Comparative and Systematic Analysis of Disaster Management System

Ehsan Shakeri

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Prof. Dr. Ali Hakan Ulusoy
Director

I certify that this thesis satisfies all the requirements as a thesis for the degree of Doctor of Philosophy in Industrial Engineering.

Assoc. Prof. Dr. Gökhan İzbirak
Chair, Department of Industrial Engineering

We certify that we have read this thesis and that in our opinion it is fully adequate in scope and quality as a thesis for the degree of Doctor of Philosophy in Industrial Engineering.

Prof. Dr. Béla Vizvári
Supervisor

Examining Committee

1. Prof. Dr. Gergely Kovács
2. Prof. Dr. Zoltán Lakner
3. Prof. Dr. Béla Vizvári
4. Assoc. Prof. Dr. Sahand Daneshvar
5. Asst. Prof. Dr. Kehinde Adewale Adesina

ABSTRACT

This study reviews, compares, and analyzes the legislative and institutional frameworks of the Disaster Management (DM) in Nigeria and India. This research aims to study the effectiveness and efficacy of the DM systems in both countries to identify the strengths and weaknesses and make recommendations for enhancing the current systems. The study initially provides a comprehensive introduction of Indian and Nigerian DM systems, including the countries' disaster profiles and the current DM policies and institutional frameworks, then compares them from various perspectives to identify the similarities, differences, common challenges, and lessons learned. An intense documentary survey of relevant literature is applied in this study to obtain data and information. The study finds that India, by developing better legal and institutional frameworks, creates a more effective DM system than Nigeria in terms of the integration and prioritization of Disaster Risk Reduction (DRR) activities, community participation, and coordination and collaboration mechanisms. The research also discovers that both nations struggle to mobilize, manage, and utilize DM funds due to a lack of transparency in funding sources. The findings also show that both countries' DM systems are mainly focused on natural disasters, with little emphasis provided on effective preventative and regulatory measures to handle man-made disasters. The study concludes that due to administrative and financial issues, none of the two countries achieved total success in capacity building activities.

Keywords: Indian Disaster Management, Nigerian Disaster Management, Man-Made Disaster Management, Natural Disaster Management, Disaster Risk Reduction.

ÖZ

Bu çalışma, Nijerya ve Hindistan'daki Afet Yönetiminin (AY) yasal ve kurumsal yapılarını gözden geçirmekte, karşılaştırmakta ve analiz etmektedir. Araştırma, güçlü ve zayıf yönlerini belirlemek ve mevcut sistemlerin iyileştirilmesine önerilerde bulunmak için; her iki ülkedeki AY sistemlerinin etkinliğini ve etkililiğini incelemeyi amaçlamaktadır. İlk olarak, ülkelerin afet profilleri ve mevcut AY politikaları ve kurumsal yapıları da dahil olmak üzere; Hindistan ve Nijerya AY sistemlerinin kapsamlı bir tanıtımını sağlanmıştır. Ardından, benzerlikleri, farklılıkları, ortak zorlukları ve alınan dersleri belirlemek için sistemler çeşitli perspektiflerden karşılaştırılmıştır. Veri ve bilgi elde etmek için ilgili literatürün yoğun bir belgesel taraması uygulanmıştır. Çalışma, Hindistan'ın daha iyi yasal ve kurumsal yapılar geliştirerek, Afet Riskini Azaltma (DRR) faaliyetlerinin birleştirilmesi ve önceliklendirilmesinin, toplum katılımı, koordinasyon ve işbirliği mekanizmaları açısından Nijerya'dan daha etkili bir AY sistemi oluşturduğunu ortaya koymaktadır. Ayrıca, fon kaynaklarında şeffaflık eksikliği nedeniyle her iki ülkenin de AY fonlarını harekete geçirmek, yönetmek ve kullanmak için mücadele ettiğini ortaya çıkarmaktadır. Çalışmadaki bulgular, her iki ülkenin de AY sistemlerinin esas olarak doğal afetlere odaklandığını ve insan kaynaklı afetlerle başa çıkmak için etkili önleyici ve düzenleyici önlemlere çok az yer verildiğini göstermektedir. Çalışmada, idari ve mali sorunlar nedeniyle iki ülkeninde kapasite geliştirme faaliyetlerinde tam bir başarı sağlayamadığı sonucuna varılmıştır.

Anahtar Kelimeler: Hindistan Afet Yönetimi, Nijerya Afet Yönetimi, İnsan Yapımı Afet Yönetimi, Doğal Afet Yönetimi, Afet Riskinin Azaltılması.

This doctoral dissertation is proudly dedicated to:

The love of my life "Elnaz",

My cute little boy "Kiyan",

My Beloved mother and aunt, and

Loving memory of my reverend father

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LIST OF ABBREVIATIONS

BBB	Build Back Better
COSs	Civil Society Organizations
CBDRM	Community-based Disaster Risk Management
DCBA	Disaster Countermeasures Basic Act
DM	Disaster Management
DMCs	Disaster Management Centers
DRUs	Disaster Response Units
DRR	Disaster Risk Reduction
DRRM	Disaster Risk Reduction and Management
DDMA	District Disaster Management Authority
DDMP	District Disaster Management Plan
DDMF	District Disaster Mitigation Fund
DDRF	District Disaster Response Fund
EM-DAT	Emergency Events Database
EMVs	Emergency Management Volunteers
EOPs	Emergency Operation Plans
FBOs	Faith-based Originations
FEMA	Federal Emergency Management Agency
HFA	Hyogo Framework for Action
IFRC	International Federation of Red Cross and Red Crescent Societies
LDRRMF	Local Disaster Risk Reduction and Management Fund
LEMA	Local Emergency Management Agency
MDAs	Ministries/ Departments/ Agencies

MHA	Ministry of Home Affairs
NEC	Nation Executive Committee
NDMA	National Disaster Management Authority
NDMF	National Disaster Management Framework
NDMP	National Disaster Management Plan
NDRF	National Disaster Response Force
NDRRMF	National Disaster Risk Reduction and Management Fund
NEMA	National Emergency Management Agency
NERA	National Emergency Relief Agency
NIDM	National Institute for Disaster Management
NPDM	National Policy on Disaster Management
NDPC	Natural Disaster Prevention and Control
NGOs	Non-governmental Organizations
SFDRR	Sendai Framework for Disaster Risk Reduction
SDMA	State Disaster Management Authority
SDMF	State Disaster Mitigation Fund
SDRF	State Disaster Response Fund
SEMA	State Emergency Management Agency
SEC	State Executive Committee
UN	United Nations
UNISDR	United Nations International Strategy for Disaster Reduction
UNDRR	United Nations Office for Disaster Risk Reduction

Chapter 1

INTRODUCTION

1.1 Background

> *"The significance of disaster is brought sharply into focus when one takes a cross-cultural and international view"* (Dynes, 1988, p. 102).

In recent years, human suffering has increased as disasters have become more frequent and intense across the globe (Akter & Wamba, 2019; Mavhura, 2016). These disasters have enormous negative impacts on human lives, properties, and infrastructures. In the last decade, every year, natural disasters killed near 75000 and affected about 200 million people, while caused approximately 162.2 billion USD in economic losses which all are anticipated to rise in the next years (IFRC, 2015a). The key reasons for rises of such disasters are associated with different variables impacting human settlement, which consist of global climate change, inadequate government capacities at national and local levels, weak legislative frameworks, population growth, and the absence of effective disaster management (DM) institutions (Mukhtar, 2018; Rivera, Ceesay, & Sillah, 2020).

Indeed, disaster risks cannot be entirely eliminated, but they can be significantly mitigated through an all-inclusive, multi-sectoral, multi-dimensional, all-hazard, and multi-jurisdictional approach to DM (Ahmed, 2013). Governments clearly have a pivotal role in adopting and implementing a holistic and comprehensive DM by:

1- Placing DM as a central component within the structure of its government;

2- Enacting effective legal frameworks that precisely lay out all relevant stakeholders' mandates, duties, and roles at all levels; and
3- Establishing institutional frameworks and necessary procedures for collaborating with and assisting local-level administrations and communities (Ishiwatari, 2013; UNISDR, 2015).

In that sense, many nations in the world, based on their particular cultures, political structures, legal contexts, past experiences, availability of resources, and vulnerabilities to disasters, have developed their own DM system (Ministry of Home Affairs, 2013).

Due to the crucial role of DM systems in handling disaster risks, and reducing social and economic losses, the critical evaluation of them has become a significant area of focus for both disaster researchers and practitioners. Several scholars have studied the legal and institutional frameworks of such systems in different countries and evaluated their effectiveness and efficiency. Studies in this field can be generally categorized into three classes:

1. Studies that mainly focus on analyzing either the legal framework or institutional mechanisms of DM in a specific country. For instance, Ahmed (2013) analyzed the DM policies in Pakistan; Van Niekerk (2014) critically analyzed the legal basis of DM in the South African; and Gaire, Delgado, and González (2015) used the same lens to evaluate the DM legal framework of Nepal. These studies have tried to identify the key weaknesses of the current legal provisions and institutional frameworks to propose possible recommendations for improvements.

2. Studies that consider both the legislative and institutional frameworks of DM in a specific country. For instance, Bang (2014) investigated the DM in Cameroon and found that the country suffers from not only insufficient DM policies but also weak institutions at the national level; Lixin et al. (2012) analyzed and put forward some recommendations for the Chinese DM system by studying the country's legal and institutional structures; and Nepal, Khanal, and Sharma (2018) studied the DM in Nepal with an emphasis on the legal framework and institutional structures.
3. Comparative analysis of the DM system between different countries is the third class of studies. The key objective of these cross-national studies is to scientifically describe the existing similarities and differences in DM to learn from the successes and failures of others. For instance, Yustisia et al. (2020) compared DM systems between Indonesia and Japan and identified the main distinctions in terms of regulations and organizations; Katafono (2018) provided a comparative analysis of DM in Dominica and Vanuatu and addressed the common challenges and lessons learned; and Ullah and Gungor (2014) studied the efficacy of DM systems in Pakistan, Turkey, and the United States and acknowledged their shortcomings.

Despite the importance of comparative work in providing insight on DM policies and institutions internationally, raising awareness about the impact of disasters and degree of vulnerability on distinct nations, and creating opportunities for learning from the successes, mistakes, and experiences of others, there are relatively few cross-national and comparative studies around the world. To fill this gap, this study analyzes and

compares the DM systems in India and Nigeria, with particular attention on DM agencies at the national level.

1.2 Aim of the Study

The aim of this research is to study the efficiency of the DM systems in India and Nigeria by reviewing, analyzing, and comparing the legal and institutional frameworks of DM systems in both countries. Results and comparisons help to find the similarities, differences, common challenges, and lessons learned and conclude with a series recommendation to improve the existing systems.

1.3 Research Questions

In order to achieve the study's aims, the research questions that have been addressed are as follows:

1. What main disasters have happened in India and Nigeria and how have they impacted?
2. What acts and policies have each nation established to cope with disasters?
3. How DM organizations have evolved in each country?
4. What are the strengths and weaknesses of the DM system in each country?
5. What lessons can India and Nigeria learn from the experience of other countries in DM?
6. What measures can be taken to improve the current DM system in each country?

1.4 Significance of the Study

The results of this study are expected to draw the attention of legislators, policy-makers, and development practitioners in the field of DM to review their policies and plans in order to enhance the effectiveness of DM systems within each country studied

and assist other nations, especially developing countries with the high level of vulnerability of them.

1.5 Outline of the Study

This doctoral dissertation has 8 chapters. The study's description and background information are included in ***Chapter 1***, as well as an overview of the study's key research aims, questions, and contributions. ***Chapter 2*** is devoted to review related DM literature which is relevant and necessary for conducting this study. It also explains the definition of related terms to DM. ***Chapter 3*** covers the methodology of the study and discusses the reasons for the selection of the cases of this study. ***Chapters 4*** and ***5*** by explaining disaster profiles, DM laws, and institutional frameworks of DM, give an insight into the current DM systems in India and Nigeria, respectively. In ***Chapter 6***, to identify the strengths and shortcomings of the DM system in each country, the comparison between the DM systems in India and Nigeria from the point of view of legislation and organization structure is presented. ***Chapter 7*** presents the policy implications of this study and the final chapter summarizes the research results and offers ideas for changing the current situation and move towards more effective DM systems in India and Nigeria.

Chapter 2

LITERATURE REVIEW

This chapter is devoted to review of the literature which is relevant and necessary for conducting this study. The first three sections try to define and discuss the key terms and concepts which are used throughout the study to ensure their clarity and proper application. The fourth section provides the literature relevant to DM system and discuss the principal components and stages of it. The fifth section describes the progression of DM from a reactive approach to a holistic and proactive approach which focuses more on Disaster Risk Reduction (DRR) activities, capacity building, community participation, etc. It then reviews the previous studies in this field to fully understand the current situation and research gap.

2.1 Disaster Definitions

What is a disaster? The answer to this question is more difficult than it seems. According to Mayner and Arbon (2015), several definitions for the term disaster have been coined in the literature, however; there is no a consistent and widely acknowledged definition yet. The reason for the many different definitions is that DM is a multidisciplinary topic and scientists and practitioners from various scholars contribute to the literature on DM. Anthropologists, geologists, economists, sociologists, psychologists, public health experts, and businessmen each offers a different definition of disaster and its causes and consequences depending on their field of knowledge (Baker, 2009). Blanchard in his glossary, which gathered the definitions of terms and concepts related to DM, collected more than 70 different definitions of

disaster from various reference works (Blanchard, 2008). Papp (2019) points out that although these definitions vary, they are all based on at least two of these three characteristics:

- A quick, unexpected incident that causes
- Significant destructions, loss and damages and
- Surpasses the capacity of the society to handle it.

Mayner and Arbon (2015) also conducted a study on the terminology of disaster and identified more than 120 different definitions of disaster and analyzed them using text analysis techniques. They found that the definition provided by United Nations-International Strategy for Disaster Reduction- (UNISDR) is more comprehensive and of better quality. Since the main aim of this study is to analyze and compare the whole DM systems in India and Nigeria, it seems logical to apply a definition which is more comprehensive and includes all types of disasters. Therefore, this study follows the disaster definition proposed by the UNISDR. Table 1 presents some examples of different disaster's definition as well as the one proposed by the UNISDR.

The review of literature shows that disaster databases which collect and provide a variety of disaster-relate data have also applied different data collection methodologies. Lack of single approach for the numerical determination of disaster has led to a significant difference in the data of loss and damage among disaster databases (Huggel et al., 2015; Panwar & Sen, 2020; Papp, 2019). In order to collect reliable information and data from available international databases such as EM-DAT, NatCat and Sigma, this research has used EM-DAT. Because according to Panwar and Sen (2020), in compared to the two other databases, EM-DAT has the fewest undocumented records and contains more data.

Table 1: Disaster definitions

Source	Definition
UNISDR (2009, p. 9)	A serious disruption of the functioning of a community or a society involving widespread human, material, economic or environmental losses and impacts, which exceeds the ability of the affected community or society to cope using its own resources.
India (2005, p. 2)	A catastrophe, mishap, calamity or grave occurrence in any area, arising from natural or man-made causes, or by accident or negligence which results in substantial loss of life or human suffering or damage to, and destruction of, property, or damage to, or degradation of, environment, and is of such a nature or magnitude as to be beyond the coping capacity of the community of the affected area.
Rautela (2006, p. 802)	A state of extreme (usually irremediable) ruin and misfortune that leads to the breakdown of the social fabric and the affected community is unable to cope up with the event and often external assistance is required.
EM-DAT (2020)	A situation or event, which overwhelms local capacity, necessitating a request to national or international level for external assistance.
Council (2010, p. 4)	A serious disruption of the functioning of a community or a society involving widespread human, material, economic or environmental losses and impacts, which exceeds the ability of the affected community or society to cope using its own resources.
Cited in Blanchard (2008)	A disaster is an emergency considered severe enough by local government to warrant the response and dedication of resources beyond the normal scope of a single jurisdiction or branch of local government. (Carroll, 2001, p.467)
	An event, natural or man-made, sudden or progressive, which impacts with such severity that the affected community has to respond by taking exceptional measures. (Carter,1991)
	An occurrence that has resulted in property damage, deaths, and /or injuries to a community. (FEMA, 1990)

2.2 From Hazard to Disaster

According to NCTC (2005, p. 17), hazard is “a natural or human-caused threat that may result in disaster when occurring in a populated, commercial, or industrial area”. From this definition it can be deduced that hazard alone does not cause disaster. For instance, if a volcano occurs on a remote and isolated island, it is only considered as a natural event, not disaster. However, the occurrence of the same volcano in a densely populated area with high vulnerability level can become a disaster resulting in severe

damage to buildings and killing and injuring large numbers of people and completely disrupting their normal lives. In fact, disaster happens as the outcome of an interaction of factors including: exposure to a hazard; existing levels of vulnerability; and lack of capacity or actions to mitigate or handle the possible adverse impacts (UNISDR, 2009). The factors that cause a disaster are depicted in Figure 1.

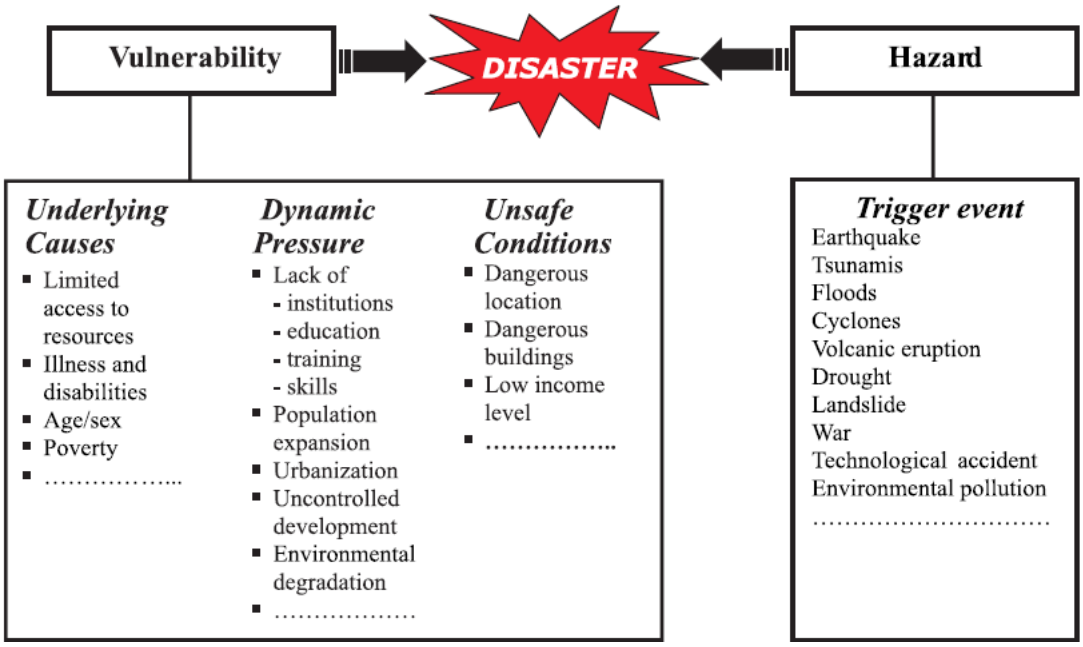

Figure 1: Factors that cause disaster (source:(CBSE, 2006))

As shown in Figure 1, a hazard (such as floods, cyclones, drought, etc.) becomes disaster with great loss of life and property only when combined with vulnerability. Given the difficulty, if not impossibility, of lessening or mitigating a hazard such as cyclone intensity or hurricane frequency, it becomes more important to prioritize addressing the concept of vulnerability in DM (Birkmann, Sorg, & Welle, 2017). Vulnerability is defined by UNISDR (2009, p. 30) as "the characteristics and circumstances of a community, system or asset that make it susceptible to the damaging effects of a hazard". A society's vulnerability to disaster depends on many factors. Dangerous location of the community, low income, age/gender, lack of proper

constructions, land use regulations, early warning systems, trainings, laws and policies, and uncontrolled development are some of the factors contribute to vulnerability (CBSE, 2006; Fekete, Hufschmidt, & Kruse, 2014; D. McEntire, Gilmore Crocker Mph, & Peters, 2010).

According to McEntire (2001), there are many interrelated factors that will increase the vulnerability. As can be seen in Table 2, he has categorized all factors that affect the amount of vulnerability into 6 groups.

Table 2: Factors affecting vulnerability (source: (McEntire, 2001))

Type of vulnerability	**Factors that interact to increase vulnerability**
Physical vulnerability	• the proximity of people and property to triggering agents; • improper construction of buildings; • inadequate foresight relating to the infrastructure; • degradation of the environment.
Social vulnerability	• limited education (including insufficient knowledge about disasters); • inadequate routine and emergency health care; • massive and unplanned migration to urban areas; • marginalization of specific groups and individuals.
Cultural vulnerability	• public apathy towards disaster; • defiance of safety precautions and regulations; • loss of traditional coping measures; • dependency and an absence of personal responsibility.
Political vulnerability	• minimal support for disaster programs among elected officials; • inability to enforce or encourage steps for mitigation; • over-centralization of decision making; • isolated or weak disaster related institutions.
Economic vulnerability	• growing divergence in the distribution of wealth; • the pursuit of profit with little regard for consequences; • failure to purchase insurance; • sparse resources for disaster prevention, planning and management.
Technological vulnerability	• lack of structural mitigation devices; • over-reliance upon or ineffective warning systems; carelessness in industrial production; • lack of foresight regarding computer equipment/programs.

2.3 Disaster Types

Researchers have categorized disasters differently, just as there are discrepancies in how disasters are defined. Different categorizations of disaster have been proposed by (EM-DAT, 2020; Mohamed Shaluf, 2007; Mohamed Shaluf & Ahmadun, 2006; Wang, Hsieh, & Huang, 2018). According to Biswas and Chaudhuri (2012); Lin Moe and Pathranarakul (2006); Wang *et al.* (2018) and many others, disasters according to what causes them, can be categorized, into natural and man-made disasters. Natural disasters are catastrophic events triggered by natural hazards such as earthquakes, cyclones, storms, etc. over which humans have hardly any control. Man-made disasters such as chemical pollution, industrial disasters, building collapses, etc., on the other hand, are those catastrophic events that result from human activities.

In addition to natural and man-made disasters, Mohamed Shaluf (2007); Parker and Handmer (2013) introduced another category, namely “hybrid disasters”, which are occurred as results of a combination of natural forces and human errors. Fukushima nuclear power plant disaster in 2011, is an example of hybrid disasters, in which a natural disaster -here a massive quake and following 15-meter tsunami- damaged reactor’s power and cooling systems and caused large emission of radionuclides into the air (Thielen, 2012).

The traditional classification of natural and man-made disasters is applied in this study because:

- Disaster statistics for this study were collected from EM-DAT in which disasters are classified into natural and man-made disasters.
- DM laws of two case countries are applied the same classification.

- Similar to Boyarsky and Shneiderman (2002), the author believes that hybrid disasters are in fact man-made ones, when forces of nature are released as results of technical defects or sabotages.

More details about different types of disaster are provided in Table 3.

Table 3: Disaster types (source: (EM-DAT, 2020; Mohamed Shaluf, 2007)

Disaster Group	Disaster subgroup	Definition	Disaster main type
Natural	Geophysical	A hazard originating from solid earth. This term is used interchangeably with the term geological hazard.	Earthquake, Mass movement, Volcanic activity
	Meteorological	A hazard caused by short-lived, micro- to meso-scale extreme weather and atmospheric conditions that last from minutes to days.	Extreme temperature, Fog, Storm
	Hydrological	A hazard caused by the occurrence, movement, and distribution of surface and subsurface freshwater and saltwater.	Flood, Landslide, Wave action
	Climatological	A hazard caused by long-lived, meso- to macro-scale atmospheric processes ranging from intra-seasonal to multi-decadal climate variability.	Drought, Glacial Lake outburst, Wildfire
	Biological	A hazard caused by the exposure to living organisms and their toxic substances (e.g., venom, mold) or vector-borne diseases that they may carry. Examples are venomous wildlife and insects, poisonous plants, and mosquitoes carrying disease-causing agents such as parasites, bacteria, or viruses (e.g., malaria).	Epidemic, Insect infestation, Animal accident
	Extraterrestrial	A hazard caused by asteroids, meteoroids, and comets as they pass near-earth, enter the Earth's atmosphere, and/or strike the Earth, and by changes in interplanetary conditions that effect the Earth's magnetosphere, ionosphere, and thermosphere.	Impact, Space weather
Man-made	Industrial accident		Chemical spill, Collapse, Explosion, Fire, Radiation, Oil spill, etc.
	Transport accident		Air, land and sea disasters
	Warfare		War, Civil strikes, Boom threats, terrorist acts, etc.

2.4 Disaster Management

The term DM refers to a method or technique used to predict, avoid, prepare for, and respond to all types of disasters (Oloruntoba, Sridharan, & Davison, 2018). The goal of DM is to limit or prevent possible negative consequences of hazards, to guarantee that impacted individuals receive fast and proper support, as well as accomplish efficient and rapid recovery (Alzahmi, 2015). There are several frameworks, methods, and techniques for dealing with disasters in the DM literature (Sawalha, 2020). Using thematic analysis, Nojavan, Salehi, and Omidvar (2018) identified 38 different DM models and categorized them into 4 main groups (see Table 4).

Table 4: Different DM models (source: (Nojavan et al., 2018))

Classification of models	Model titles	Explanations
Logical model	Traditional model, Expand and contact model, Kimberly model, Lechat model, Gupta model, etc.	Provide a simple definition of disaster stages and emphasize the basic events and actions that constitute a disaster.
Integrated model	Manitoba model, McCnokey model, PDCA model, Onion model, etc.	An integrated model of disaster management is a tool for organizing the involved activities in order to ensure effective and efficient implementation, and four factors can be identified for it: hazard assessment, risk management, mitigation and preparedness.
Cause model	Crunch model, PAR model, Littlejohn model	The cause category is not based on the idea of defining stages in a disaster. This category suggests some underlying causes of disasters.
Combinatorial model	Australian development gateway model, Cuny model, Wheel-shape model, etc.	Consists of combinatorial models in which the logical, integrated and cause models are combined to propose a model.

Among the various models mentioned in Table 4, traditional model is the most famous and widely applied DM model (Alzahmi, 2015; Nojavan *et al.*, 2018; Sawalha, 2020; Seaberg, Devine, & Zhuang, 2017; Sun, Bocchini, & Davison, 2020). Since the DM systems in both countries studied in this study are also based on traditional DM model, the implementation steps of this model are explained in the rest of this section.

As illustrated in Figure 2, the traditional DM model consists of four main phases: mitigation, preparedness, response, and recovery (Coppola, 2011; Sawalha, 2020).

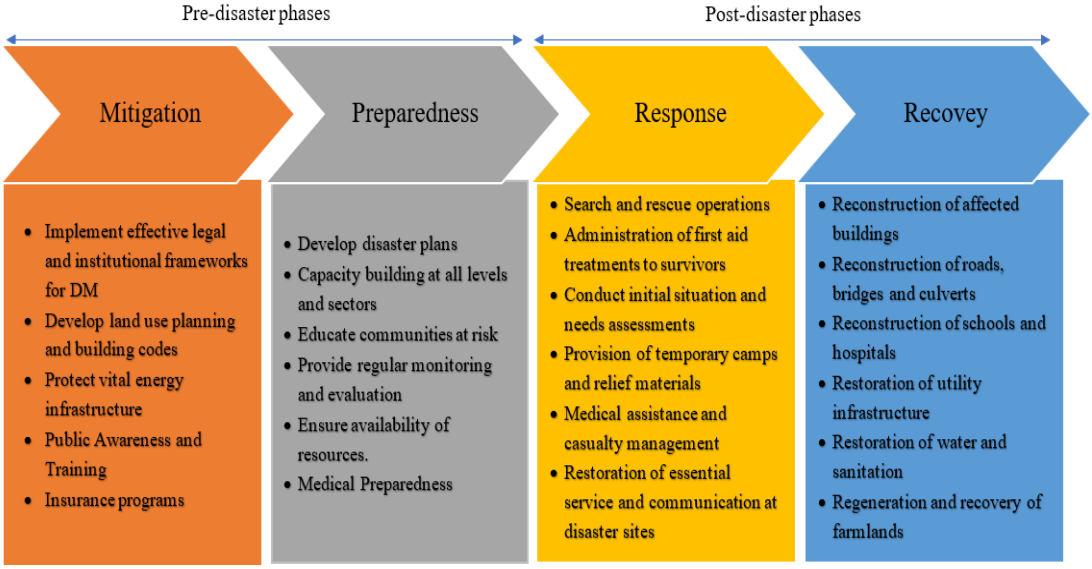

Figure 2: Traditional DM model (adopted from (Gougelet, 2016; Ministry of Home Affairs, 2009; NEMA, 2010))

Mitigation: Disaster mitigation is the cornerstone of DM. Mitigation is defined as a set of measures aimed at preventing a disaster, reducing, or eliminating the adverse impacts of any hazard (Bosher, Chmutina, & Van Niekerk, 2021; UNISDR, 2009). Nowadays, the growing impacts of natural and man-made disasters (Akter & Wamba, 2019) illustrates the need to further advance mitigation through well-coordinated measures. Disaster mitigation encompasses a wide range of structural and non-

structural measures such as promoting programs of education, training and technology transfer, monitoring hazards phenomenon, promoting mitigation activities as an integral part of development plan, implementing effective legal and institutional mechanisms for DM, increasing community participation in the entire DM process, implementing proper land use regulations and building codes, and insurance programs (Gireesh Kumar et al., 2021; Gougelet, 2016; Press & Hamilton, 1999).

Preparedness: Disaster preparedness can be defined as a set of activities taken by governments, organizations, societies, and people in advance to effectively prepare for, respond to, and recover from adverse consequences of any disaster caused by natural or man-made hazard (IFRC, 2000). Preparedness for disasters is a continual and interconnected process including a variety of actions such as developing early warning systems, providing disaster preparedness plans, capacity building, vulnerability assessment, ensuring availability of resources, establishing reliable information system to gather and share information, promoting disaster-related education and training, and developing evacuation procedures (Chan & Ho, 2018; NEMA, 2010; Twigg, 2004). According to Hagelsteen and Burke (2016), capacity building for DM is one of the main elements of preparedness. Within the context of DM, capacity building involves activities like training, knowledge development, and continuous development of the institutional and policy mechanisms (Scott et al., 2015) which helps in the formation of a better coordinative and collaborative partnership between all the sectors and stakeholders at all levels (Devendra Yadav & Akhilesh Barve, 2014).

Response: Disaster response is a set of multi-sectorial and multi-dimensional activities, tasks, and programs undertaken immediately after a disaster strikes to

maximize survival of victims, minimize property and environment damage, and provide basic needs of those affected by the disaster (Berktaş, Kara, & Karaşan, 2016; Chaudhuri & Bose, 2019; UNISDR, 2009). Search and rescue operations, initial damage assessment, first-aid treatment of injuries, distribution of relief items, mass care and sheltering, and coordination and collaboration of responders are among the main response activities (Cretney, 2016; Lekkas et al., 2020; Nazer et al., 2017). An effective disaster response requires appropriate coordination and collaboration among diverse actors involved in response process including governmental organizations, private sectors, volunteer organizations, and local community groups. However, due to the different and sometimes complex roles of each actor and stakeholder, creating an effective collaboration and collaboration mechanism is difficult to achieve (Perry, 2007).

Recovery: Recovery phase which has been started soon after the response phase includes programs, measures, and interventions aim at returning affected communities, businesses, or other entities to normal life that they had before the disaster (UNISDR, 2009). Disaster recovery is a complex and multifaceted process involving many activities such as replacing lost houses, restoring properties, restarting jobs, reviving companies, reopening public services, completely maintaining infrastructure, providing financial assistance, and improving facilities of impacted communities (Jordan, Javernick-Will, & Amadei, 2015; Labadie, 2008; Lekkas *et al.*, 2020; Rouhanizadeh & Kermanshachi, 2020). Recently, scholars and specialists emphasize that post-disaster recovery should be based on "Build-Back-Better" (BBB) concept (Dube, 2020; Su & Le Dé, 2020). BBB concept considers disasters as an exceptional opportunity to bring about changes in societies to reduce vulnerability to future disasters. Based on BBB concept, the rebuilding and recovery period following a

disaster provides unparalleled chance to promote fresh approaches, techniques, and methods to make societies stronger and more resilient to future disasters (Neeraj, Mannakkara, & Wilkinson, 2021; Su & Le Dé, 2020).

2.5 Paradigm Shift in DM and Roles of Government

Historically, disasters were considered as uncontrollable yet tragic event outside human power (Henstra & McBean, 2005). Based on this perspective, DM has been followed the reactive approach in which activities have been undertaken once disaster occurs, such as giving emergency supplies and relief (Sabur, 2012). As researches in this field progressed, it became evident that while hazards cannot be entirely eliminated, their negative consequences can be minimized through an all-inclusive, multi-sectoral, multi-dimensional, all-hazard, and multi-jurisdictional approach to DM (Ahmed, 2013).

According to this new paradigm, disasters are no longer considered as "acts of nature" but rather as symptoms of poor implementation of DM (Sabur, 2012). Following the new paradigm, several nations have amended and extended their DM system beyond mere relief and recovery activities and place a larger focus on "Disaster Risk Reduction" (DRR) a term used to refer to mitigation and preparedness measures (Chopra & Venkatesh, 2015; Murti & Mathez-Stiefel, 2019).

Governments clearly have a pivotal role to successfully implement this paradigm shift (Kong & Sun, 2021; Shah et al., 2020). They need to adopt a proactive approach and establish a holistic and integrated DM system from the national to the local level through effective legal and institutional frameworks (Ishiwatari, 2013; Meludu, 2011; UNISDR, 2015).

In this study, the terms “legal framework”, “legal arrangement”, and “legal mechanism”, which are used interchangeably, refer to a set of laws, policies, and other legal documents that lay down the basic rules for governmental and non-governmental measures related to DM. Also, the terms “institutional framework”, “institutional arrangement”, and “institutional mechanism”, which are used interchangeably, include a network of institutions and organizations at the central, state, local, and community levels involved in DM-related activities.

The roles of legal and institutional frameworks in DM have been acknowledged by disaster researchers and practitioners at both national and global levels (Ministry of Home Affairs, 2013). At global level, the Sendai Framework for Disaster Risk Reduction 2015-2030 (SFDRR) and its predecessor, the Hyogo Framework for Action (HFA) identify legal framework as a vital component of developing a holistic DM. The SFDRR lists four priorities for actions, the second of which is to “Strengthening disaster risk governance to manage disaster risk” (UNISDR, 2015, p. 14). The key initial stage to achieve this priority is to improve the DM’s legislations and policies and strengthen their execution (IFRC, 2015b).

Legal and institutional frameworks of DM are intertwined. Legal framework provides the necessary basis for the implementation of an institutional structure and its participants. Legislation defines structure of organizations at various tiers, and also the functions, duties, and authorities of diverse institutions and personals. Furthermore, institutional framework cannot have an acceptable performance without complete and comprehensive legal arrangements (Ministry of Home Affairs, 2013). Therefore, studies and analysis conducted on DM should be included a simultaneous evaluation of legal and institutional frameworks.

Several scholars have examined the legal and institutional frameworks of the DM system in various nations and assessed their efficacy and efficiency. The researches in this topic can be divided into three categories:

1. Studies that are primarily concerned with evaluating and analyzing either the legal framework or institutional mechanisms of DM in a particular nation. Generally, the main aim of such studies is to identify the key weaknesses of the current legal provisions and institutional frameworks to propose possible recommendations for improvements. The following are some examples of this category.

Mavhura (2016) studied Zimbabwe's DM laws to determine its strengths and weaknesses in terms of disaster preparedness. He found that lack of active community-level engagement in DM, absent of committed and necessary funds to conduct DM programs, centralization of authority, and an emphasis on hazard rather than vulnerability are some of the main flaws of the present DM legislations in the country.

Ahmed (2013) critically reviewed the DM Act 2010 in Pakistan. According to his findings, Pakistan DM Act is reactive and needs to be revised because it does not directly refer to DRR measures and also does not include provisions for financial processes.

Van Niekerk (2014) analyzed the DM legal framework of the South Africa and found out that lack of concrete guidelines for local government is one of the weakest points of the current disaster-related laws.

Gaire *et al.* (2015) used the same lens to evaluate the DM Act of Nepal. Based on their research, the current DM laws appear to be ineffective and out of date. Therefore, to

reduce the country's vulnerability, there is an urgent need for a new and integrated legal framework that pays attention to all aspects of DM.

Shah *et al.* (2020) analyzed the current institutional framework of DM in Pakistan. Their results show that DM organizations in Pakistan have several challenges such as jurisdictional overlap, overlapping of duties and tasks, absent of proper financial and non-financial resources, and lack of proper coordination and collaboration mechanism.

Similar researches have also been conducted in the countries studied in this study. Mashi, Oghenejabor, and Inkani (2019) reviewed the National Emergency Management Agency (NEMA) Act which is the central and national-wide law on DM in Nigeria. They listed the structural problems of this act as well as its operational weaknesses for achieving the priorities specified in the SFDRR. They found out that the act focused more on implementation and functions of NEMA than on developing action plans to mitigate or minimize the negative impacts of hazards. Furthermore, they mentioned that the act does not provide a clear guidance encouraging stakeholders to mobilize resources for DM, and also the NEMA lacks the authority to mandate other governmental and commercial organizations to include DRR measures into their activities.

Amede and Ejumudo (2021) also conducted a study about the Nigerian DM system using Bayelsa state as a case and attributed the reason for the ineffectiveness of the DM to the weakness of existing legal framework in the country.

Adefisoye (2015) limited the scope of his research to only evaluate the implementation of the National Disaster Management Framework (NDMF) in Nigeria. The NDMF is

a policy instrument to address the duties of federal, state and local governments, NGOs, and community leaders in DM. He found that the NDMF because of lack of complete legal foundation, proper funds, and enough knowledge has made little progress particularly at state and local levels.

In the case of India, Saha and Chowdhury (2020) examined the Disaster Management Act 2005 which is the fundamental law related to DM in India. They stated that although this act provides the necessary instruments to continue performing the role of preventing and mitigating the effects of disasters, it also has shortcomings. For example, the act just makes brief allusions on collaborating with local and community levels in preparation, execution, and evaluation of DM-related operations. The act appears to be ignorant toward the fact that all DM actions are limited to the active and voluntary participation and collaboration of the local communities.

Pandey (2016) also used the same lens and critically reviewed the Disaster Management Act 2005. He found out that enactment of Disaster Management Act 2005 posed some federal difficulties in India's DM. For example, it was challenged how the federal government can gain authority to issue directives to states for mandatory compliance in areas that have so far been recognized as state monopolies. Likewise, the establishment of a massive DM institution at federal level has been questioned, owing to the fact that the federal government's key authorities and responsibilities in DM are limited to formulating state-level legal arrangement to perform their specific roles.

2- ***Studies that consider both the legislative and institutional frameworks of DM in a specific country.*** The following are some examples of this category.

Bang (2014) critically reviewed and examined both legal and institutional frameworks of DM in Cameron. Results of his research revealed that the existing DM laws focus mostly on response programs rather than DRR measures. As a result, institutional frameworks related to preparedness and response measures at central, state, and local levels have more organizational transparency in comparison with organizational responsibilities for DRR activities. He also found out that community participation in DM activities is weak because DM laws have not clearly defined their roles and responsibilities.

Lixin *et al.* (2012) analyzed the legal and institutional structures of Chinese DM system to identify existing problems and weaknesses. They found that when a major disaster occurs in the country, the coordination between organizations becomes difficult because the country's DM system includes a large number of departments and organizations, each working on a specific aspect of DM process based on their priorities and goals. They also mentioned that using various "single style" DM laws instead of enactment of one all-inclusive law leads to the lack of a complete legal framework and insufficient legal protection in national DM.

Nepal *et al.* (2018) examined Nepal's DM legal and institutional mechanisms and discussed their merits, weaknesses, and restrictions. They found that DM's legal framework of the country concentrated on particular disasters like floods, landslides, and earthquakes at central level, with little attention on local level. They also pointed out that the majority of DM-related laws have prioritized preparedness and response phases above recovery and mitigation.

3- ***Comparative analysis of the DM system between different countries is the third class of studies.*** The key objective of these cross-national studies is to scientifically describe the existing similarities and differences in DM to learn from the successes and failures of others. The following are some previous studies in this category.

Yustisia Lestari *et al.* (2020) compared DM systems between Indonesia and Japan to identify the main distinctions in terms of legal and institutional frameworks. Their findings revealed that the Indonesian government's preparation in terms of DM legislation and organization has improved significantly over the last decade. However, it has some important weaknesses compared to Japan's DM system. For example, after a disaster hits the country, the coordination mechanism is less effective compared to Japan, because the existing laws do not precisely define the responsibilities and duties of all actors involved in DM, which sometimes causes overlap in their roles and duties. Also, in Japan, communities, due to having the necessary knowledge and awareness about the DM process, more actively and effectively participated in DM-related activities compared to Indonesia.

Katafono (2018) conducted a comparative analysis of DM between Dominica and Vanuatu. Notwithstanding both nations' histories of recurrent and intense disasters, the study found that Vanuatu has done a greater effort to guarantee that DRR measures, rather than only post-disaster activities, are fully rooted in its normative framework. By analyzing the previous disaster events in both countries, the author also concluded that Vanuatu thanks to having better financial resources was similarly in a better situation in terms of mitigation and preparedness activities than Domenica.

Ullah and Gungor (2014) studied the DM systems in Pakistan, Turkey, and United States and acknowledged their shortcomings. One of the important facts they found was the low level of public knowledge about DM in Turkey and Pakistan compared to the United States, which has caused serious problems in handling disasters at the state level. Furthermore, by reviewing and evaluating the handling of past natural disasters, they found that the institutional framework of DM in the United States at the federal level has been more effective than the other two countries.

Despite the importance of comparative work in providing insight on DM policies and institutions internationally, raising awareness about the impact of disasters and degree of vulnerability on distinct nations, and creating opportunities for learning from the successes, mistakes, and experiences of others, there are relatively few cross-national and comparative studies around the world. To fill this gap, this study analyzes and compares the DM systems in India and Nigeria, with particular attention on DM agencies at the national level.

Despite some clear distinctions in governance and social context, India and Nigeria were selected as cases for the study because both countries: (1) are extremely vulnerable to the wide ranges of natural and man-made disasters (NDMA, 2010; NEMA, 2010; Patil, 2012), (2) have exceptionally diverse populations and are among the world's biggest federations with three levels of government: federal, state and district/local (Han, 2013), and (3) are developing countries where disaster risks are increasing rapidly (Sayah Mofazali & Jahangiri, 2018). Due to these similarities, there are significant lessons to learn from their experiences.

Chapter 3

METHODOLOGY

This research aimed at studying the efficiency of the DM systems in India and Nigeria by exploring, analyzing, and comparing the current situation of DM-related legal and institutional frameworks. A qualitative research method was chosen in this research because of the exploratory nature and research aims. As Polit and Beck (2012) stated, qualitative method is particularly successful in exploratory investigations since they attempt to get a comprehensive picture of a phenomena and its underlying components.

The relevant secondary data were collected from various sources such as scientific journals, books, academic research projects and relevant national and international laws, regulations and reports to analyze the research issue.

This research has been conducted in three steps as follows:

1- ***Literature review and research on the current situation of DM in India and Nigeria.*** In order to gain a comprehensive understanding of the current literature, concepts, theories, and practices related to the study, a detailed literature survey about disasters, types of disasters, related terms and concepts, and roles of government in handling disasters. This step also provides a comprehensive introduction of Indian and Nigerian DM systems, including the countries' disaster profiles and the current DM policies and institution frameworks. EM-DAT was selected to collect and present the disaster profiles

of each country. The current DM systems including their legal and institutional mechanisms in both nations examined using documents in the databases of the respective national and state governments. These documents included the official governmental DM laws, acts, the national DM plans, and any additional supporting materials such as National DM framework and policy guidelines. To obtain further data, a snowball sampling strategy was applied utilizing references and papers available on those official government documents. Furthermore, databases of the United Nations Office for Disaster Risk Reduction (UNDRR), International Federation of Red Cross and Red Crescent Societies (IFRC) and other relevant institutions were used to collect more documents relevant to this research. Moreover, published researches and papers that were highly relevant to any of these two nations' DM legal and institutional frameworks were collected from different scientific databases such as Science Direct, SpringerLink, PubMed, and Google Scholar to complement the national and international documents and reports with scientific study on the issue.

2- ***Comparison analysis.*** The obtained data from previous step was used to conduct a qualitative comparative analysis in order to compare the DM systems in India and Nigeria from different points of view. To establish a common framework for comparison, important aspects of DM under the following thematic areas are formulated:

- ***Integration of DRR and DM law:*** to assess whether and to what extent the existing DM laws of these two countries are meeting their full potential in supporting DRR.

- ***Financing of DM:*** to examine financial mechanisms of DM in both countries and identify possible weakness and problems in the area.
- ***Community participation:*** to assess whether and to what extent the current DM legal and institutional frameworks of two countries are supporting and encouraging local community to participate in all phases of DM, including preparedness, mitigation, and response.
- ***Coordination and collaboration:*** to examine the coordination and collaboration mechanism among diverse parties, including governmental organizations, international organizations, private sectors, NGOs, CBOs, FBOs, volunteers, etc.
- ***All-hazard approach:*** to examine the scope of DM system in the two countries to determine whether all types of risks across all natural and man-made hazards are addressed or not.
- ***Capacity building:*** to evaluate capacity building activities within the context of DM like training, knowledge development, and continuous development of the institutional and policy mechanisms in both countries.

3- Policy implication and recommendation. The results of comparative analysis and all data gathered in the first two steps were used to propose policy implications and make recommendations.

India and Nigeria were selected as cases for the study because:

1. Both countries are extremely vulnerable to a wide range of natural and man-made disasters and have a long history of suffering great numbers of casualties from disasters (NDMA, 2010; NEMA, 2010; Patil, 2012). In 2018, India ranked first and Nigeria ranked fourth among the top ten countries with the

highest number of people affected by natural disasters. In the same year, in terms of the total death toll, India and Nigeria were ranked second and sixth, respectively. In that year, natural disasters cost around 1400 lives and affected over 23 million people in India, while in Nigeria, such disasters killed 300 individuals and impacted almost four million people (Sapir, 2019). At first glance, due to the massive population of India, there is a big difference between the two countries. However, if the data are standardized to population size, then in India, the numbers of people affected and died per 100,000 inhabitants are estimated to be 1756 and 0.1, respectively. While in the case of Nigeria, the aforementioned numbers are estimated to be 1990 and 0.15. It can be seen that after the standardization of data, there is not much difference in the mentioned statistics between the two countries.

2. Both countries have been affected by significant and frequent disasters in recent years. In 2019, India and Nigeria were both among the top ten most-hit countries by disasters triggered by natural hazards. More specifically, India (with 18 disasters) and Nigeria (with 7 disasters) were both ranked as the second most-affected countries in Asia and Africa, respectively (IFRC, 2020).
3. The statistical records of the main natural disasters in India and Nigeria indicate that the majority of these disasters were caused by climate- and weather-related hazards. In fact, in both countries, floods and droughts affected more people than any other disaster during 1979-2018 (see Tables 5 and 8).
4. According to World Disasters Report 2020, India and Nigeria are both categorized as “highly vulnerable” countries, meaning that they are both highly vulnerable to disasters (IFRC, 2020).

5. Both countries have exceptionally diverse populations and are among the world's biggest federations with three levels of government: federal, state, and district/local (Han, 2013) and are developing countries where disaster risks are increasing rapidly (Sayah Mofazali & Jahangiri, 2018).

Chapter 4

DISASTER MANAGEMENT PROFILE OF INDIA

4.1 Disaster Profile of India

India is a home, in varying degrees, to various types of destructive natural and human-made calamities due to its vast territory, unique geographic and climatic conditions, climate change, expanding population, extensive industrialization and urbanization, and socio-economic parameters (Ministry of Home Affairs, 2018; NDMA, 2010; Patil, 2012). In 2016, India was ranked second globally as the country most affected by the impact of weather-related disasters, and third as the nation with the greatest number of natural disasters. Furthermore, in terms of humanitarian impact, India witnessed the highest mortality and affected people due to natural disasters in 2017 (Crunch, 2018; Debarati, Hoyois, & Below, 2016; Eckstein, Künzel, & Schäfer, 2017).

Approximately 80% of India's land is prone to one or more types of natural disasters (Patil, 2012). To be more specific, 59% of the land, 68% of the farmland, and 76% of the coastline are vulnerable to earthquakes, droughts and tsunamis, respectively. Additionally, river erosion has the potential to affect around 12% of the territory of India (Ministry of Home Affairs, 2018). The multi hazards areas around India are illustrated in Figure 3.

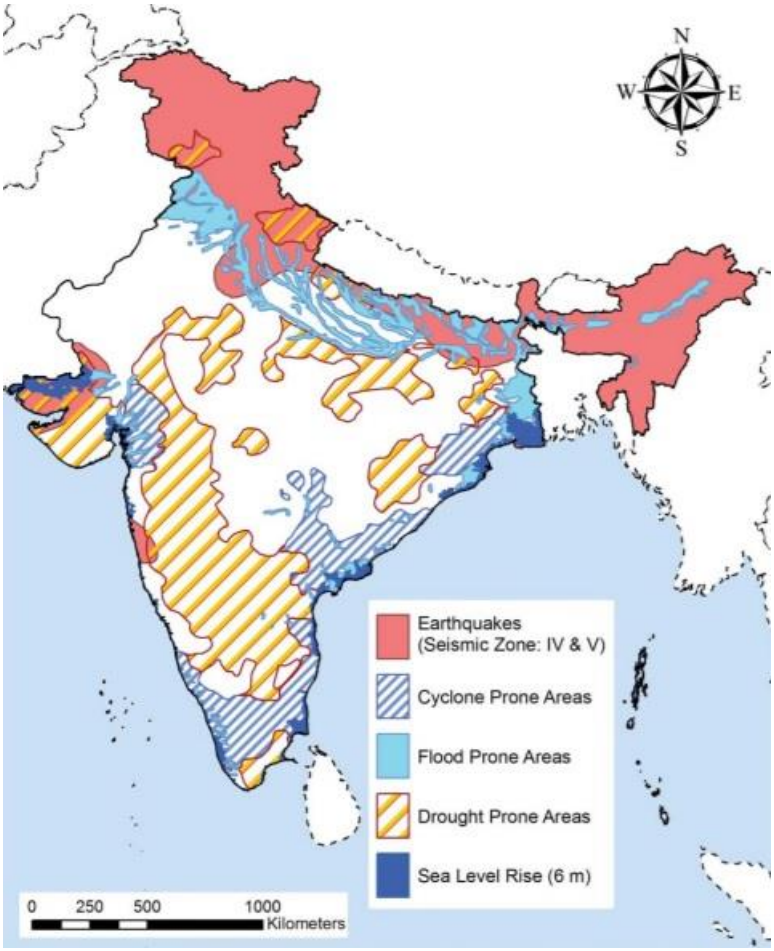

Figure 3: Multi hazards map of India (source: (Chakraborty & Joshi, 2016, p. 311))

Findings show that over the last two decades in India, due to natural disasters, about 4500 people died and 55 million were affected every year (EM-DAT, 2020). In addition to the humanitarian impacts, according to the recent report prepared by the UNDRR, between 1998 to 2017, India has suffered direct economic losses valued at $79.5 billion due to natural disasters (Pascaline & Rowena, 2018). As Figure 4 illustrates, natural disasters in India have increased their economic impact over the last decades.

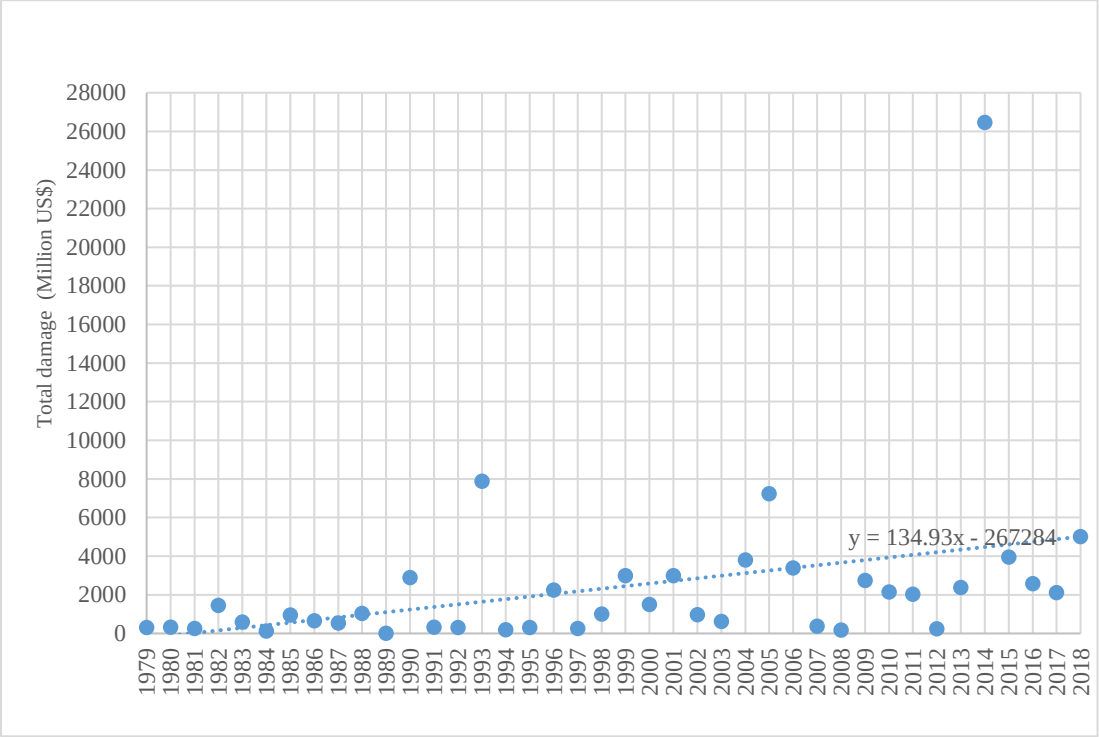

Figure 4: Economic impacts on natural disaster in India (own elaboration with data from (EM-DAT, 2020))

Table 5 shows the statistical record of the main natural disasters that occurred during 1979-2018 in India.

Table 5: Natural disasters in India (1979-2018) (compiled by author based on (EM-DAT, 2020))

Type of Disaster	Frequency (times/year)	Average of people affected (persons/year)	Average of life lost (persons/year)	Average of economic damage (1000 US$/year)
Drought	0.2	27978846	8	134388
Earthquake	0.6	731106	1281	135828
Epidemic	1.5	10200	401	-
Flood	6.4	20574278	1318	1580169
Landslide	1.1	98677	86	1397
Storm	3.5	1875458	671	578287
Extreme temperature	1.3	6	408	13949

From the above table, in terms of death toll and total economic damage, floods are the main natural disasters in India. In fact, flooding is the most regular disaster in India

with one-eight of the nation experiencing flooding each year. Between 1979 and 2018, on average per year, India experienced 6.4 floods that have killed more than 1300 individuals and caused billions of dollars in losses to country's economy. The major and deadliest flood disasters in India are mentioned in Table 6.

Table 6: The deadliest flood disasters in India (compiled by author based on (EM-DAT, 2020))

Year	Location	Number of people have died	Number of people have affected	Economic damage (1000 US$)
2013	Uttarakhand flood	6054	500000	1100000
1994	Most of the country	2001	12000000	175000
2020	Assam flood	1922	1300000	7500000
2019	Kerala flood	1900	3000000	10000000
1998	Assam flood	1811	29227200	-
1980	Gujarat flood	1600	30000000	320000
1995	Bihar flood	1479	32704000	258000
1997	Gujarat flood	1442	29259000	-
1987	Bihar flood	1200	18000000	545000
2005	Mumbai flood	1200	20000000	3330000

Continuous and heavy monsoon rains, spreading massive flood water across a reduced river channel, poor flood management, and inadequate drainage mechanism are some of the most likely reasons of flood in India (Mohanty, Mudgil, & Karmakar, 2020).

The second common natural disaster in India which has devastating impacts on a substation portion of the population's livelihood and economy is drought. Only in 2015, as a result of insufficient and erratic monsoon rain, India's droughts afflicted 330 million individuals distributed over ten states with overall economic loss of $3 billion (EM-DAT, 2020). Since approximately 68 percent of the nation’s farmlands is drought-prone, droughts are also the leading cause of low crop yields and famines in India (Kala, 2017).

4.2 DM Law in India

The Disaster Management Act, 2005 (hereinafter referred to as the Indian Act) is the central and nationwide legal framework governing complete spectrums of DM from prevention, risk reduction, preparedness, response to rehabilitation and recovery in India.

Prior to 2005, India lacked a comprehensive DM law, and disasters were dealt with in a reactive, relief-centric, and post-disaster manner. In fact, historically, the Indian DM, due to repeated experiences of flood and drought was mainly focused on relief efforts related to these two disasters. And because both flood and drought have significant impacts on agriculture, until 1999, the Ministry of Agriculture was the core ministry for DM (Ministry of Home Affairs, 2013). Following some major natural disasters, including the Odisha super cyclone in 1999 which caused about 10,000 deaths, the 2001 Gujarat earthquake which caused almost 20,000 deaths, and the Indian Ocean tsunami of 2004, causing immense loss of life and property, the Indian Act was enacted and the responsibly of handling disasters was shifted to the Ministry of Home Affairs (Madan & Routray, 2015).

By the enactment of the Indian Act, DM of India has evolved from a reactive approach, which mostly emphasized relief-centric response, to a proactive and comprehensive approach through focusing more on prevention and risk mitigation (Ministry of Home Affairs, 2013).

The Indian Act formulated a multi-level DM system extending from the federal level to the state and district levels and outlined institutional structures and defined major functions of stakeholders involved at all levels.

The Indian Act consists of 11 chapters and 79 sections. The first chapter contains preliminary aspects such as the title, extent, and definitions of different terms which have been mentioned in the Act. Chapters 2-4 are concerned with the establishment, membership, powers, and functions of the National Disaster Management Authority (NDMA), State Disaster Management Authorities (SDMAs), and District Disaster Management Authorities (DDMAs), at national, state, and district levels, respectively. While Chapter 5 sets out the measures that the Central and State governments must take regarding DM, Chapter 6 deals with the functions of the local-level authorities. Chapter 7 and 8 deal with the creation of the National Institute of Disaster Management (NIDM) for capacity development and the National Disaster Response Force (NDRF) for the aim of specialist response. In addition, the provisions for financial mechanisms are addressed in Chapter 9 and the provisions related to offenses, penalties, and punishments are covered in chapter 10. The final chapter of the Indian Act deals with miscellaneous matters such as the prohibition of discrimination, the powers of governments to issue a direction, request resources, and make or amend rules and regulations. Figure 5 shows the outline of the Indian Act.

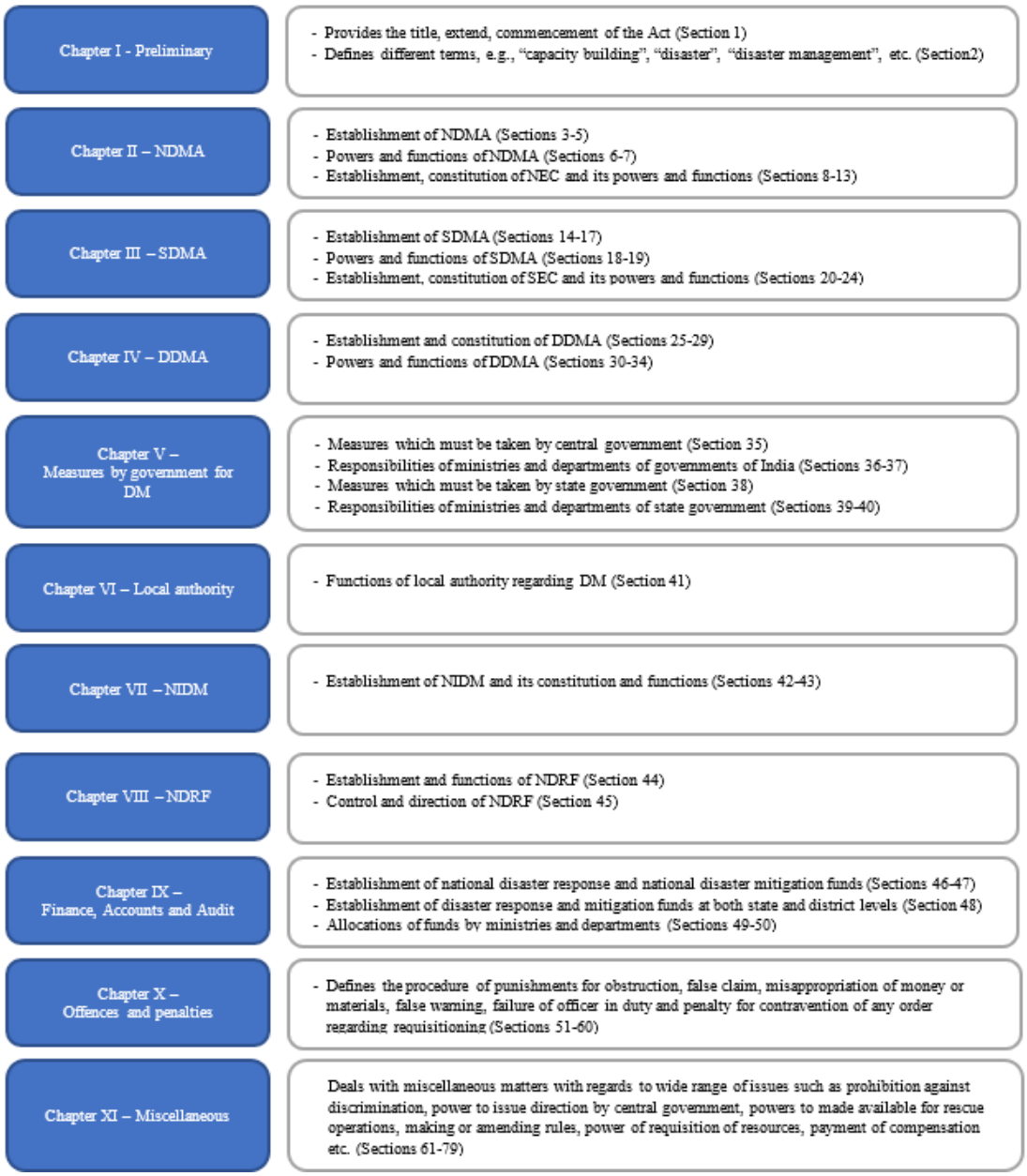

Figure 5: Outline of the Indian Act (compiled by author based on (NDMA, 2005))

Following the enactment of the Indian Act, as per Section 6 of the Indian Act, the National Policy on Disaster Management (NPMD) with the vision to build a safe and disaster resilient country was formulated by the NDMA and approved by the Union Cabinet in 2009. The NPMD basis on the Indian Act, provides a holistic framework covering all components of DM to handle all types disasters. Figure 6 illustrates the outlines of NPMD.

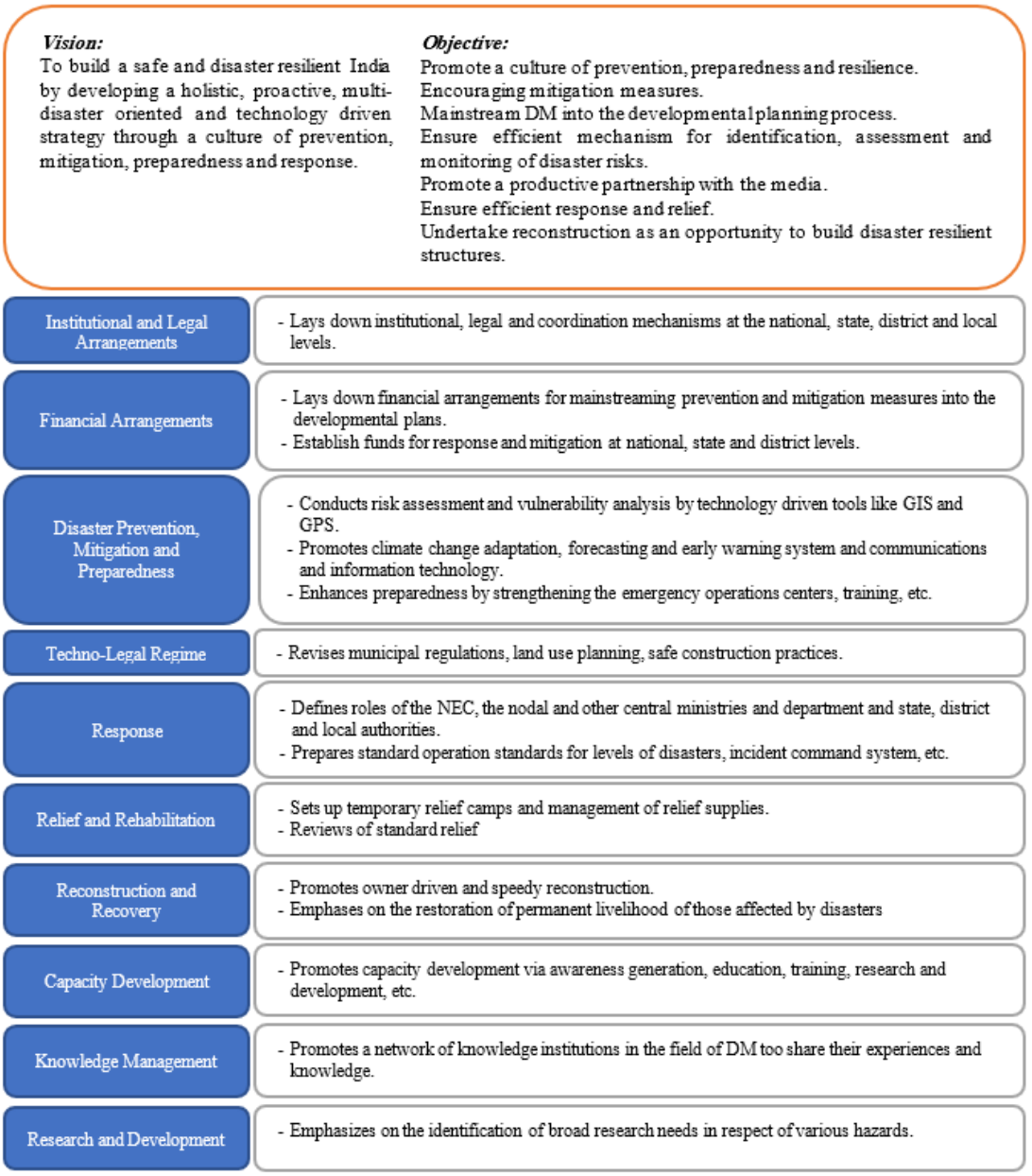

Figure 6: Outline of NPMD (compiled by author based on (Ministry of Home Affairs, 2009))

The National Disaster Management Plan (NDMP) is another main document related to DM in India at the national level. The NDMP is prepared by the NEC under the provision of Section 11 of the Indian Act and approved by the NDMA. Making India resilient, reducing disaster's impacts on people, properties, economy and environment, and increasing abilities of the country to handle all types of disasters are the main aims of the NDMP. The NDMP provides an overarching planning framework for all aspects

of DM and servers as a guide for translating the Indian Act and the NPMD into action. The NDMP is a dynamic document that is revised and updated at regular intervals to reflect the latest DM best practices and expertise. The last version on NDMP was unveiled in 2019 and has 14 chapters. The outline of NDMP 2019 is shown in figure 7.

Figure 7: Outline of NDMP (compiled by author based on (NEC, 2019))

4.3 Institutional Framework of DM in India

Figure 8 represents the organizational set-up for DM in India at three levels with the linkage with the key stakeholders.

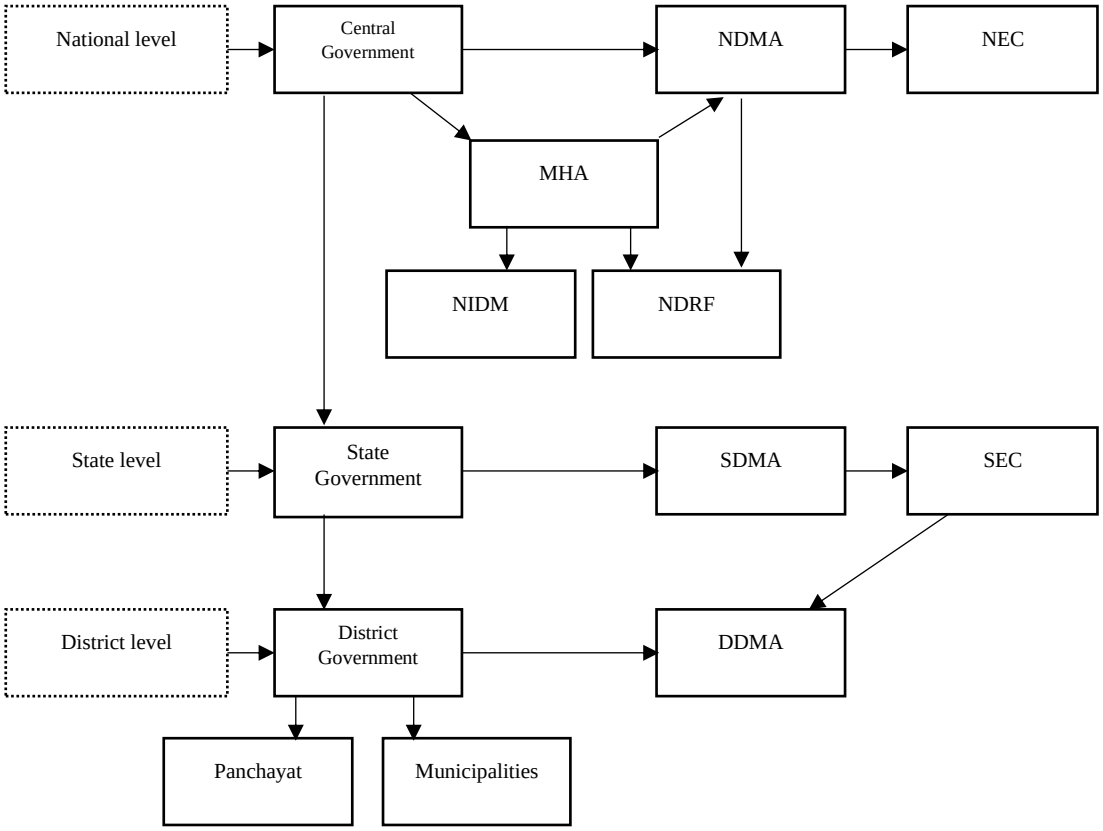

Figure 8: Institutional framework of India (adapted from (Carter & Pozarny, 2016; Ministry of Home Affairs, 2018; NDMA, 2005))
Note: NDMA = National Disaster Management Authority; NEC = National Executive Committee; MHA = Ministry of Home Affairs; NIDM = National Institute of Disaster Management; NDRF = National Disaster Response Force; SDMA = State Disaster Management Authority; SEC = State Executive Committee; DDMA = District Disaster Management Authority.

At the national level, there are four high-profile bodies; the NDMA, NEC, NIDM, and NDRF. The NDMA vested with the MHA with the Prime Minister as chairperson, acts as the central body for providing various laws, plans, guidelines, and codes for DM in the country (NDMA, 2005) as well as coordinating and implementing the activities related to preparedness and response (Madan & Routray, 2015).

The NEC, the executive wing of NDMA, is led by the Union Home Secretary and consists of 14 secretaries from various ministries and departments. Supporting the NDMA in carrying out its tasks is the NEC's main role.

The NIDM, in coopetition with other research institutes, has major responsibility of scheduling and developing capacity building programs, training, and conducting studies related to DM.

The NDRF is a special force that was established with eight battalions of federal paramilitary armies in 2006. The ultimate objective of establishing the NDRF is to provide a specialized response to all types of disasters. The NDRF currently consists of twelve battalions, each with 1149 personnel located around the nation according to the country's risk profile and to reduce reactive time. The NDRF is directed and controlled by NDMA; however, the NDRF's director general is selected by the federal government.

At the state level, the SDMA, led by the state chief minister, is tasked with establishing DM policies and plans in compliance with NDMA's standards, as well as serving as the state's coordinating, implementing, and monitoring body for DM. At this level, the SEC is also chaired by the state chief minister, has been charged with assisting SDMA in carrying out its duties.

At the district level, DDMA, led by the district magistrate, is a body for planning, directing, and implementing district-level DM efforts in accordance with the NDMA and SDMA standards. The vital roles and functions of the main DM’s actors in India are shown in Table 7.

Table 7: Roles and functions of the major bodies in the Indian DM (sources: (Ministry of Home Affairs, 2009, 2013; NDMA, 2005; NEC, 2019))

	Institution name	**Vital roles and functions**
National level	*NDMA*	- Central agency for providing laws, plans, guidelines and codes for all aspects of DM. - Approving national plan prepared by NEC and DM plans submitted by ministries. - Governing the implementation of the issued laws and plans in the field of DM. - Provisional supports to other countries hit by serious disasters. - Establishing comprehensive policies for the NIDM's operation.
	NEC	- Acting as the DM's coordination and monitoring body. - Assisting the NDMA in carrying out its duties. - Preparing the NDMP and monitoring and coordinating its execution. - Monitoring and coordinating the implementation of ministries' DM plans as well as all other national laws, policies, and guidelines issued by NDMA. - Providing necessary guidelines, advise and technical supports to ministries or departments of Government of India as well as the state governments in order to prepare their DM plans and also monitoring the implementation of such plans. - Coordinating response in the event of any disasters through directing the related ministries, the state governments, Armed Forces, Central Armed Police Forces (CAPF), NDRF, civil defense volunteers, home guards, fire services, and other uniformed services. - Increasing the level of education and awareness about DM.

	Institution name	Vital roles and functions
National level	*NDRF*	- Providing specialist response support to the affected states or districts in case of any type of disasters.
	NIDM	- Developing and implementing training modules, educational materials, and all-inclusive human resource capacity building programs for all spectrums of DM. - Conducting researches in the field of DM. - Documenting and developing the national-wide information base. - Promoting awareness generation. - Assisting nationwide policymakers, state-level government and other research and training institutions to efficiently carry out their duties and functions.
State level	*SDMA*	- Establishing state-wide DM policies and programs. - Approving state plan prepared by SEC. - Providing procedures on DM which should be followed by departments of the state. - Approving DM plans submitted by other departments of state. - Coordinating the execution of state plan. - Offering provision of budget regarding that preventive and mitigative activities. - Ensuring that preventive and mitigative activities are merged with the development plans.

	Institution name	**Vital roles and functions**
State level	*SEC*	- Assisting the SDMA to perform its functions. - Developing state's DM plan. - Coordinating and monitoring the implementation of the national laws, plans, guidelines issued by NDMA and SDMA, and the plans which are prepared by the state/district governments. - Providing necessary procedures and technical supports to the state/district governments in order to prepare their DM plans as well as monitoring the execution of such plans. - Coordinating and directing response measures of the state government departments or any other authority or agency for all kinds of disasters. - Assessing how vulnerable various regions of the state are to various types of catastrophes and what steps should be done to prevent or mitigate them. - Coordinating response in the event of any disasters - Promoting required training programs, education and awareness according to the vulnerability of the state.
District Level	*DDMA*	- Developing district's DM plan. - Coordinating response to any disaster. - Organizing and coordinating specialized training programs. - Coordinating and monitoring the execution of all federal, state, and district policies, plans and guidelines. - Facilitating community training and awareness programs. - Reviewing the state capacities for responding to any disaster. - Providing necessary guidelines and technical supports to the local-level stakeholders to perform their duties.

Chapter 5

DISASTER MANAGEMENT PROFILE OF NIGERIA

5.1 Disaster Profile of Nigeria

Nigeria, Africa's most populous country, is situated on Africa's western coast, and its population is over 190 million people. The country is vulnerable to natural disasters such as drought, epidemics, flooding, land sliding, and storm, as well as man-made disasters such as oil spillage, terrorist attacks, and oil pipe blasts (NEMA, 2010; Sadiq, 2012). In 2018, Nigeria was ranked fourth and sixth amongst the nations with the largest number of people impacted and died by disasters, respectively (Sapir, 2019).

Table 8 gives a profile of natural disasters that affected Nigeria during 1979-2018.

Table 8: Natural disasters in Nigeria (1979-2018) (compiled by author based on (EM-DAT, 2020))

Type of Disaster	Frequency (times/year)	Average of people affected (persons/year)	Average of life lost (persons/year)	Average of economic damage (1000 US$/year)
Drought	<0.1	76923	-	1823
Epidemic	1.5	6371	623	-
Flood	1.2	316721	46	23626
Landslide	0.1	46	1	-
Storm	0.1	436	4	26

It could be seen from Table 8 that flooding is a type of disasters which has far-reaching consequences in Nigeria. Floods in the country have affected over 12 million people and caused over 1790 deaths between 1979 and 2018. Only as a result of the 2012 floods, which are considered as the worst flood disaster in Nigeria in recent history,

363 individuals lost their lives and over 2.3 million were displaced (Echendu, 2020). The major and deadliest flood disasters in Nigeria over the past years are presented in Table 9.

Table 9: Major flood disasters in Nigeria (compiled by author based on (EM-DAT, 2020))

Year	Location	Number of people have died	Number of people have affected	Economic damage (1000 US$)
2012	Nasarawa, Niger, Plateau, Adamawa, Bauchi, Gombe, Taraba, Yobe, Jigawa, Kaduna, Kano, Katsina, Kebbi, Anambra, Ebonyi, Cross River, Lagos, Benue	363	7000867	500000
2001	Jigawa, Kano provinces	200	84065	3000
2018	Kogi, Delta, Anambra, Niger	199	1922332	275000
2020	Jigawa, Kebbi, Kwara, Sokoto, Zamfara	155	193425	100000
1988	Kano, Borno, Oyo states	130	300000	-
2011	Ibadan North, Ibadan South-West, Oluyole, Ido, Ibadan North-West, Egbeda, Ona Ara, Ibadan North East, Lagelu, Akinyele districts (Oyo province)	120	3000	-

Using geospatial techniques, Njoku, Efiong, and Ayara (2020), found that 19 of Nigeria's 36 states, particularly communities in the Niger Delta, around the lagoons of Lagos, along River Niger, Benue, and the Cross-River are at high risk of flooding. The flood risk map of the country is shown in Figure 9. Low-risk areas are areas where the probability of flooding is almost zero, and high-risk areas are areas where floods can happen at any time due to seasonal and scattered rains, dam overflows, and rising ocean water. Medium hazards are areas that are prone to flooding, but not as high-risk areas.

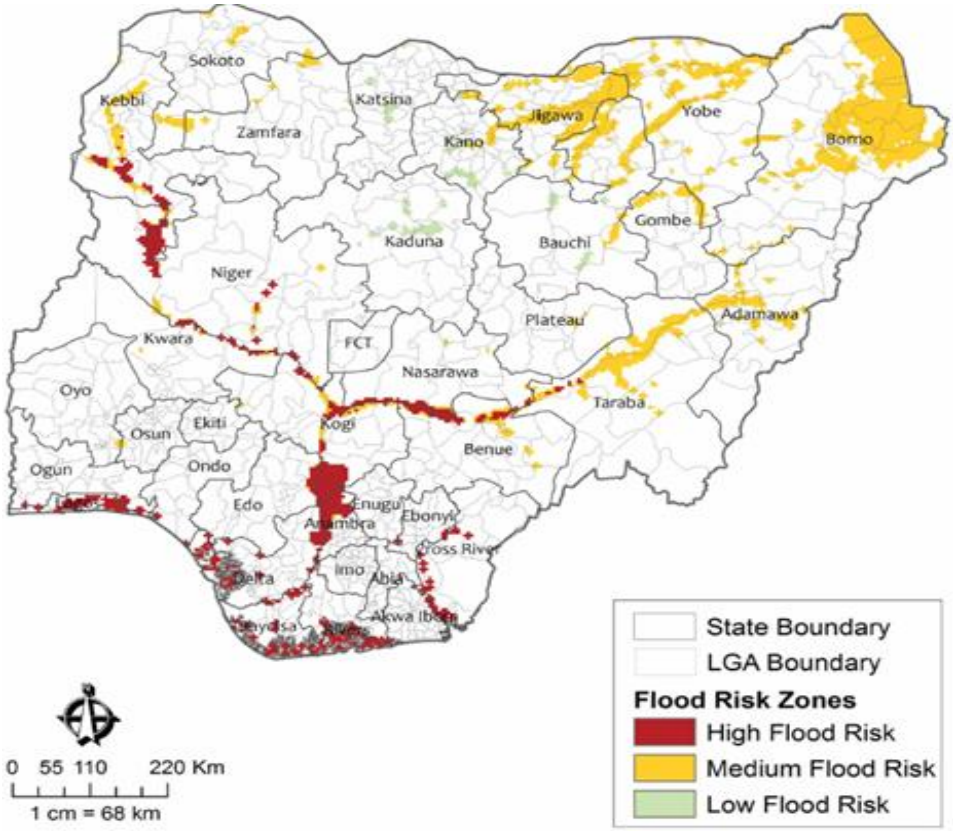

Figure 9: Flood risk map of Nigeria (source:(Njoku *et al.*, 2020))

Flooding in the country is due to many factors, including tropical rains, ocean surges, poor drainage and waste management systems, and unregulated urbanization (Echendu, 2020; Sadiq, 2012).

Drought is another main hazard in this country, although less common, affects many individuals. As can be seen from Figure 10, the nation's northern regions, in areas within the Sudan-Sahel belt are at high risk of drought. For instance, the occurrence of a severe drought in the northern states of Nigeria in the early 1970s caused devastating impacts on food supply, livelihood, socio-economic of millions of individuals in the arena (Adedeji et al., 2020).

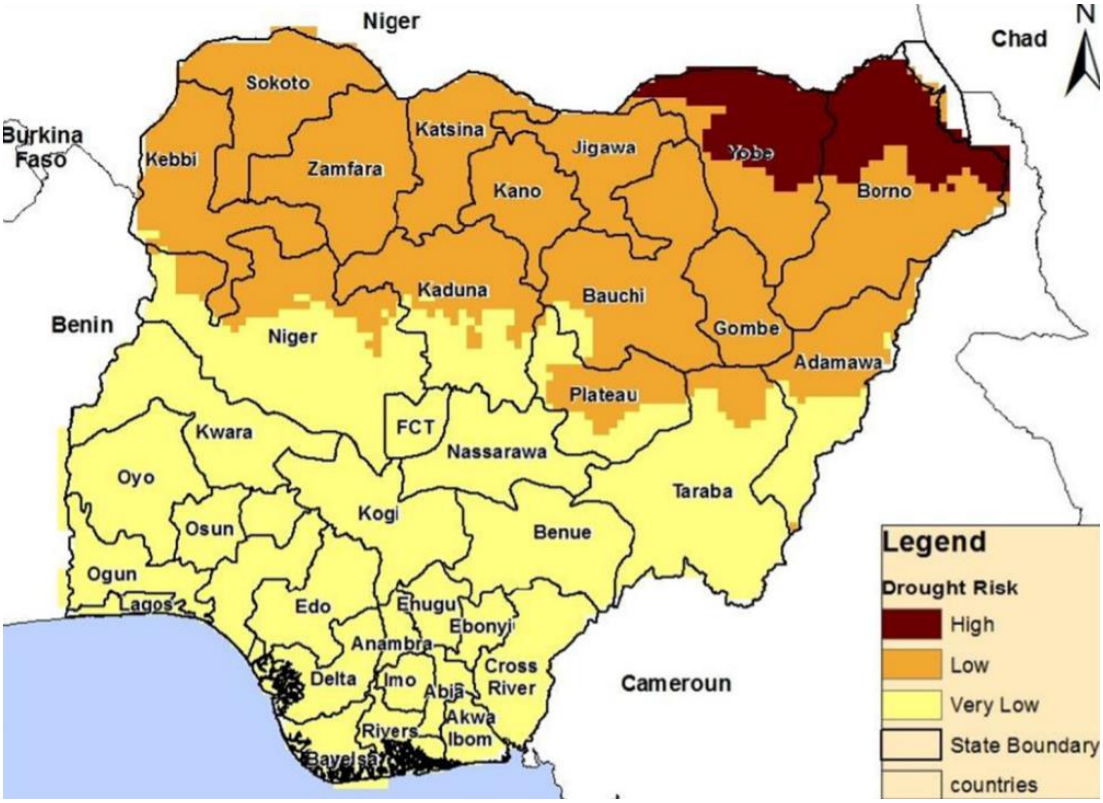

Figure 10: Drought risk map of Nigeria (source:(Adedeji *et al.*, 2020))

5.2 Disaster Management Law in Nigeria

DM in Nigeria began its foundation in 1906 by establishing the Fire Brigade. In addition to its core firefighting duty, the agency was tasked with providing humanitarian assistance during emergencies (NEMA, 2010). In 1973, the country suffered a devastating drought resulting in enormous negative consequences for lives, properties, and socio-economic losses. As a result, the National Emergency Relief Agency (NERA) was established in 1976 by Decree 48 of the 1976 NERA Act, with the general purpose of handling relief supplies for victims throughout the country (Adefisoye, 2015; Olanrewaju et al., 2019). Since the scope of the NERA Act was limited mostly to relief-based activities and had inadequately structured for DM (Alabi et al., 2017), in 1999, the central government of Nigeria enacted the NEMA Act to provide a comprehensive legal framework to handle both natural and man-made disasters in the country.

The NEMA Act has 6 parts and a schedule which aims at broadening DM in Nigeria from federal to state and local levels. It mostly addresses the creation of the NEMA at the federal and the State Emergency Management Agency (SEMA) at the state level as well as their functions, powers, the appointment of staff, and financial provisions. Figure 11 shows the outline of the NEMA Act.

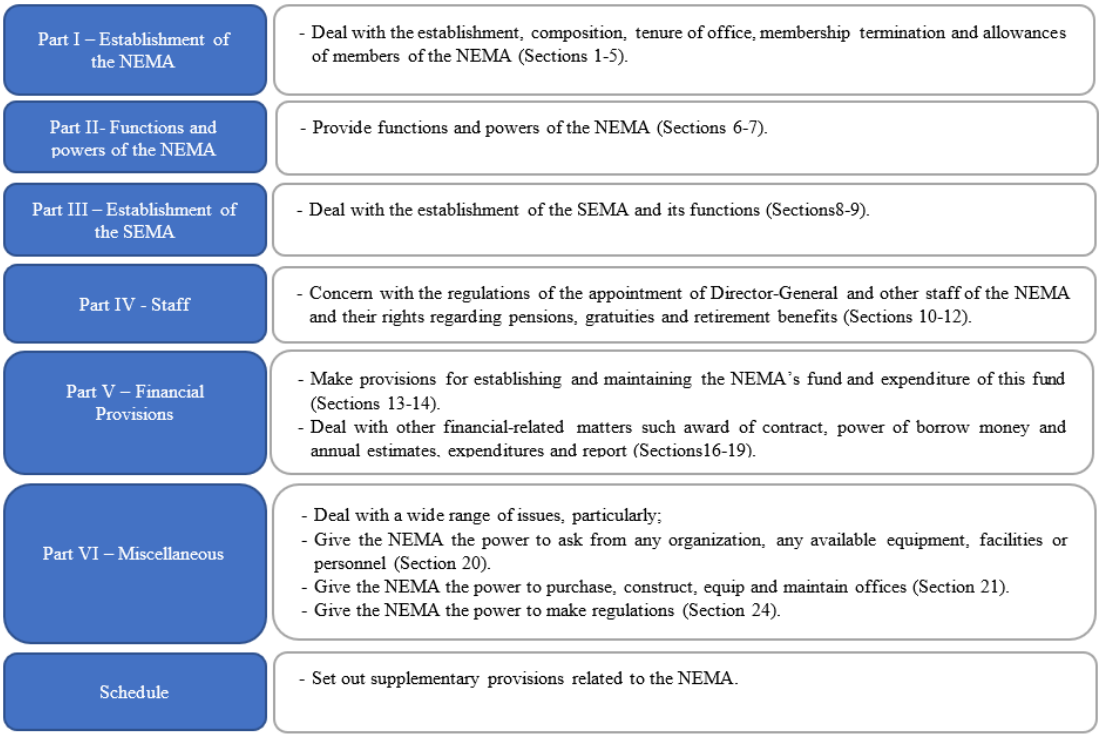

Figure 11: Outline of the NEMA Act (compiled by author based on (NEMA, 1999))

As can be seen from Figure 11, much emphasis of the NEMA Act has been placed on the administrative and financial elements of NEMA's formation and operation as the country's principal national-level organization responsible for DM. In fact, The NEMA is the top organization at the federal level for formulating policies and coordinating plans on all activities relating to DM in the country, based on Section 6.a of the NEMA Act. Throughout the years, the NEMA has faced several gaps and learned lessons in the implementation of plans. As a result, in 2010, NEMA developed

the National Disaster Management Framework (NDMF) to provide a better coordinating and collaborating systems for DM. The NDMF is a policy instrument to address the duties of federal, state and local governments, NGOs, and community leaders in DM (NEMA, 2010). The outline of the NEMF is presented in Figure 12.

Figure 12: Outline of NDMF (compiled by author based on (NEMA, 2010))

5.3 Institutional Framework of DM in Nigeria

Figure 13 represents how different organizations in Nigeria collaborate and share responsibilities to achieve a mutual goal which is reducing the likelihood and severity of disasters.

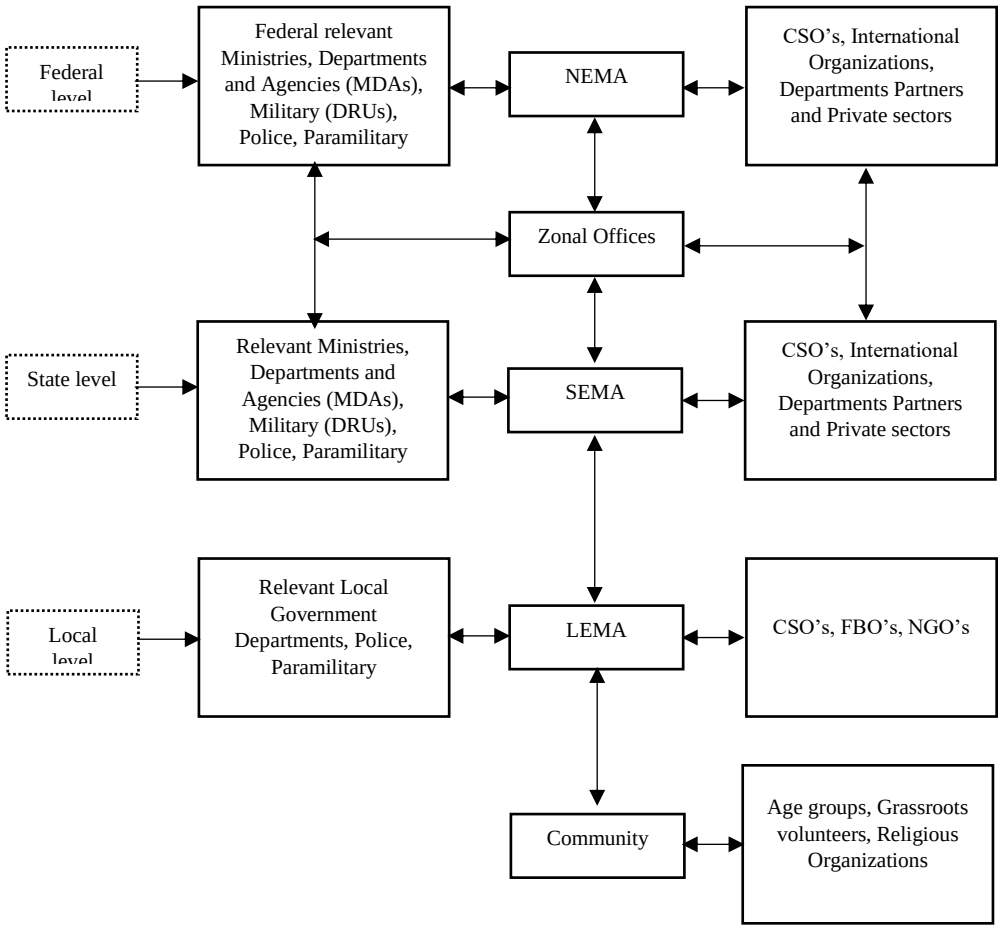

Figure 13: Institutional framework of Nigeria (adapted from (NEMA, 1999, 2010))
Note: NEMA = National Emergency Management Agency; CSO's = Civil Society Organizations; SEMA = State Emergency Management Agency; MDAs = Ministries, Departments and Agencies; DRUs = Disaster Response Units; FBOs = Faith-Based Organizations; NGOs =; LEMA = Local Emergency Management Agency.

The NEMA Act and NDMF provide the creation of the NEMA at the federal level, SEMA at the state level, and the LEMA at the local government level (NEMA, 2010). All of these organizations are responsible for capacity development to prevention, mitigation, preparation for, response to, and recovery from disasters (Sadiq, 2012).

Other key actors of Nigerian DM system consist of MDAs, the paramilitary forces, Emergency Management Volunteers (EMV), CSOs, and DRUs.

At the federal level, as per the provisions of the NEMA Act and NDMF, through its six zone offices located around the nation, the NEMA is the primary body for DM. The NEMA zonal offices act as a link between the federal coordination in Abuja and the state level implementation. These offices are aware of each region's particular hazards and may convey these requirements and difficulties to NEMA headquarter (NEMA, 2010).

The NEMA's particular duties include:

- handling all preparedness and mitigation measures;
- notifying, activating, mobilizing, deploying employees, and establishing the required response facilities;
- evaluating and assessing damage of disasters;
- administration of disaster finances;
- informing and enlightening the public;
- formulating of DM legal framework, and
- distributing relief items via collaboration with SEMAs, NGOs, regional and international bodies (NEMA, 2004).

According to the NDMF, all states of Nigeria must assure the formation of a body known as the SEMA, which will be backed up by state legislation. The law must contain measures ensuring that local governments across the state also create authorities with comparable duties, known as the LEMA (Adefisoye, 2015). NEMA,

SEMAs and LEMAs are all responsible for developing capacities for preparedness, prevention, response to, and recovery from all types of disasters (Sadiq, 2012).

Community organizations such as CBOs, FBOs, and EMVs are the first responders after a disaster, and if additional resources are required, the SEMA, LEMA, and NEMA can help (Sadiq, 2012). Table 10 shows the vital roles and functions of these three agencies.

Table 10: Roles and functions of the major bodies in the Nigerian DM (sources: (NEMA, 1999, 2010))

	Institution name	**Vital roles and functions**
National level	*NEMA*	- Formulating policies on all measures related to DM at federal level. - Developing and coordinating strategies and activities for a more effective disaster response. - Coordinating and promoting research activities associated with DM at federal level. - Monitoring the readiness of all actors that could be involved in DM. - Gathering data and reports from related stakeholders. - Educating and informing the public about disaster preventive and mitigation strategies. - Coordinating and providing essential materials for search and rescue. - Coordinating and supporting the activities of NGOs and development partners engaged in DM. - Coordinating activities of voluntary institutions involved in relief operation. - Receiving and mobilizing funds, relief items, and technical supports from private sector, international NGOs. - Preparing funds for DM. - Collaborating with SEMAs and LEMAs for assessing and monitoring the delivery of relief items as needed. - Work closely with United Nations organizations to decrease negative consequences of disasters. - Establishing necessary rules and monitoring the activities of SEMAs and LEMAs. - Distributing emergency supplies and helping with rehabilitation of survivors as needed.

	Institution name	**Vital roles and functions**
State level	*SEMA*	- Informing NEMA any disaster that occurs within the state. - Responding to any disaster that occurs within the state and, if necessary, requesting help from NEMA. - Taking DM measures within the state as NEMA may suggest. - Formulating policies on all measures related to DM at state level. - Developing and coordinating strategies and activities for a more effective disaster response at state level. - Monitoring and providing feedbacks to NEMA about the readiness of actors that could be played a role in DM at state level. - Educating and informing the public about disaster preventive and mitigation strategies at state level.
Local Level	*LEMA*	- Coordinating DM measures and responding to any disaster that occurs in local area. - Monitoring and providing feedbacks to SEMA about the readiness of actors that could involve in DM in local area. - Collecting data about disasters and disaster-prone regions in their arena of jurisdiction, and sharing with SEMA. - Mobilizing support and resources from the SEMA if damage is beyond the capacitates of local authorities. - Establishing and developing DM capacities at community level.

Chapter 6

COMPARISON ANALYSIS AND DISCUSSION

Even though the DM system aims to handle disaster affairs effectively and timely, there are clear distinctions in many ways between India and Nigeria. In this section, the comparison between the DM systems in India and Nigeria from different points of view will be discussed.

6.1 Integration DRR and DM Law

DM legislation which clarifies authorities, responsibilities, and priorities and sets the ground rules of all stakeholders involved in DM is a powerful tool aimed at deducting disaster risks, preventing new risks, and making safer, adaptive and disaster resilient communities. To accomplish such aims, as mentioned in the SFDRR and its predecessor, the HFA, nations are required to reassess, amend and strengthen their DM laws and regulations to ensure that DRR efforts are highly prioritized and integrated across all sectors (IFRC, 2015b).

DRR is defined by the UNISDR as;

> "the practice of reducing disaster risks through systematic efforts to analyze and manage the causal factors of disasters, including through reduced exposure to hazards, lessened vulnerability of people and property, wise management of land and the environment, and improved preparedness for adverse events" (UNISDR, 2009, pp. 10-11).

Since establishing DRR as a clear priority over the DM law is important for steering a national focus towards risk reduction, an important starting place of comparison is to assess whether and to what extent the existing DM laws of these two countries are meeting their full potential in supporting DRR.

The overview of the Indian Act shows that, by enacting this law, India triggered a paradigm shift in the approach towards DM, from a reactive approach that focused more on post-disaster relief and response activities to a proactive approach that mostly emphasizes risk reduction and mitigation. Where the term "DRR" does not appear in all the 79 sections and a high number of subsections of the Indian Act, but rather, consistently uses terms such as prevention, mitigation, and DM. Section 2e of the Indian Act defines the term 'disaster management' as "continuous and integrated process of planning, organizing, coordinating and implementing measures which are necessary or expedient for 1- prevention of danger or threat of any disaster, 2- mitigation or reduction of risk of any disaster or its severity or consequences, 3- capacity-building, 4-preparedness to deal with any disaster, 5-prompt response to any threatening disaster situation or disaster, 6-assessing the severity or magnitude of effects of any disaster, 7- evacuation, rescue and relief, and 8-rehabilitation and reconstruction" and in section 2i 'mitigation' is defined as "measures aimed at reducing the risk, impact or effects of a disaster or threatening disaster situation" (NDMA, 2005).

Considering the above definitions and powers and functions of the major bodies in the Indian DM suggests that the Indian Act refers to DRR practices. In addition, the National Plan and State Plan (Sections 11 and 23), both refer to various actions for the

prevention and mitigation of disasters; integration of such actions in the development plans; and capacity building and preparedness to effectively handle disasters.

Moreover, the Indian Act, under section 47, empowers the federal government to establish a fund called the National Disaster Mitigation Fund to be invested in programs only for the aim of mitigation. According to sections 47 and 48 of the Indian Act, state and district authorities must also establish such funds as the State Disaster Mitigation Fund and the District Disaster Mitigation Fund for same purposes.

Inclusion of these terms and sections indicates the Indian Act provides a comprehensive approach to DM, tending to concentrate on both reactive and proactive approaches as well as DRR measures.

However, in the case of Nigeria, the NEMA Act, which was founded in 1999, and not considerably updated in the most recent decade, has failed to mirror the language and priorities of the SFDRR and HFA.

The analysis of the NEMA Act reveals that the roles and functions of the NEMA and SEMA are mainly related to the ex-post disaster measures like delivery of relief materials, rehabilitation and reconstruction measures rather than ex-ante DRR efforts. In fact, in the whole NEMA Act, there is no section addressing important issues of DRR like early warning systems, risk mapping, public awareness, and participation of communities.

In 2010, with the recognition of the importance of DRR and filling the aforementioned gap in the Nigerian DM law, the NEMA developed the NDMF which provides strategic guidance for effective and efficient DM in the country.

While the NDMF provides a complete DM spectrum concentrating on both reactive and proactive approaches, its implementation has been limited (Obalum, Ilegbune, & Stanley-Idum, 2019; Olanrewaju *et al.*, 2019) due to two major problems. First, since the NDMF is not backed by law, it remains a mere guideline and not a legal framework (Okoli, 2014). As a result, the NEMA as the lead agency for coordinating and implementing DM activities is not empowered by law to carry out all functions of the NDMF, especially in the SEMA and LEMA (Olanrewaju *et al.*, 2019). Second, little budgetary allocation dedicated to DRR activities (Mashi *et al.*, 2019) and the absence of adequate capacities in manpower, skills, and equipment (Obalum *et al.*, 2019), inhibit the effective implementation of NDMF in the country. Therefore, in Nigeria, there is a great need to update and improve the legislative frameworks at both the national and state levels to ensure that they are adapted to emerging DRR needs.

In this context, Natural Disaster Prevention and Control (NDPC) Law 2013 ("Law on Natural Disaster Prevention and Control ", 2013), which is the principal DM law of Vietnam, is a good example of a strong and holistic legal framework that has given high priority to DRR measures. Although the term “DRR” is not mentioned anywhere in the NDPC, analysis of its basic principles and provisions reveals that the NDPC clearly aims at covering a wide range of DRR measures. According to Article 4 of NDPC, the fundamental ideas of this law are based on: (1) using proactive prevention measures; (2) applying a holistic and integrated DM by involving all national and local levels stakeholders; (3) mainstreaming DRR-related activities with all governmental

development plans and initiatives; (4) applying combinations of scientific findings and indigenous knowledge as well as structured and unstructured solutions in DM; and (5) creating the legislative framework for decentralized and carefully harmonized DM system. The analysis of Chapter 2 of NDPC shows that the law seeks to establish long-range DRR measures via detailed strategies and plans at all levels from national to community level. Responsibilities and roles of main participants in DRR measures are also clearly spelled out in the Chapter 3 of the NDPC. Attention on DRR activities can also be seen in other provisions of the NDPC. For instance, Article 5(1) addresses to the responsivity of states in providing insurance against disasters; Articles 15(2b), 20(3d), 25(3b), and 30(1e) are about improving public and community awareness about DRR measures; Article 21 aims at conducting different forms of education and training to meet the needs of diverse participants in DM; Articles 8-11 deal with sources of funding needed for DRR measures; and Article 17 and 20 deal with two important aspects of DRR which are risk mapping and early warning systems.

Considering the aforementioned points, it can be stated that the existing basic DM law of Vietnam pays special attention to DRR activities; hence, it can be used as a model by other countries like Nigeria to improve their DM law to fully reflect the priorities of the SFDRR and HFA and support all ranges of DRR activities.

6.2 Financing of DM

A crucial aspect that determines the effectiveness and efficiency of DM is the timely availability and release of sufficient funds. A large amount of funds is needed for not only improving systems, increasing the capacity of local and national institutions, and developing capacities, but also responding, recovering, and reconstructing after the occurrence of any disaster (Adefisoye, 2015).

In the case of India, at the national level, the requirements of sections 46 and 47 of the Indian Act mandate the establishment of two funds: the National Disaster Response Fund and the National Disaster Mitigation Fund. The National Disaster Response Fund is used to cover emergency response, relief, and rehabilitation costs, while the National Disaster Mitigation Fund is used to cover mitigation costs.

Parallel grants are also available at the two lower tiers of the government under the Indian Act. The State Disaster Response Fund (SDRF) is used for state-level emergency response, relief, and rehabilitation, whereas the State Disaster Mitigation Fund (SDMF), which is applied by the SDMA, is utilized for mitigation efforts.

The Indian Act also gives state-level governments the authority to establish comparable funds at the district level. The district authorities have access to the District Disaster Response Fund (DDRF) and the District Disaster Mitigation Fund (DDMF) for disaster response and mitigation, respectively.

The Indian Act also compels all ministries/departments of the federal and state governments to put aside financial sources from its yearly budget to carry out the measures and projects outlined in its DM plans (Sections 37, 40, and 49). The National Disaster Response Fund and National Disaster Mitigation Fund's funding sources are suggested by the Indian Act. It appears that these funds would be provided by the Parliament through appropriation. It also covers any additional gifts or contributions provided for the purpose of DM by any person or entity. However, no explicit criteria for determining the quantity of contributions to the funds are mentioned. The Indian Act also does not lay down the sources of financing for response and mitigation funds at the state and district levels (Ministry of Home Affairs, 2013). The lack of clarity in

the funding sources causes problems in mobilizing, managing, and spending such funds at different levels.

In the case of Nigeria, according to Section 13 of the NEMA Act, the nation contributes 1% of the national budget to the Ecological Fund and, 20% of which is dedicated to the NEMA, and the remaining 80% is allocated to the relevant ministries and states and local governments which participate in DM (NEMA, 1999). However, such funds are not mentioned the lower levels of government. In fact, the central government provides the majority of the NEMA's financial assistance and resources, with state and local governments contributing just a little amount.

The lack of provisions in the Nigerian Act for compelling state and local governments is the main reason for the inadequate contribution of the SEMAs and LEMAs towards funding the NEMA (Mashi *et al.*, 2019). The NEMA Act, unlike the Indian Law, instead of establishing special DRR funds, bundles the DRR budget with its national DM budget. However, in reality, due to the lack of adequate funding (Obalum *et al.*, 2019; Olanrewaju *et al.*, 2019) and uncertainty of the exact share of DRR measures in the total DM budget, the financial resources of the NEMA have been used mostly for disaster response rather than disaster resilience and disaster mitigation and preparedness (Aladegbola & Akinlade, 2012).

Moreover, the lack of sustainable sourcing mechanisms at the lower levels of governance in both countries is one of the obstacles that prevents the implementation of DM’s activities. While the authorities at the two lower tiers of the government are responsible for handling disasters first before they ask for outside assistance, their institutions are incapacitated financially (Adefisoye, 2015). Consequently, when a

disaster happens, they wait for help from the federal government and NGO assistance (Mashi *et al.*, 2019).

Therefore, both countries need to clearly identify assured sources of funding at all levels of governance, particularly at state and local levels, to guarantee that all DM operations are managed successfully.

In this regard, the Philippines approach to financing DM may provide useful guidance for the two nations. The Philippines Disaster Risk Reduction and Management Act of 2010 (DRRM law), establishes the National Disaster Risk Reduction and Management Fund (NDRRMF) and Local Disaster Risk Reduction and Management Fund (LDRRMF) funds at the national and local levels, respectively. Of the total NDRRMF amount, 70% is dedicated to disaster mitigation, prevention, and preparedness activities, and 30% is allocated as response or standby fund for relief and recovery programs. Similarly, at the local level, Local Government Units (LGUs) are compelled to allocate 70% of their LDRRMF to DRR and prevention programs and 30% to response activities. The more salient point of the Philippines DM legislation, however, is that the DRRM law mandates local governments to dedicate at least 5% of their yearly earnings to the LDRRMF. In fact, what has been achieved in the Philippines which offers lessons for India and Nigeria, is the establishment of a coherent and comprehensive DM financing system (Kellett, Caravani, & Pichon, 2014) that not only forces local governments to play a role in financing DM but also devotes a large portion of the DM funds to pre-disaster preparedness and risk reduction measures.

6.3 Community Participation

As the bottom unit of society, local community engagement and participation plays a pivotal role in reducing vulnerabilities of people and minimizing the loss resulting from any natural and human-made disasters. This is because people at this level are not only the first to suffer the disaster's adverse effects but also, more importantly, the first responders to deal with the event. Hence, public awareness and the formal recognition of the role and contribution of the local communities are integral parts of DRR.

In order to get maximum benefits of community resilience in the aftermath of a disaster, affected communities must be well-prepared. The initial phase towards this direction is officially recognizing the value and role of local communities' efforts and providing them with sufficient funds and qualified personnel as well as proper legal and institutional frameworks (Zubir & Amirrol, 2011). Such frameworks with bottom-up approaches are needed to encourage and empower local communities with official roles in all phases of DRR, including preparedness, mitigation, and response.

One program which takes bottom-up approach to engage the local communities is Community-based Disaster Risk Management (CBDRM). This program is based on the proactive concept of reducing disaster risks by involving people in at-risk localities. CBDRM aims to reduce vulnerabilities, minimize human suffering, and accelerate recovery in vulnerable communities by leveraging their own latent capacities and coping mechanisms, such as local knowledge, resources, connections, and social organizations (Kadel, 2011; Nguyen et al., 2011).

The government of India transfers a significant amount of disaster-related planning, coordinating, implementing, and decision-making functions to the state, district, and local-level authorities and lays the preparation of CBDRM, by enacting the Indian Law. As noted in Section 2, the Indian Law mandates each state to develop a plan for DM called the SDMP. States are also authorized to lay down states' DM policies and suggest the provision of funds for disaster mitigation. Also, all districts are also required to create District Disaster Management Plan (DDMP). On paper, SDMPs and DDMPs are meant to engage the grassroots level of society and reflect their own knowledge, project priorities, and development measures (Rumbach, 2016).

The recently revised of the Indian Law, 2015 emphasizes the importance of community participation by recognizing the roles of community groups, youth organizations, or other voluntary agencies in all DM activities [Section 60a (NDMA, 2005)]. In fact, according to Section 60b of the Indian Law, it is the duty of every citizen to engage and assist the local authorities with any demanded activities with the purpose of prevention, response, warning, emergency operation, evacuation, and recovery [Section 60b (NDMA, 2005)]. To achieve desired outcomes of such participatory activities, Section22(2)(i) and Section 30(20)(xiii) of the Indian Law ask both the state and district authorities to promote general education, community training, and awareness raising programs with reference to different disasters at community, district and state levels.

In addition to the Indian Law, the Government of India has made strong references to the community's roles and participation in DM by laying down various policies, guidelines, and plans. The National Policy on Disaster Management (NPMD) 2009, which provides a framework for handling disasters for the whole of India in a holistic

approach, lays special focus on community participation. Paragraphs 5.3.1 and 5.3.2 of this policy focus on community-based disaster preparedness and recognize the vital role of the community in prevention, mitigation and preparedness activities. Paragraph 7.8.1 of NPMD also recognizes the community as the basis of all disaster response activities, including animal care (Paragraph 7.10.1) and setting up relief camps (Paragraph 8.2.2).

The NDMP 2019, which provides an overarching planning framework for all aspects of DM for the whole of India, also reinforces the need for increasing the capacity of the community for the purpose of CBDRM (NEC, 2019). In 2019, as one of the recent developments for mainstreaming community-based approach in the ongoing programs, plans, and projects of the Government of India, the NDMA proposed a draft of guideline titled Community Based Disaster Risk Reduction to define the roles and responsibilities of the main stakeholders for implementation of CBDRM. Adoption of this guideline alongside the other mentioned legislation and policies provides an operational process for increasing the effectiveness of community involvement and consequently making the communities more resistant and resilient.

Remarkable results of the active community participation in the process of DM through implementing a bottom-up approach can be seen in the efficient management of super-cyclone Phailin, which struck the state of Odisha in 2013(Mariaselvam & Gopichandran, 2016; UNDP, 2015). The disaster affected more than 13 million people in over 18,300 villages in 18 districts. However, due to the better preparedness and participation of the community level, only 44 people were killed, which was far lower than compared to the 1999 Super Cyclone in the same region, where nearly 10,000 people died (Jha, Basu, & Basu, 2016; Pal, Ghosh, & Ghosh, 2017).

However, in the case of Nigeria, the NEMA Act covers mostly emergency and disaster response, and recovery measures and does not expressly make provision for recognizing and acknowledging the importance of community participation and its role in DM programs. In 2010, the federal government of Nigeria, by formulating the NDMF, tried to implement a national policy to encourage and engage communities at the grassroots level in DM. The NDMF, which provides strategic guidelines for DM in the country, has led to a renewed interest in community participation in DM.

The NDMF recognizes different community structures like CBOs, FBOs, and NGOs and empowers them to actively participate in DM activities under direction of the NEMA, SEMAs, and LEMAs (NEMA, 2010). However, the detailed analysis shows that the NDMF fails to plainly address the roles and duties of communities in some key activities of DM. For instance, the NDMF does not give room for the participation of the community in the disaster risk assessment as the first step of an effective DM. In addition, there are no guidelines formulating mechanisms and procedures for community involvement in the prevention and mitigation of disasters.

This little acknowledgment of community participation in Nigerian legislation has the potential to result in weak community engagement. Reports from a workshop held in July 2015 in Abuja, on Legal Frameworks for Disaster Response and Risk Reduction in Nigeria, identified weak community participation as one of the critical gaps in the effective implementation of DM and suggested further improvement in the country's DM legislation in this regard (IFRC, 2015c). Daramola also made a similar observation and claimed that the absence of effective community participation in DM is one of the main factors that contributes to the vulnerable nature of Nigerian cities (Daramola, 2017). This lack of active engagement of communities in the implementation of DM

measures in Nigeria was observed during the devastating floods of 2012, causing heavy economic and humanitarian losses (Buba et al., 2021; NEMA, 2013). Hence, to decrease the vulnerability of communities and increase their resilience capacities, Nigeria needs to lay the groundwork for an effective bottom-up approach through expanding its DM to incorporate the role of community members and local government as the main actors of the whole process of DM.

In this regard, the Japanese DM system is a good example of how a country can actively encourage and involve the local communities in DM by establishing a set of effective legal and institutional frameworks. Japan's DM system, which is constantly improved and updated by learning from major disasters, includes detailed DM-related laws and policies covering all aspects of DM.

The cornerstone of DM laws in Japan is the Disaster Countermeasures Basic Act (DCBA), which was formulated in 1961 as a result of a typhoon that hit the Bay of Ise in 1959 and caused more than 5000 victims. The purpose of the DCBA was to address the shortcomings and weaknesses of the old DM framework that had manifested itself in previous disasters and promote comprehensive and systematic efforts by the government to reduce disasters. The DCBA has four main thrusts: (1) to clarify DM responsibilities and implement mechanisms to prepare for, provide emergency response to, and recover and rehabilitate from disaster; (2) to promote comprehensive and systematic administrative efforts towards DM; (3) to provide funds to deal with disaster; and (4) to establish and implement procedures for proclaiming disaster emergencies. In Chapter 1 of the DCBA, in addition to clarifying the responsibilities and roles of the relevant government agencies at national, prefectural and municipal levels, the responsibilities of the community participants are also mentioned. The

DCBA under Article 7(2), obligates local community to “contribute toward the cause of disaster prevention by taking their own measures to prepare for disaster and by participating in voluntary disaster prevention groups etc.” (Japan, 1961, p. 5). In 2001, the National DM Council of Japan took further steps and issued the Basic Framework for Promoting a Nationwide Movement for Disaster Reduction to increase the active participation of communities in DM activities. The special attentions of this framework are on: involving different community organizations, developing more engaging instructional tools to learn essential DM skills, promoting safety-related investments in both business and community areas, enabling cross-stakeholder collaboration, and promoting long-term DM measures for different individuals and segments of the society (Yustisia Lestari *et al.*, 2020).

In addition to the above measures, the turning point in establishing an effective CBDRM based on a bottom-up approach in Japan dates back to after the 2011 Tōhoku earthquake and tsunami when the government realized more the significance of mutual assistance in working with local communities. As a result, in 2013, the DCBA was updated and the provision to provide Community DM Plan was added. Community DM Plan aims at enhancing community disaster resilience by creating a strong integration between; (1) “Self-help” activities anchored in people's and companies' knowledge; (2) “Mutual-support” activities of diverse community-level organizations; and “public-help” activities taken by central and local-level government (Office, 2020). Formulation and implementation of the Community DM Plan encourage community members to actively and efficiently participate in DM activities. Consequently, whenever a disaster happens, DM groups made up of citizens may act quickly to address the issues that arise before help comes.

6.4 Coordination and Collaboration

Coordination and collaboration among diverse parties, including governmental organizations, international organizations, private sectors, NGOs, CBOs, FBOs, volunteers, etc. is an essential part of DM. However, due to the different and sometimes complex roles of each actor and stakeholder, creating an effective collaboration and collaboration mechanism is difficult to achieve (Perry, 2007).

In this regard, both countries have attempted to develop policies and regularity guidelines to ensure effective and efficient cooperation and coordination among the participating agencies.

In Nigeria, the NEMA Act established the NEMA as the apex coordinating organization for DM activities at the federal level, while the SEMAs and LEMAs serve as the coordinating bodies at the state and local levels, respectively. To fulfill this stewardship role and create a mechanism to collaborate and coordinate activities, the NEMA developed the NDMF. While Section 2 of the NDMF develops horizontal and vertical coordination strategies to ensure synergy at the three levels of government and among stakeholders (NEMA, 2010), the poor response to previous disasters has demonstrated that such strategies have not been adequately translated into concrete measures (Alabi *et al.*, 2017; Echendu, 2020; Olanrewaju *et al.*, 2019; Sadiq, 2012). As noted by Kazaure and Inkani (2013), the 2012 flood disaster in Nigeria which resulted in 363 deaths, affected more than 7 million people and damaged almost 600000 houses (Idowu & Zhou, 2019) could have been less disastrous if there had been proper coordination mechanism between the DM's stakeholders. The poor coordination and collaboration of DM activities are also reported by (Adefisoye, 2015;

Essoh & Abutu, 2018; Mashi *et al.*, 2019) as a major challenge of DM in Nigeria. Essoh and Abutu (2018) noted that when a disaster occurs in Nigeria, it is noticeable that several agencies participated at the field level to respond to the event, do not clearly know their particular roles and responsibilities. They also tend to work individually according to their own values, norms, and operating methods, but not under the effective central leadership and coordination of any agency. Consequently, duplication of roles, waste of resources, and even conflict among different levels of government have become very common in the event of an emergency in Nigeria (Mashi *et al.*, 2019).

The analysis of the NEMA Act and NDMF has led to the identification of two main barriers to the establishment of effective coordination in Nigeria. First, while the NEMA Act saddled the NEMA with the mandate to coordinate all DM-related activities in the country, the NEMA is not empowered by the NEMA Act to compel all other governmental, non-governmental, public-private, and community actors to take their activities in a coordinating and cooperative manner for a common goal of reducing the negative impacts of disasters. The lack of such provisions in NEMA Act also prevents complete implementation of the NDMF, especially in the lower levels of government (Olanrewaju *et al.*, 2019). As a result, while the NEMA Act and NDMF mandate all states to establish the SEMA, only 25 states have founded their SEMCs and the others are still clinging to the relief-centric approaches which make the system very vulnerable. Second, the relations between the NEMA and SEMA/LEMA as also mentioned in (Dia et al., 2012) are mostly based on ad-hoc arrangements and interpersonal relationships rather than formalized and pre-founded coordination processes in NEMA Act or NDFM.

In the case of India, the Government of India, by enacting the Indian Law, lays down the coordination structures, and aligns the main roles and duties of DM stakeholders at the national, state, district, and local levels.

At the national level, the NDMA, led by the Prime Minister, was established under Section 3 of the Indian Act as the nodal apex for better implementation of DM across the country by establishing the necessary policies, plans, and guidelines and coordinating their enforcement and implementation. Under Section 10 of the Indian Act, the NEC, as the executive arm of the NDMA, is constituted to assist the NDMA in performing its functions and also, among other functions, has the responsibilities for coordinating and monitoring the response in the event of any disaster. According to Section 11 of the Indian Act, NEC has prepared and updated the NDMP to create effective coordination and collaboration mechanisms between the various agencies involved in DM. The NDMP, with respect to the crosscutting nature of DM's activities, describes the vertical and horizontal linkages needed for the coordination between and amongst various ministries and government departments and other stakeholders across all DM activities by clearly laying out their roles and responsibilities.

In addition to the national-level coordination mechanisms, the Indian Law has also provided provisions for subnational coordination at state and district levels. At the state level, each state, according to Chapter III of the Indian Law, mandates to establish the SDMA and SEC. While the SDMA, similar to the NDMA, has responsibilities to develop policies and plans in compliance with the established policies by NDMA for DM in a state, the SEC is mandated to not only assist the SDMA to perform its functions but also serve as a coordination platform for emergency response in the event of any disaster. And last but not the least, at the district level, the DDMA has been

formed under Chapter IV of the Indian Law, and is mandated to play the role of district planning, coordinating, and implementing for all activities related to DM in accordance with the guidelines and policies laid down by the NDMA and SDMA.

What has been achieved in India, by formulating such regulations, policies, and institutions which could be a good lesson to be learned by Nigeria is the establishment of better coordination and collaboration mechanisms among the implementing agencies in activities and programs related to DM.

6.5 All-Hazard Approach

Disasters according to what causes them, can be categorized, into natural and man-made disasters. Natural disasters are catastrophic events triggered by natural hazards such as earthquakes, cyclones, storms, etc. over which humans have hardly any control. Man-made disasters such as chemical pollution, industrial disasters, building collapses, etc., on the other hand, are those catastrophic events that result from human activities.

Even though varying to some degree in the cause, scope, duration, and required measures, man-made disasters, same as natural ones, can result in serious disruption to a community, physical damage, loss of life, and economic and environmental disturbances. In recent years, due to the extensive industrialization and urbanization, the frequency of man-made disasters and their potential damage to life and property have been increased across the world as well as India and Nigeria (NEC, 2019; NEMA, 2002).

In economic terms, the total losses from both types of disasters are estimated at $187 billion for only 2020, while $12 billion of it coming from man-made disasters, which

shows a 17 percent increment in comparison with 2019 (TRTWorld, 2020). Man-made disasters can also cause immense human losses and untold suffering for the people. For example, in 1984, about 40 tons of Methyl isocyanate gas was leaked into the atmosphere at a pesticide plant in Bhopal, India. The incident affected more than half a million people and caused about 3800 deaths in the immediate aftermath (UNISDR, 2018). Therefore, the effective DM demands a comprehensive framework at the national, state and local levels which addresses all types of risks across all natural and man-made hazards.

Section 2(d) of the Indian Act, considers disasters both natural and man-made and mandates the NDMA to deal with all types of disasters. However, analyzing the Indian NDMP 2019 and the policies and guidelines which have been issued by the NDMA shows that the institutional framework of DM in the country has been mainly focused on natural disasters.

In the NDMP, the detailed plans for all phases of the DM cycle have been defined for almost all types of natural disasters; however, such plans are addressed only to a few types of man-made disasters such as Chemical (Industrial) Disasters, Nuclear and Radiological Emergencies and Biological and Public Health Emergencies. In fact, other man-made incidents such as oil spillage, mine, and port disasters, and other emergencies which necessitate the participation of security and/or intelligence services like terrorist attacks, hijacking, and air accidents are out of the scope of the NDMP and Indian Act.

The same problem is also observed in the case of Nigeria. Although the country has recently been suffering from increasing man-made disasters, particularly in the form

of terrorism and conflicts (Odai, Azodo, & Chhabra, 2019), the country's DM mechanisms are lacking adequate preventive and regulatory measures to deal with the risks and impacts of these hazards. This challenge is also reported by Sadiq (2012). He stated that the approach of the country to deal with man-made disasters like terrorist attacks is mostly concentrated on response, relief, and rehabilitation rather than preparedness, prevention, and mitigation actions.

Therefore, both countries need to focus more on man-made hazards and strengthen their legislation and institutional frameworks with an all-hazards approach that covers man-made disasters as well.

In this regard, the experience of the United States as one of the first countries to apply the "all-hazards" approach in DM may have useful lessons for India and Nigeria. According to this approach, DM in the US not only covers all types of natural and man-made disasters but also after the September 11 attacks includes any act of terrorism. All-hazards approach is based on the assumption that due to similarities across diverse risks and hazards scenarios, they can be managed through common preparedness and response plans. Proponents of this approach claim that this method leads to a more effective DM system for two reasons. First, by integrating resources, reducing wastes, and sharing expenditures this method makes DM more cost-effective. Second, by encouraging collaboration amongst various agencies from various sectors (governmental, non-governmental, public-private, and community sectors) this method improves preparation and increases resilience (Bodas, Kirsch, & Peleg, 2020). Considering the benefits of adopting all-hazards strategy, in 1996, the US Federal Emergency Management Agency (FEMA) issued the "Guide for All-Hazard Emergency Operation Planning" intended to assist state/local DM agencies in

developing all-hazards Emergency Operation Plans (EOPs). Adaptation of such all-hazards EOPs at state and local levels, facilitates more robust and effective response mechanisms, integrates mitigation measures into response and recovery efforts, and enhances collaboration with national govt in the event of any major calamity (FEMA, 1996).

6.6 Capacity Building; Training and Research

Capacity building for DM has been acknowledged as one of the key means of considerably reducing disaster losses (Hagelsteen & Burke, 2016). Within the context of DM, capacity building involves activities like training, knowledge development, and continuous development of the institutional and policy mechanisms (Scott *et al.*, 2015) which helps in the formation of a better coordinative and collaborative partnership between all the sectors and stakeholders at all levels (Devendra Yadav & Akhilesh Barve, 2014).

In India, at the national level, as per Chapter-VII of the Indian Act, the NIDM housed within the MHA is the apex institute and a statutory body of capacity building at all levels for disaster prevention and preparedness. The NIDM has been assigned the nodal responsibilities for developing the training modules, educational materials and a national level information base, undertaking research, documentation and publication, implementing human resource development, assisting in the formulation of the national level policies and promoting awareness of various stakeholders in the field of DM. The NIDM has also been mandated to support the state governments and training institutes by providing technical support and financial assistance. However, due to administrative and financial issues, the NIDM has not achieved complete

success in supporting and strengthening the state-level training institutes (Ministry of Home Affairs, 2013).

At the state and district levels, Disaster Management Centers (DMC's) in the State Administrative Training Institutes are responsible for taking measures related to capacity building and preparedness. DMC's are required to hold at least 20 training programs and train a minimum of 500 participants per year (NDMA, 2011).

Besides the NIDM and DMC's, there are other Indian institutes like the Central and State universities, Disaster Management Institute (Bhopal), Forest Research Institute (Dehradun), National Civil Defense College, National Fire Service College, etc. undertaking capacity building measures in the field of DM.

In terms of youth education, recently, most central universities in the country have created centers of DM with the aim of undertaking training, research, and education (NIDM, 2013). Also, in order to lead towards effective public awareness and combat future disasters, DM education is incorporated into the curriculums of secondary schools (Devendra Yadav & Akhilesh Barve, 2014).

In the case of Nigeria, there is not a distinct national focal organization like the NIDM to tackle disaster-related training and capacity-building measures. Instead, the NEMA, among its vast and multifarious functions, has also mandated to provide and develop DM capacity building programs like training, research, and human resource development at the national, local, and community levels.

The NEMA, through its Training Department, determines required training and develops proper training programs for the staff of NEMA, SEMAs, LEMAs, and other relevant stakeholders to raise their skills, knowledge, and technical competence. In addition, the NEMA, with the main object of training high-level practitioners, supports six federal universities located in different political regions of the country to undertake postgraduate programs in DM (Adefisoye, 2015).

Despite the effort and progress being made in this regard by the NEMA, insufficient training, education and awareness is yet to be seen as a big challenge in the country (Oruonye, Ahmed, & Tukura, 2016; Sadiq, 2012).

There are several reasons behind this fact. First, Nigeria is a large and populous country, making it difficult to adequately perform all capacity building activities through a single national agency, especially given the numerous other functions the NEMA has had to fulfill since its inception. Therefore, there is a need to establish a new national institute that works as a capacity building arm of the NEMA. Second, the financial resources of the NEMA are not only insufficient but also are more used for disaster response than towards capacity building and preparedness measures (Adefisoye, 2015; Dia *et al.*, 2012; Essoh & Abutu, 2018). Third, the contribution of SEMAs and LEMAs to capacity building efforts has been inadequate and ineffective due to a lack of sustainable funding on the one hand, and the absence of a compulsion provision in the NEMA Act on the other (Mashi *et al.*, 2019). So, state and local governments should be forced and adequately funded to carry out roles of capacity building and manpower training in their arena of jurisdiction.

In this regard, Japan's experience in promoting awareness programs and enhancing capacity among the DM stakeholders could be useful for both India and Nigeria. In this context, the government of Japan through the Cabinet Office and related ministries and agencies has continuously prompted initiatives that raise awareness of DRR among the public and local communities and improve the capacity at each level and in all sectors. Japan, to strengthen its DM capacities, is taking measures such as conducting DM drills, promoting community DM plans, reviewing and revising DM-related laws and regulations, improving training content, creating an enabling environment for volunteer activities, developing an effective framework for public-private partnerships, utilizing information and communication technology in DM, and conducting a wide range of DM researches (Office, 2020).

Chapter 7

POLICY IMPLICATION

The findings of this study are expected to draw the attention of legislators and policy-makers in the field of DM to review their policies and plans in order to enhance the effectiveness of DM systems within each country studied and assist other nations, especially developing countries with the high level of vulnerability of them. In this way, the present study has the following policy implications:

1. In order to reduce vulnerability and build community and national resilience to disasters, countries need to review, update and strengthen their legal frameworks to ensure that DRR measures have a high priority across all sectors. However, existing DM laws in Nigeria and many developing countries place a low priority on DRR and are primarily concerned with response and recovery rather than risk reduction (Al-Nammari & Alzaghal, 2015). In this regard, the experiences and lessons from India in enacting comprehensive regulatory frameworks for DRR can be valuable to other countries.
2. The effectiveness of DM is highly dependent on the timely availability and release of dedicated financing. In this way, governments need to create legally mandated frameworks at the national and local levels to provide assured sources of funding for all activities of DM. These legal frameworks must identify how financial resources should be provided, mobilized, managed, and spent at all governmental levels, especially at the local level, because they are at the forefront of dealing with any disaster. This should be of particular

concern to India and Nigeria, along with other developing countries which usually suffer from a lack of financial resources.

3. The strength of DM and its success in achieving disaster-resilient communities depend on the degree of community involvement in the whole process of DM. In order to actively involve local communities, governments must establish effective legal frameworks and clearly address the roles and responsibilities of community members regarding all DM activities. India, as can be seen in the management of super-cyclone Phailin, by enacting such DM laws and adopting CBDRM which promotes a bottom-up approach with a starting-point at the community level, performs better than Nigeria in terms of sustainable participation of the community in the government's DM measures.
4. It may seem superfluous, or at least self-evident, to emphasize the significance of coordination and collaboration mechanisms among the various agencies involved in DM on the reduction of disaster risk. However, due to the different and sometimes complex roles of each actor and stakeholder, establishing proper coordination systems is difficult (Perry, 2007). The Indian DM laws and policies concerning the crosscutting nature of DM's activities clearly lay out the roles and duties of all DM actors at all three tiers of government and establish strong vertical and horizontal coordination mechanisms. India's experience in creating an enabling environment for well-defined coordination mechanisms can be used as a good model for other countries, including Nigeria.
5. Increasing the quantity and severity of man-made disasters, especially in low- and middle-income nations (UNISDR, 2018) have highlighted the necessity to address these hazards as a part of a comprehensive DM system. In fact,

managing disaster risks efficiently requires a comprehensive, all-hazard, and integrated DM system covering all types of disaster risk, triggered by natural or human-made hazards. The results of this study show that both countries should upgrade their institutional structure, and legal institution to pay more attention to man-made disasters by applying an all-hazard approach to DM.

6. Capacity building for DM has been considered as one of the key approaches to sustainable development and is clearly expressed in international frameworks for DRR such as the HFA and SFDRR (Iizuka, 2020; UNISDR, 2015). Considering the importance of capacity building for DM, governments must continuously promote programs and projects to improve the capacity at all levels. The results of this analysis show that due to administrative and financial issues, none of the two countries achieved complete success in capacity building measures.

Chapter 8

CONCLUSION

This study has reviewed, analyzed, and compared the legal and institutional frameworks of DM systems in India and Nigeria. It initially provides a comprehensive introduction of Indian and Nigerian DM systems, including the countries' disaster profiles and the current DM policies and institutional frameworks, then compares them from different points of view to find the similarities, differences, common challenges, and lessons learned. Both countries have enacted national disaster legislation and established their DM systems with several common features. DM systems in both countries follow a similar pattern revolving around a multi-level structure from the federal level to the state and finally the local/district level. While the federal governments play a leading role in formulating, enforcing and coordinating policies, guidelines, and plans for DM at the national level, the state governments are responsible for enacting their DM laws under the national legislation. Also, in both countries, the primary responsibility for managing DM activities lies with state governments and the federal governments have a supportive and supplementary role when a disaster overwhelms a state's capacity.

Despite these similarities, the DM systems in India and Nigeria differ significantly in terms of legislation and institutions.

Regarding the integration and prioritization of DRR efforts in their DM laws and regulations, we found that the Indian Act is more in line with the international frameworks governing DM policies such as the HFA and SFDRR. It provides a more comprehensive approach to DM, tending to concentrate on both reactive and proactive approaches as well as DRR measures. However, the NEMA Act is more focused on disaster response and recovery than preparation and mitigation and failed to mirror the language and priorities of the HFA and SFDRR.

Considering the system of financing DM, the Indian Act provides separate funds for response and mitigation at all levels of governance, but the sources of funding are not clear at the state and district levels, which causes problems in mobilizing, managing, and spending such funds at different levels. In Nigeria, the federal government mainly provides the financial resources for DM and the two other tiers of the government contribute almost nothing towards funding the NEMA. This is because the NEMA Act has failed to make provisions to compel the lower levels of governance to make financial contributions towards DM in the country.

From the community participation point of view, we found that India by enacting the Indian Law and other policies and guidelines such as the NDMP, NPMD, and Community Based Disaster Risk Reduction of India, recognizes the pivotal roles and contributions of community groups, youth organizations or other voluntary agencies in all DM activities. As a result, under the supervision and guidance of the NDMA, SDMAs, and LDMAs, local communities in India are more actively participating in DM activities. Whereas, the NEMA Act does not clearly make provisions for recognizing and acknowledging the importance of community participation and its role in DM programs. Also, while the NDMF recognizes different community structures

like CBOs, FBOs, and NGOs and empowers them to engage in disaster-related activities, it has failed to plainly address their duties and responsibilities. Because of this little acknowledgment, community engagement in Nigeria is still low, and people tend to stay inactive when calamities strike.

Our review and analysis also found that in Nigeria, the coordination and collaboration mechanisms among the implementing agencies in activities and programs related to DM are still largely on paper, rather than reality. However, India by developing better legal and institutional frameworks creates more effective coordination and collaboration mechanisms between and amongst various ministries and government departments, and other stakeholders across all DM activities.

While both countries suffered from destructive man-made disasters in the recent past, our research found that their DM systems are mainly focused on natural disasters and paid less attention to adequate preventive and regulatory measures to handle the risks and impacts of man-made hazards.

In terms of capacity building for DM, we found that despite the efforts and progress being made by the NIDM and NEMA, both due to administrative and financial issues have not achieved complete success in supporting and strengthening the state-level training institutes.

Based on the challenges identified and discussed, and in order to change the current situation and move towards more effective DM systems in India and Nigeria, the following recommendations are presented:

1- The NEMA Act should be amended to ensure that DRR measures are highly prioritized and integrated across all stakeholders (governmental, non-organization, private sectors, community based, etc.) involved in DM.

2- Due to the importance of timely availability and release of sufficient funds to effectively handle disasters, both countries need to clearly identify assured sources of funding at all levels of governance, particularly at the state and local/district levels.

3- To reduce people's vulnerabilities and losses as a result of disasters, Nigeria should proactively involve local communities in disaster management activities by clearly defining their roles and responsibilities and providing them with adequate funding.

4- To avoid duplication of roles and waste of resources, Nigeria should take steps to improve the collaboration and coordination mechanisms between the tiers of government. In this regard, the NEMA Act should empower the NEMA to compel the SEMAs and LEMAs to do their activities in a coordinating and cooperative manner.

5- Both countries need to pay more attention to man-made hazards and strengthen their legislation and institutional frameworks by with all-hazards approach that covers man-made disasters as well.

6- In both countries, adequate financial resources should be provided to agencies at all three levels of governance, especially at the state and local/district levels for capacity building activities like manpower training, knowledge development, and continuous development of institutional and policy mechanisms.

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