai and Nankai Earthquake Diseaster Management 4.       1000 Act on Special Measures for Promotion of Disaster Management 4.         2004       1000 Tentiel Rains in the Tokai Region       04 Act on Special Measures for Promotion of Disaster Management for Tench-type Earthquakes in the Vicinity of the Japan and Chishima Tenches       Establishment of basic national direct Vicinity of the Japan and Chishima Tenches         2004       1000 Tentiel Rains in the Tokai Region       1000 Sector Measures for Promotion of Seaster Management for Tench-type Earthquakes in the Vicinity of the Japan and Chishima Tenches       Fest Amendment of the Act on Promotion of Seaster Management education, and Improvement of Tenche Act on Promotion of Sediment Disaster Countermeasures in Sediment Disaster Proor Areas       Second Amendment of the Act on Promotion of Tesidential Land Development of Sediment of Basider Of Development of Sediment of Act on Promotion of Tesidential Land Development for Second Capital response capabilities trought response capabilities for ophil response capabilities for ophil response capabilities and participation of residential Land Development in disaster countermeasures         2005       Amendment of the Act on Promotion of Sestiential Land Development is in disader countermeasures         2006       Amendment of the Act on Promotion of Sestiential Land Development is in disader countermeasures         2006       Amendment of the Act on Promotion of Sestiential Land Development is in disader countermeasures         2007       Act on Promotion of Japan Sestiential Conference Capabilitis for ophicaphilon to objectopreverbuach conference <td>expected inundation area, etc.</td>	expected inundation area, etc.
2004       Torrential Rains in the Tokal Region         2004       Torrential Rains in the Tokal Region         The 2004 Chiretsu Earthhouse       Act on Special Measures for Promotion of Disaster         Control Logical Chiretsu Earthhouse       Second Anadom Chishina Trenches         Control Act       Second Measures in Sediment Disaster         Control Act       Control Act         Amendment of the Act on Promotion of Sediment Disaster       Control Act         Amendment of the Act on Promotion of Sediment Disaster       Second Anadom (2012)         Wide ara response for Large-scale Distribution       Second Anadom (2012)         Amendment of the Act on Promotion of Sediment Disaster       Second Anadom (2013)         Amendment of the Act on Promotion of Residential Land Development       Second Anadom (2013)         Amendment of the Act on Promotion of Residential Land Development       Second Anadom (2013)         Amendment of the Act on Promotion of Sediment Disaster       Second Anadom (2013)         Market and Back and Development of Act on Promotion of Sediment Disaster       Second Anadom (2013)         Amendment of the Act on Registron of The Second Present in disaster countermeasures       Second Anadom (2014)         Act on Overlopment of Acade Sessilient to collagory earthquark       Second Anadom (2014)         Act on Promotion of Sumant Countermeasures       Second Anadom (2014)	
2004       Torrential Rains in the Tokal Region         Management for Trenchype Eartinguakse in the Vicinity of the Japan and Chishima Trenches       First Amendment (12012)         IOS       Amendment of the Root Octorrol Act Amendment of the Act on Promotion of Sediment Disaster         Amendment of the Act on Promotion of Sediment Disaster       First Amendment (2012)         Mide are reported for Actional Provided Control Act Amendment of the Act on Promotion of Sediment Disaster       First Amendment (2012)         Amendment of the Act on Promotion of the Earthquake- Proof Retrofit of Buildings       Second Amendment (2013)         O6       Amendment of the Rot on Promotion of Residential Land Development Act on Oevelopment of Acts and Residential Land Development of Action of Sesters	ves and regional earthquake-pro
The 2004 Chitetsu Earthquake         of the Japan and Chishima Trenches         Wide-ara response for Large-scale DB           05         Amendment of the Flood Control Act         Amendment of the Act on Promotion of Sediment Disaster           Amendment of the Act on Promotion of Sediment Disaster         Second Amendment of the Act on Promotion of the Earthquake- Proof Retrofit of Buildings         Second Amendment of the Act on the Regulation of the Earthquake- Proof Retrofit of Buildings         Second Amendment of the Act on the Regulation of Residential Land Development of support for artifected per Amendment of Act act Residential Consummit Disasters         Second Amendment of the Act on the Regulation of Tesidential Land Development of collegiory earthquake- Rest act on Promotion of Stammit Countermeasures         Second Amendment of collegiory earthquake- tor collegiory earthquake- tore collegiory earthquake- tor collegiory earthquake- tore colleg	d earthquake-proofing.
Of Anterlativent of the Act on Promotion of Sediment Disaster Countermeasures in Sediment Disaster Prove Areas Amendment of the Act on Promotion of Sediment Disaster Prove Areas Of Anterlation and Importantial Conference on Promotion of the Earthquake- Proof Retrofit of Buildings Of Anterlation of Submitting Conference on Promotion of Sediment Disaster / Mendment of the Act on Promotion of Sediment Disaster / Of Anterlation of Submitting Conference on Promotion of The Samport for Areas Of Anterlation of Submitting Conference on Promotion of Sediment Disaster / Mendment of the Act on Promotion of Sediment Disaster / Mendment of the Act on Promotion of Submitting Conference on Promotion on Promotion of Submitting Conference on Promotion on Promot	ister aster improvements to disast
Countermeasures in Seatiment Ubaster Prone Areas Amendment of the Act on Promotion of the Earthquake- Proof Retrofit of Buildings 06 Amendment of Act and the Regulation of Residential Land Development Act on Promotion of Surami Countermeasures Act on Development of Areas Resilient to Sunami Disasters	its to regional disaster manageme
Proof Retrofit of Buildings     O6 Amendment of the Buildings     O6 Amendment of the Act on the Regulation of Residential Land Development     (11 Act on Promotion of Tsunami Countermeasures     Act on Development of Areas Resilient to Tsunami Disasters	
10 Antendinent of the ALC units regulation on Residential Land Loverage     11 Act on Promotion of Tsurami Countermeasures     Act on Development of Areas Resilient to Tsurami Disasters	Ne ties in the event of a large-scale a
Act on Development of Areas Resilient to Tsunami Disasters // -Establishment of obligatory earthquake-	
	f emergency safety checks.
and Tsunami (The Great East Japan Earthquake) 13 Amendment of Disaster Countermeasures Basic Act/ Participation of diverse entities includin flood control activities, acquisition of app	priver management organizations opriate maintenance an manageme
Act on Reconstruction from Large-Scale Disasters Amendment of the Act on Promotion of the Earthquake proof Retroit of Balding Designation of Narkai Trough Earthquake	Disastar Countermossure Promoti
Amendment of the Flood Control Act and River Act	management for the Nankai Trou
Areas Affected by Large-scale Disaster	entation of Measures against Tok
Amendment of the Act on Special Measures for Promotion / Inland Earthquake and promotion of earth of Nankai Trough Earthquake Disaster Management 70 fa Basic Plan, etc.	quake management through creati
2014 Heaver Spourfall (Amendment of the Act on Special Measures for Promotion , Establishment of laws regarding disc	rded vehicles in the acquisition
of Tohnankai and Nankai Earthquake Disaster Management/	
2014 Hiroshima Landsilde Disaster	

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.

Туре	Prevention	Emergency Response	Recovery/Reconstruction
B	asic Act on Disaster Management <ul> <li>Act on Special Measures Concerning</li> <li>Countermeasures for Large-Scale Earthquake</li> <li>Act on the Promotion of Measures for</li> </ul>	• Disaster Relief	<general and="" assistance="" measures="" relief=""> •Act on Special Financial Support to Deal with</general>
Earthquakes, Tsunamis	Tsunami         •Act on Special Financial Measures for Urgent Earthquake Countermeasure Improvement Projects in Areas for Intensified Measures         •Act on Special Measures for Earthquake Disaster Countermeasures         •Act on Special Measures for the Promotion of Nankai Trough Earthquake Disaster Management         •Act on Special Measures against Tokyo Inland Earthquake         •Act on Special Measures for Promotion of Disaster Management for Trench-type Earthquake         •Act on Special Measures for Promotion of Disaster Management for Trench-type Earthquakes in the Vicinity of the Japan and Chishima Trenches         •Act on Promotion of Disaster Resilience Improvement in Densely Inhabited Areas         •Act on Development of Areas Resilient to Tsunami Disasters	• Self-Defense Forces Act	Extremely Severe Disasters  Semail and Medium-sized Enterprise Credit Insurance Act  Act on Financial Support of Farmers, Forestry Workers and Fishery Workers Suffering from Natural Disaster  Act on Provision of Disaster Condolence Grant Employment Insurance Act  Act on Support for Reconstructing Livelihoods of Disaster Victims  Japan Finance Corporation Act  Disposal of Disaster Waste>  Waste Management and Public Cleansing Act  CDisaster Recovery Work>  Act on Temporary Measures for Subsidies from National Treasury for Expenses for Project to Recover Facilities for Agriculture, Forestry and Fisheries Damaged by Disaster
Volcanic eruptions	•Act on Special Measures for Active Volcanoes	s	<ul> <li>Act on National Treasury's Sharing of Expenses for Project to Recover Public Civil Engineering Works Damaged by Disaster</li> </ul>
Windstorms, flooding	•River Act	•Flood Control	<ul> <li>Act on National Treasury's Sharing of Expenses for Recovery of Public School Facilities Damaged by Disaster</li> </ul>
Landslides, rockfalls, debris flow	<ul> <li>Erosion Control Act</li> <li>Forest Act</li> <li>Landslide Prevention Act</li> <li>Act on Prevention of Disasters Caused by Steep Slope Failure</li> <li>Act on Promotion of Sediment Disaster Countermeasures in Sediment Disaster Hazard Areas</li> </ul>	Act	Act on Special Measures concerning Reconstruction of Urban Districts Damaged by Disaster     Act on Special Measures concerning Reconstruction of Condominiums Destroyed by Disaster     Act on Special Measures concerning Reconstruction Act on Farthquake Insurance     Agricultural Insurance Act     Government Managed Forest Insurance Act     Acts relating to Disaster Taxation>     Act on Reduction or Release, Deferment of Collection and Other Measures Related to Tax Imposed on Disaster Victims     Other>     Act on Special Measures for the Preservation of Distribution of the Measures for the Preservation of
Heavy snowfall	Act on Special Measures for Heavy Snowfall Areas     Act on Special Measures concerning Maintenance of Road Traffic in Specified Snow Coverage and Cold Districts		Rights and Interests of the Victims of Specified Disasters • Act on Special Financial Support for Promoting Group Relocation for Disaster Mitigation • Act on Special Measures for Land and Building Leases in Areas Affected by Large-scale Disaster
Nuclear power	•Act on Special Measures Concerning Nuclear Emergency Preparedness		•Act on Reconstruction from Large- Scale Disasters

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.

- 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.



# Coordination Mechanism of DRRM

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

4		Typhoon, Earthquakes, Tsunami, Cyclo	one. Flood.	Landslide, Thunderbolt, Fire, Flood,
	Disasters	Landslides, Sediment flow, Volcano eruption etc.		windstorm, Avalanche, Earthquake,
	Types	,		Heavy rainfall, Inundation, Debris flow
	.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			etc.
5	Average	Deaths: 1845.		Deaths: 1552.
Ŭ	Loss and	Economic Loss 10,924.13 Billion Yen		Damage 89.33 Billion Nepalese Rupees
	Damage per	(Source:statista.com, calculated with la	et 10 vre '	(Source:drr.gov.np,npc.gov.np;
	year	data)	3t 10 yr3.	calculated with last 9 yrs.' data)
	yeai	uata)		Calculated with last 9 yrs. data)
6		Disaster Lega	al Instrument	s
	Disaster Coun	iter Measures Basic Act, 1961.	Envisioned	by the Constitution of 2015.
		Relief Act, 1947.		de to Provide for Reconstruction of the
		ntrol Act, 1949.		quake Affected, 2015
		Standards Act, 1950.		isk Reduction and Management Act,2017
	_	vation and Flood Control Urgent		gulations 2019.
	Measures Act	•		ernment Operation Act, 2017
		l Financial Support, 1962.		ding Act, 1988.
		Act, 1962 and the land-use regulations.	-	Ith Act, 2018.
		uake Insurance, 1966.	r ublic i lea	
		on of Disaster Condolence Grant, 1973.	Soil and wa	atershed conversation act, 1982.
		ial Measures Counter Measures for	Environme	ntal Protection Act, 2019.
	_		Land-Use /	Act, 2019.
	Large-Scale Earthquakes, 1978. Act on Special Financial Measures for Urgent		Prime mini	ster Relief Fund Regulation, 2007
		· ·	And some	frameworks and guidelines
	Earthquake Countermeasures Improvement Projects in Areas of Intensified Measures, 1980.		The laws	and procedures developed by Province
	Act on Special Measures for Earthquake Disaster		Governme	nts and local levels.
	Countermeasu	I Measures for Prevention of Rights and		
		/ictims of Specified Disasters, 1996.		
		tion of Disaster Resilience Improvement habited Areas, 1997.		
	2			
		ort for Livelihood Recovery of Disaster		
	Victims, 1998.			
		l Measures for Nuclear Disasters, 1999. Promotion of Sediment Disaster		
		ures for Prone Areas, 2000.		
	-	I Measures for Promotion of Tohnankai		
		arthquake Disaster Management, 2002.		
	-	an River Inundation Countermeasures		
	Act, 2003.			

	Act on Speci	al Measures for Promotion of DM for	
		arthquakes, 2004.	
		otion of Tsunami Countermeasures,	
	2011.	oution of Foundami Countermeasures,	
		opment of Areas Resident to Tsunami	
	Disasters, 201		
		olishment of the Nuclear Regulation	
	Authority, 201		
		nstruction from Large-scale Disasters,	
	2013.		
		ial Measures for Land and Building	
		as Affected by Large-Scale Disasters,	
	2013.		
	•	ial Countermeasures Against Tokyo	
	Inland Earthqu	Jake, 2013.	
		Disaster Manag	ement Mechanism
7	Levels/Laye	4 Active levels in Japan: Central,	5 Active levels in Nepal: Federal, Provincial, District
	rs	Prefectural, City/Town/Village level	level, Municipal level and Community level
		and Community level	
8	Main	Director General for Disaster	Executive Chief, National Disaster Risk Reduction and
	Person/Age	Management, Cabinet Office.	Management Authority (NDMA).
	ncy for	-	
	Coordinatio		
	n		
9	Councils/Co	Central Council headed by Prime	National Council headed by Prime Minister and
	mmittees	Minister.	Central Executive Committee headed by Home
		Prefectural Council headed by	Minister.
		Governor.	Province Council headed by Chief Minister and
		City/village/Town Council headed by	Province Executive Committee headed by Minister for
		Mayor.	Internal Affairs and Law in Province.
		Community based disaster	District DM Committee headed by Chief District
		prevention	Officer.
		· organizations/committees headed	Local Level DM Committee headed by Mayor.
		by citizens (Volunteer and Optional).	Community level committees formed by local citizen
		· · · · · ·	(Volunteer and Optional).
10	Responsibili	Developing DRR basic plans and	Councils for approval of plans, policies and standards.
	ty	their execution	Committees for DRR plan and their execution.
11	Implementat	By the councils with the help of	By the committees with the help of NDMA and
	ion	respective agencies.	respective agencies.
			,

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

#### 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.
- 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)

#### Bibliography

#### Journals

Jimee G.K., K. Meguro and A.M. Dixit (2019), 'Learning from Japan for Possible Improvement in Existing Disaster Risk Management System of Nepal', Open Journal of Earthquake Research, 2019, 8, 85-100. Nepal P., N.R. Khanal & B.P. Pangalisharma (2018), 'Policies and Institutions for Disaster Risk Management in Nepal: A review', The Geographical Journal of Nepal, Vol 11: 1-24,2018, Central Department of Geography, Tribhuvan University, Kathmandu, Nepal.

#### Books

Cabinet Office (2019), White Paper Disaster Management in Japan: Cabinet Office, Government of Japan, Tokyo.

CBS, (2011), Census Report 2011: Central Bureau of Statistics, National Planning Commission, Government of Nepal, Kathmandu.

Clarke, D.J.& Dercon, S. (2016), *Dull Disasters? How planning ahead will make a difference,* New York Oxford University Press DOI: 10.1093/acprof:oso/9780190260903:002.0003©The World Bank CC By 3.0 IGO

Japan Statistics Bureau (2019), Statistics Handbook of Japan 2019: Statistic Bureau of Japan, Ministry of Internal Affairs and Communications, Tokyo.

MoHA (2019), Nepal Disaster Report, 2019: Ministry of Home Affairs, Kathmandu.

UNDP 2019, 'Human Development Index (HDI)', HDRO (Human Development Report): Office of United Nations Development Programme. Retrieved 11 December2019, New York.

UN (2020), *World Population Prospects 2019*: United Nations, Department of Economics and Social Welfares, 2020, New York.

WB (2020), *Global economic prospects, a World Bank group flagship report, International Bank for Reconstruction and Development:* The World Bank 1818 H Street NW, Washington, DC 20433

WB (2016), *Learnings from Disaster Drills Simulations in Japan, 2016, International Bank for Reconstruction and Development:* The World Bank 1818 H Street NW, Washington, DC 20433

#### **Working Papers**

Atushi, Koresawa (2014), 'Disaster Risk Reduction and Disaster Management in Japan', Fire and Disaster Management Agency, Ministry of Internal Affairs and Communications, Government of Japan.

Khanal, Beda Nidhi (2020), 'Nepal: A brief Country Profile on Disaster Risk Reduction and Management', Visiting Researcher of 2019B Program, Asian Disaster Reduction Center, Kobe, Japan.

Lorene, S.C. (2016), 'Factors Contributing to the High Resiliency and Capacity of Japan to Natural Hazards in the Context of Social Institutions', Visiting Researcher of 2016A Program, Asian Disaster Reduction Center, Kobe, Japan.

#### Websites

UN Office for Disaster Reduction (2020): preventionweb.net/english/ (accessed 1-12 March 2020) Wikimedia Foundation (2020), Inc.1 Montgomery Street Suite 1600 San Francisco, A 94104 USA: https://en.wikipedia.org/wiki/ (accessed Jan-Mar 2020)

Cabinet Office of Japan, Director General for Disaster Management (2020), Tokyo, www.bousai.go.jp/1info/pdf/saigaipamphlet\_je.pdf (accessed 10 March 2020)

Ministry of Home Affairs, National Emergency Operation Center (2020), Kathmandu, Nepal, www.drrportal.gov.np (accessed Jan-March, 2020).