Disaster risk reduction and management in Nepal: Delineation of roles and responsibilities

Report

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List of abbreviations

AD	Anno Domini (used to denote English Calendar year)
ADPC	Asian Disaster Preparedness Centre
APF	Armed Police Force
BIPAD	Building Information Platform Against Disaster
BS	Bikram Sambat (Nepali National Calendar year)
CBDRR	Community Based Disaster Risk Reduction
CDO	Chief District Officer
CEDMHA	Centre for Excellence in Disaster Management and Humanitarian Assistance
COVID	Corona Virus Disease
CRED	Centre for Research and Epidemiology of Disaster
DAO	District Administration Offices
DDMC	District Disaster Management Committee
DFID	Department for International Development
DHM	Department of Hydrology and Meteorology
DIMS	Disaster Information Management System
DMB	Disaster Management Bureau
DMG	Department for Mines and Geology
DoHS	Department of Health Services
DRR	Disaster Risk Reduction
DRRM	Disaster Risk Reduction and Management
DUDBC	Department of Urban Development Building Construction
DWIDM	Department of Water Induced Disaster Management
EOC	Emergency Operation Centre
FG	Federal Government
GLOF	Glacial Lake Outburst Flood
GoN	Government of Nepal
HCT	Humanitarian Country Team
HDI	Human Development Index
HPC	High Power Committee
HSA	Humanitarian Staging Areas
HR	Human Resource
IFRC	International Federation of Red Cross and Red Crescent Societies
IMDMCC	Inter-Ministerial Disaster Management Co-ordination Committee
INGO	International Non-Government Organization
IOM	International Organization of Migration
IRRA	Immediate Relief Requirement Assessment
LEOC	Local Emergency Operation Centre
LG	Local Government
LGOA	Local Government Operationalization Act 2074
MIRRA	Multidimensional Immediate Relief Requirement Assessment
MoFAGA	Ministry of Federal Affairs and General Administration
MoHA	Ministry of Home Affairs
MoHP	Ministry of Health and Population
MoIAL	Ministry of Internal Affairs and Law
NBC	National Building Code
NDRF	National Disaster Response Framework
NDRRMA	National Disaster Risk Reduction and Management Authority
NEOC	National Emergency Operation Centre
NGO	Non-Governmental Organization
NPC	National Planning Commission
NPR	Nepali Rupee
NRA	National Reconstruction Authority
NRRC	National Risk Reduction Consortium
NSC	National Seismological Centre

NSET	National Society for Earthquake Technology
NTC	Nepal Telecom
PG	Provincial Government
PIF	Policy and Institution Facility
SFDRR	Sendai Framework for Disaster Risk Reduction
SOP	Standing Operation Procedure
TOR	Terms of Reference
UN	United Nations
UNDRR	United Nations Disaster Risk Reduction
WASH	Water Sanitation and Hygiene

Executive Summary

Background and study scope

Nepal's current landscape of disaster governance is guided by its Constitution (2015 AD) and the Disaster Risk Reduction and Management (DRRM) Act (2017 AD). The spirit of the Constitution suggests that local governments shall do as much as they can on their own, and where they cannot, provincial and federal governments shall provide back-up or lead disaster risk reduction and management. Despite these provisions, it is unclear how roles and responsibilities are shared between the federal, provincial and local governments.

For this reason, the DRRM National Council tasked the Ministry of Home Affairs (MoHA) to propose a legal draft on the "delineation of authority, responsibility and accountability between federal, provincial and local levels according to the nature, intensity and scale of the disaster." The Policy and Institutions Facility (PIF)1, a component of DFID's Disaster Resilience Programme, is responding to this call from MoHA and providing technical assistance to carry out this study.

Methodology

This study depicts the outcomes of a review of concepts, policies and practices through academic analysis and interdisciplinary reflections; consultations with 28 local government leaders and bureaucrats in Nepal about existing DRRM practices and capacities; and consultations with experts. The findings will be further validated during workshops and technical meetings with DRRM actors at all levels of government.

Key recommendations

1. Categories of disasters: For practice, disasters can be categorized into 4 levels (0 to 3). The categorization helps to delineate roles, responsibilities and authority between government levels.

2. Decision making: Establishing disaster categories and determining the impact of disasters is insufficient to provide adequate guidance to help delineate government roles, responsibility, and authority. Local government reserves the right to request external support if they cannot respond to a disaster. Local governments must build their capacity to manage larger disasters. This decentralized mandate should be endorsed through the National Disaster Risk Reduction and Management Authority (NDRRMA).

Local and provincial government should review their capacity yearly while revising their disaster preparedness and response plan to adjust their qualitative and quantitative criteria, their indicators and update their minimum capacity targets and institutional capacity. The NDRRMA should review disaster category criteria and indicators periodically.

3. Jurisdiction: All governments must have more defined jurisdictional roles and responsibilities and should be held accountable. Incentives should be introduced to hold all them accountable for achieving established targets, such as performance grants.

4. Consideration of extensive and limited disaster risks: As Nepal is at earthquake risk, it is recommended to delineate differentiated roles and responsibilities between local, provincial and federal governments based on this risk for different DRRM actions. Hazards of limited scope need to be assessed for their potential impact. They then need to be assigned to specific agencies at different levels.

[1] The Policy and Institutions Facility (PIF) is a policy support window within DFID/Nepal's disaster resilience portfolio, designed to support the Government of Nepal. It is managed by Oxford Policy Management Ltd. For details, see: https://www.opml.co.uk/work-with-us/teams/nepal/about-the-team

5. Consideration of combined capacity and differentiated responsibility: While actions may be conducted through local government generally, such activities should be guided by a vision of collaborative national capacity.

The **federal government role** ultimate responsibility is to mainstream DRRM and establish harmonized policies and institutional support systems. Federal agencies are responsible and accountable for Level-3 disasters and need to provide demand-driven support to the provinces and local governments. Federal government should hold residual responsibility of coping with unprecedented hazards, such as COVID-19. Federal agencies must assume responsibility for seismic, meteorological and hydrological monitoring systems and advanced forecasting and early warning systems.

Provincial governments should manage Level-2 scale disasters without federal support, must collaborate with federal agencies for Level 3 disaster management, must support local governments preparedness activities and backstop disaster response efforts. They should rapidly assess the disaster impact and recommend to the federal government whether to declare a localized or province-wide emergency. They are accountable for providing overall guidance to local governments on their capacity building.

Local governments should be responsible for having enough resources and logistics facilities in anticipation of Level 0 and 1 disasters. They must prepare to manage Level - 2 and 3 disasters by themselves before external help is able to reach them. They must develop the capacity to assess immediate relief needs using nationally endorsed tools and methods. Finally, they ought to establish and manage relief distribution points and manage databases of vulnerable populations, vulnerability profiles, and disaster risk profiles.

There should be differentiated responsibilities **between rural and urban municipalities and sub-metropolitan and metropolitan jurisdictions.** Standard operating procedures would enable a more systematic disaster response. **Municipalities** must seek technical support from their federal and provincial counterparts for hazard mapping, risk monitoring, risk reduction, and mainstreaming DRR into development. They must immediately inform concerned actors of any disaster incidents. Municipalities should take early action, based on early warning systems provided by the province or a federal agency.

6. Intergovernmental and inter-agency coordination and collaboration: Coordination and collaboration between governments is vital for the delineation of roles, responsibilities and accountabilities on DRR.

As mentioned in Japan's 'wide area support system', **municipalities must collaborate**, as sister municipalities, to share and combine resources so that the unaffected municipality can assist the impacted municipality.

The **NDRRMA** must coordinate with relevant federal ministries and departments to enhance capacity such as: monitoring, forecasting, or search and rescue. It ought to develop and strengthen a national disaster database system and maintain a disaster information management system. To ensure inter-agency collaboration, the NDRRMA must facilitate existing coordination and collaboration mechanisms, such as: humanitarian cluster groups etc. Finally, it must facilitate and operate the national early warning system.

The CDO's role and responsibility to mobilize federal and provincial resources to help local governments is crucial (e.g. security personnel mobilization). The capacity of the District Emergency Operation Centre (DEOC) is key for disaster management coordination.

Coordination and collaboration with Nepal's development partners, UN Agencies, intergovernmental organizations, and INGOs, private business and corporate sectors and civil society organizations is vital to the disaster management agenda. This falls under the federal government's jurisdiction.

1 Introduction

1.1 National DRRM context

Nepal's current landscape of disaster governance is guided by its Constitution (2072) (2015 AD) and the Disaster Risk Reduction and Management (DRRM) Act 2074 (2017 AD). The Constitution stipulates that disaster risk reduction and management as a sole authority of local government, and also as a shared authority amongst federal, provincial and local governments. The spirit of the Constitution suggests that local governments shall do as much as they can on their own, and where they cannot, provincial and federal governments shall provide back-up or lead disaster risk reduction and management. However, the spirit is not well reflected in DRRM Act and other legal provisions and the ambiguity has created confusion about roles, responsibilities and accountability between these three levels.

The sharing of authority, responsibility and accountability must be based upon a solid basis and the DRRM National Council has decided to do establish it on the nature, intensity and scale of disasters (Decision 2 of the meeting of the Council on Baishakh 22, 2076 (May 5 2019).

The DRRM Act 2074 sets out formal structures, roles and responsibilities at federal, provincial, district[2], and local levels. At federal level there is provision for a DRRM National Council, Executive Committee, and National Disaster Risk Reduction and Management Authority (NDRRMA). The First Amendment of the DRRM Act 2074 in 2075 (2019 AD) also includes a provision for a Province Disaster Management Council (Chapter 6, Clause 13Ka) and further specifies the structure and functions of Provincial Disaster Management Executive Committees.

The Act also stipulates a structure (a Disaster Management Committee) and DRRM functions for each local government. Local governments are also guided by the Local Government Operationalization (LGO) Act 2074 (2017 AD), which established disaster management structures and functions for each local government and their ward units.

The DRRM Act led to the establishment of the National Disaster Risk Reduction and Management Authority (NDRRMA), to coordinate and implement DRRM-related functions in the country. The DRRM Regulations 2076 further elaborate the functions of different government decision-making mechanisms in line with provisions of the DRRM Act 2074. The Government of Nepal (GoN) has endorsed a National DRRM Policy 2075 and Disaster Risk Reduction National Strategic Action Plan 2018-2030, which provides a comprehensive planning framework for disaster risk reduction and management in Nepal, encompassing different priority areas and guiding government actors and stakeholders to achieve targets by adopting appropriate processes.

Rationale for this delineation study

Despite the constitutional and legislative provisions guiding DRRM authority, there is less clarity on the authority, responsibility and accountability of the above structures, and between the three levels of government - i.e. who will do what in the planning and implementation of disaster risk reduction and management activities at federal, provincial and local levels. Primarily, it is unclear how the roles and responsibilities will be shared between the federal,

[2] District Disaster Management Committee (DDMC) is headed by a Chief District Officer (CDO). The Chairs/Mayors of local governments (and some federal government agencies), depending on the districts, serve as members of the Committee. The Committee's main role is to lead and support disaster preparedness and response in the district. For details, see: DRRM Act 2074 & DRRM Regulation 2076

provincial and local governments according to the nature of hazards, intensity, and scale of disaster events.

The DRRM National Council recognizes the importance of delineating the scope of disasters, and the need to specify the various functions amongst three levels of government. Consequently, the Council tasked[3] the Ministry of Home Affairs (MoHA) to propose the formulation of a legal draft on the "delineation of authority, responsibility and accountability between federal, provincial and local levels according to the nature, intensity and scale of the disaster."

While carrying out this task, it was deemed important to consider the various jurisdictional mandates and practical issues that governments need to contend with, such as the capacity of different local governments situated in various geographical regions and universally accepted DRRM principles.

The Policy and Institutions Facility (PIF)[4] - a component of DFID's Disaster Resilience Programme - is responding to this call from MoHA, and is providing technical assistance to carry out this study to develop the basis for delineating the authority, responsibility and accountability for disasters, as requested by the DRRM National Council.

1.2 DRRM in a federalized Nepal

In 2015, Nepal adopted a new Constitution. As the fundamental law and policy framework for governance, the Constitution of Nepal introduced a federal system "Internalizing the people's sovereign right and right to autonomy and self-rule, while maintaining the freedom, sovereignty, territorial integrity, national unity, independence and dignity of Nepal". Article 56 of the Constitution has defined "the structure of the Federal Democratic Republic of Nepal shall be of three levels, namely the Federation, the State and the Local level" and "the Federation, State and Local levels shall exercise the power of State of Nepal pursuant to the Constitution and law".

Within this framework, DRRM is included in Schedule 7, Schedule 8 and Schedule 9, implying that DRRM falls under the sole authority of local government, along with shared authority between federal, provincial and local levels. However, the Constitution directs that laws made by local government to exercise any authority shall not be inconsistent with federal laws or any laws made by the province or the National Assembly. Similarly, the laws made by provincial government cannot defy federal laws. This brings confusion and contradiction in disaster risk reduction and management interventions.

Recognizing the need for co-ordination between federal, provincial and local government, Article 235 of the Constitution states that the federal parliament will make the necessary laws to maintain efficient coordination between the federal, state and local levels. These laws are in the process of formulation. While drafting such laws for co-ordination in disaster management, it becomes crucial to consider factors such as the formation of a coordinating mechanism, and the anticipation of disputes or contested authority between the governments.

The Constitution has mandated the mobilization of the Nepal Army in disaster management, as stipulated in federal law. Article 273 of the Constitution gives the President authority to declare an emergency, on recommendation from the federal government. Article 273 (2) has the provision to declare a state of emergency in a province due to a natural calamity or epidemic, when the province requests the federal government to do so. Article 51 [Sub-

[3] Decision 2 of the meeting of the Council on Baishakh 22, 2076 (May 5 2019)

[4] The Policy and Institutions Facility (PIF) is a policy support window within DFID/Nepal's disaster resilience portfolio, designed to support the Government of Nepal. It is managed by Oxford Policy Management Ltd. For details, https://www.opml.co.uk/work-with-us/teams/nepal/about-the-team

article 51(G) (9)] of the Constitution allows provincial governments to formulate and implement policies related to “advance warning, preparedness, rescue, relief and rehabilitation, to mitigate risks from natural disasters”. While the Constitution clearly delineates some of these responsibilities, organizational structures and the obscured policy framework on concurrence and sole authority raises the question of who will do what and how during a disaster. There is a risk that no government body would be held responsible and accountable while blaming each other for a failed DRRM due to a lack of clarity of roles such as during the 2017 and 2019 floods and the 2019 windstorm[5].

1.3 Existing DRRM initiatives

Nepal’s overarching framework for disaster risk reduction is guided by the Sendai Framework for Disaster Risk Reduction (SFDRR) 2015-2030 (UNDRR, 2015[6]). The four priority actions of the SFDRR to prevent new disasters and reduce existing disaster risks, are: (i) Understanding disaster risk; (ii) Strengthening disaster risk governance to manage disaster risk; (iii) Investing in disaster reduction for resilience, and; (iv) Enhancing disaster preparedness for effective response, and to "Build Back Better" in recovery, rehabilitation and reconstruction. Aligning with the principles and framework of the SFDRR, the GoN endorsed the National Policy on DRRM 2018 and the Disaster Risk Reduction National Strategic Action Plan (2018-2030).

The Disaster Risk Reduction National Strategic Action Plan (2018-2030) proposes priority actions for 2018 to 2020 in the short-term, 2018 to 2025 in the medium-term, and 2018 to 2030 in the long-term, assigning responsibilities within relevant federal, provincial and local governments. However, the Plan does not address the roles based on disaster intensity and impact. Similarly, the Local Government Operationalization Act (LGOA) 2074 lists different disaster management functions (table 8), including the management of DRRM fund, formulation of policies, rescue and relief operations. Even so, it fails to address how and when the local government need to seek support from provincial and federal level for disaster management.

There is some clarity on the roles of agencies for hazards monitoring and forecasting. For instance, the Department of Mines and Geology (DMG) is responsible for monitoring earthquakes in Nepal. This department has established an Optimum Seismic Monitoring System within the National Seismological Centre (NSC) linked with the National Emergency Operation Centre (NEOC), under MoHA. Forest fire and air pollution are monitored through departments under the Ministry of Forest and Environment (MoFE).

The Department of Hydrology and Meteorology (DHM) has developed a 3-day flood forecasting system and provides weather forecasts and flood early warnings. Similarly, the Department of Water Resource and Irrigation, the Department of Hydrology and Meteorology (DHM), and the Department of Mines and Geology (DMG) have put together hazard maps for different parts of the country. However, there is no clarity on how any of this information will be used by local, provincial or federal level for disaster management.

The impetus from the Gorkha earthquake led to the revision of Nepal’s National Building Codes (NBC; DUDBC, 2015)[7]. The Codes are primarily implemented by local governments, including use of authority to ensure that both public and private sector are adhering to them. Provincial and federal agencies are also responsible for following these codes in their

[5] Karna, R. and Bhandari D. (2019). Inter-Governmental Coordination in the Response and Relief to Windstorm Disaster in Bara and Parsa. Oxford Policy Management. Kathmandu

[6] UNDRR (2015). The Sendai Framework for Disaster Risk Reduction 2015-2030. United Nations Office for Disaster Risk Reduction. Geneva. 32p.

[7] DUDBC (2015). Revised National Building Codes (available at: https://www.dudbc.gov.np/buildingcode. Accessed on February 20, 2020

programmes and projects. Lastly, the National Disaster Response Framework - NDRF (MoHA, 2019[8]) was revised, building on the experience of the earthquake response.

The NDRF provides some guidance for an effective and coordinated national response. However, this response framework also fails to clearly assign roles amongst agencies. For example, as per the NDRF, the leading responsible agencies for relief distribution are simultaneously local governments and District Disaster Management Committees (DDMC). This creates overlapping roles and ambiguity in accountability.

1.4 Study objective

The primary objective of this study is to provide policy recommendations on the delineation of roles, responsibility and accountability of federal, provincial and local governments for disaster risk reduction and management according to the nature, intensity and scale of the disaster.

Specifically, the assignment aims to:

i. categorize disasters according to the nature, intensity and geographic coverage of hazards, and potential consequences of disasters;

ii. assess and map-out, according to jurisdiction, the roles and responsibilities of local, district, provincial and federal governments, based on jurisdiction;

iii. analyse existing and minimum required capacity at the local and provincial level to prepare for and respond to disasters;

iv. provide policy recommendations to delineate authority, responsibility and accountability between local, provincial and federal governments;

v. assist MoHA, based on the agreed recommendations, to draft legal instruments as instructed by the DRRM National Council.

1.5 Study methodology

This study depicts the outcomes of: (i) a review of concepts, policies and practices through academic analysis and interdisciplinary reflections; (ii) feedback from consultations with 28 local government leaders and bureaucrats in Nepal about existing practices and capacities, based on their understanding of DRRM; and, (iii) consultations with experts and agencies. This work enabled the consolidation of recommendations. The PIF developed the Terms of Reference (ToR), through internal consultation, to specify the scope of the study; and key questions to answer (Annex 1).

Since this study is intended to support the government on inter-governmental DRRM decision-making, it becomes crucial to further engage DRRM Actors at federal, provincial and local level to validate and operationalize proposed recommendations. The draft report was shared with some DRRM actors and their feedbacks are incorporated in the final report. The findings and recommendations can be utilized to prepare legal draft as requested by the Council. However, the legal draft may require further discussions with relevant government and other DRRM actors at the federal, provincial and local levels considering diversity of views and political concern in DRRRM jurisdictions. These shall provide an opportunity to further verify the outcomes of this study and its policy recommendations, which will become important input to help develop and finalize the legal draft.

[8]MoHA (2019): National Disaster Response Framework (revised) 2075. Ministry of Home Affairs. Kathmandu. Available at http://neoc.gov.np/uploads/document/file/New%20NDRF%202075_20190509125109.pdf

Study review

The study team reviewed concepts and practices to understand the contemporary discourse on community centred decentralized DRRM within the federal landscape. The review also focused on the categorization of hazards and disasters to determine how these are utilized in practice in DRRM.

We also analysed the various disaster management policies and practices, and institutional structures for their implementation in different countries - particularly on the differentiated responsibilities of national, sub-national and local governments. Wherever relevant, lessons drawn from these reviews and the DRRM practices of Nepal (and other countries, such as Bangladesh, India, Indonesia, Japan, Pakistan and the Philippines) have been cited in relevant sections of the study.

Study consultations

The study involved consultations with 28 local level bureaucrats, and leaders from different provinces (Annex 2). The individual consultations increased local government understanding, confirmed existing capacity, and identified existing and potential commitments to disaster management. The study team consulted experts from different organizations across Nepal to answer the ToR questions (Annex 1). Conclusions garnered have been utilized in subsequent chapters, together with useful information from the literature review.

This study looked at research on differentiated disaster risks and coping capacities in different parts of the country[9], considering the efficiency and effectiveness of disaster management and addressing gender, social and cultural issues and geographic disparities.

1.6 Composition of this report

This study provides an overview and recommendations for the delineation of authority, responsibility and accountability between the three layers of government, considering the existing DRRM landscape, and with a focus on local leadership.

Chapter 2: Analyses and presents the different categories of hazards and disasters, based on their nature, intensity and scale (potential consequences), reflecting on national and international best practices.

Chapter 3: Discusses the anticipated optimum capacity of different local governments to lead disaster management, as per their constitutional mandate.

Chapter 4: Reviews the existing capacity of local government and seeks to reveal the gaps between minimum required DRRM capacity and existing capacity.

Chapter 5: Provides an overview of existing capacity at provincial and federal level.

Chapter 6: Discusses the potential delineation of authority, responsibility and accountability between federal, provincial and local governments for effective disaster management.

[9] Areas are based on their geographic location, remoteness, and access to basic and emergency services of local governments. This is also, to some extent, linked to categories of local governments - metropolitan, sub-metropolitan, urban and rural municipalities in Tarai, inner-Tarai, hills and high mountains

2 Categorizing hazards and disasters in Nepal

This chapter analyses hazards and disasters based on their origin, nature and potential consequences, and tries to categorize them building on international concepts and best practices.

Firstly, this chapter attempts to categorize hazards, and discusses whether or not such categorization informs decision-making for the institutional delineation of roles and responsibility.

Secondly, the chapter reflects upon various national and international best practices to categorize disasters and discusses whether such categorization suffices to justify jurisdictionally disaggregated decision-making.

Finally, through further review of literature and existing practices in DRRM, this chapter recommends the categorization of hazards and disasters, with disaster-specific indicators. The purpose of categorization is an attempt to demarcate governmental roles, and to ensure the accountability of local, provincial and federal governments to lead disaster management.

2.1 Classification of hazards based on their nature

There are numerous definitions of the term disaster. It is interchangeably used with some other words like “crisis” and “emergency”. The United Nations Office for Disaster Risk Reduction (UNDRR) defines the term disaster as: “a serious disruption of the functioning of a community or a society at any scale due to hazardous events interacting with conditions of exposure, vulnerability and capacity, leading to one or more of the following: human, material, economic and environmental losses and impacts.” (UNDRR, 2009[10]). The losses and impacts depend on the community situation exposed to the hazard, and there are different examples to categorize disasters.

The disaster is a result of interplay of the exposure to a hazard; the conditions of vulnerability that are present; and insufficient capacity or measures to reduce or cope with the potential negative consequences.” (UNDRR, 2009). “Hazards are phenomena or an event that has the potential to cause loss of life, property and disruption of services.” (ibid). Their origin can be natural, human-induced, technological or industrial.

According to the UNDRR’s definition of vulnerability, “Vulnerability is a condition or set of conditions that hinders people’s ability to withstand or respond or bounce back from a disaster.” All the above definitions show that hazards may originate from different natural and non-natural origins, but these disasters are not “natural.” Disasters occur due to the existing social, political and economic landscape that shapes the vulnerability (Blaikie et al, 2005[11]).

Nepal experiences many types of disasters, which are different in terms of their nature, magnitude, geographic distribution, and their impacts on people’s lives, properties and livelihoods. Nepal’s Disaster Risk Reduction and Management (DRRM) Act 2074 categorizes hazards and disasters into “natural” and “non-natural” (MoHA, 2017[12]).

The DRRM Act 2074 identifies snowfall, hailstone, avalanche, glacial lake outburst flood (GLOF), extreme rainfall, low rainfall, flood, landslide and soil erosion, inundation, storm,

[10] UNISDR (2009). UNISDR Terminology on Disaster Risk Reduction https://www.unisdr.org/files/7817_UNISDRTerminologyEnglish.pdf

[11] Blaikie, P., Cannon, T., Davis, I. and Wisner, B. (2005). At risk: natural hazards, people's vulnerability and disasters. Routledge

[12] MoHA (2075 BS). Disaster Risk Reduction and Management Act 2074. Ministry of Home Affairs. Kathmandu.

drought, cyclone, cold wave, heat wave, lightening, earthquake, volcanic eruption, forest fire or other disasters from natural causes as "natural disasters".

The Act defines "non-natural disasters" as: epidemics, famine, forest fires, insect or micro-bacterial attack, animal and bird flu, pandemic flu, snake bite, animal attack, accidents related to mines, air, road, water or industrial accident; fire, toxic gas, chemical or radiation leakage, gas explosion, consumption of toxic foods, environmental pollution, deforestation, or physical infrastructure destruction, and accidents during disaster rescue, or other disasters emanating from non-natural causes.

An important point to highlight is that the Act does not intend to categorise disasters as natural or non-natural (as such disasters are not natural) but rather tries to determine the origin of hazards - whether it is natural or non-natural. The Act harmonizes the categorization of hazards and disasters in line with the international concept that disasters are not truly natural but happen due to the interplay of hazards and existing vulnerability (Blaikie et al, 2005). The current discourse around disasters broadly agrees and classifies them as natural and non-natural (UNDRR, n.d.[13]; CRED, n.d[14]; Munich Re, n.d.[15]). On the basis of origin, natural hazards are further classified into five categories as presented in Table 1 below:

Table 1 Classification of hazards based on their nature

a. Geophysical	earthquake, ground movement, dry landslide, volcano
b. Meteorological	thunderstorm/lightning, cyclone (tornado, etc.), hailstorm, windstorm
c. Hydrological	flood, urban flood, inundation flash flood, landslide, heavy rainfall, cloudburst, low rainfall, glacial lake outburst flood (FLOF), avalanche
d. Climatological	cold wave, heat wave, forest fire, drought, frost, fog
e. Biological	epidemic/pandemic, animal attack, snake bite, insect infestations

Source: Adapted from UNDRR, 2016[16] and CRED, n.d.

Some of these hazards have localized effects, for instance: lightning, landslides, animal attack; while others have definite boundaries, such as floods; whereas others, such as earthquakes, GLOFs, and epidemics create widespread primary impact.

2.2 Frequency and intensity of hazards

Another important characteristic of hazard is its frequency, i.e. how often it occurs in a given place over a specified time. For example, in Nepal, floods are more frequent than cyclones; thunder is more frequent than hailstones; forest fires are more frequent than floods.

Similarly, hazards can be differentiated by their magnitude/intensity, i.e. how severely a hazard poses a disastrous effect on the population, assets and livelihoods. High intensity (or magnitude) hazards have a higher damaging potential. For example, a rare high magnitude event, such as the Gorkha earthquake in 2015 of 7.8 Mw killed 8,970 people, injured 22,302 people, and caused a total economic losses estimated at US $7 billion (NPC, 2015[17]).

[13] UNDRR (no date). DesInventar: Disaster Information Management System. UNDRR. Accessed on February 14, 2020 at https://www.desinventar.net/whatisdesinventar.html
[14] EM-DAT (no date). Emergency Database. Center for Research on the epidemiology of disasters (CRED). Accessed on February 15, 2020 at https://www.emdat.be/
[15] Munich Re (not date). NatcatSERVICE. Munich Re. Accessed on February 15, 2020 at https://natcatservice.munichre.com/
[16] UNDRR (2016). Terminology of Disasters 2009. Available at: http://www.desinventar.net/definitions.html (accessed on 19 February 2020)
[17] NPC (2015). Nepal Earthquake 2015: Post Disaster Needs Assessment (PDNA), National Planning Commission. Kathmandu

High magnitude, low frequency events tend to attract more scrutiny due to their high and wide-ranging impact and the media attention they garner. Such events demand a national/international level response and are beyond the sole capacity of local government. They require federal level leadership or support on rescue, response, recovery and rehabilitation.

However, low magnitude and high frequency events, such as forest fires and lightning in Nepal take comparatively fewer lives in a single event but have equally serious implications in the long-term. For instance, there were 1,889 fire events over the last 7 years, which killed 913 people. Similarly, every year during monsoon, Nepal faces flash floods in the Tarai Region and landslides in the hilly region. Such reoccurring and high frequency events tend to increase the vulnerability of the population. Such events, which are localised in nature, can ideally be managed by local government.

However, categorizing hazards based on magnitude/intensity alone does not inform decision-makers on their delineation of roles and responsibilities. For example, an earthquake is classified under 6 categories, as presented in Table 2 based on magnitude on the Richter scale.

Table 2 Classification of earthquake

Classification	Magnitude (on Richter Scale)	Earthquake effects
Great	8 or more	Great earthquake. Can totally destroy communities near the epicentre.
Major	7 - 7.9	Major earthquake. Serious damage.
Strong	6 - 6.9	May cause a lot of damage in very populated areas.
Moderate	5 - 5.9	Slight damage to buildings and other structures.
Light	4 - 4.9	Often felt, but only causes minor damage.

Source: Michigan Technological University[18]

For instance, an earthquake of magnitude 7 on the Richter scale in a remote, unpopulated area, with no economic infrastructure may cause no impact on lives and livelihoods, whereas a magnitude 6 earthquake might have a widespread impact in an area with a dense population and a weak infrastructure.

The scale of intensity of a hazard is not enough to delineate whether that particular hazard event ought to be managed by federal or local government, unless its impact on the human and economic components is analysed as well. The mere scale of intensity of a given hazard neither spells out its consequences, nor spells out the need for a response. Information on consequences and potential impact of hazards is needed to inform the response required and put together a risk-informed analysis, as discussed in section 2.6 and Annex 3.

There are different methods to measure intensity. For hazards like landslides, droughts and wildfire, the intensity scale can be determined based on the area covered. Floods are analysed in terms of return period. Extreme temperatures are measured in degree Celsius, storms in wind speed, chemical spills in cubic meters and rainfalls in mm/hr. Some hazards, such as biological hazards and lightning, cannot be categorised with intensity scales.

2.3 Slow and rapid onset hazards

Hazards can be grouped into rapid onset and slow onset hazards. Rapid onset hazards trigger and spread very quickly. Lightning and earthquakes are very quick onset hazards,

[18] MTU (no date). Classification of earthquake hazard based on magnitude. Michigan Technological University http://www.geo.mtu.edu/UPSeis/magnitude.html

although their development is slow until reaching a threshold point. Rapid onset hazards demand quick decision-making from vulnerable communities and concerned agencies. Some other examples of rapid onset hazards in Nepal are avalanches, floods, landslides, severe thunderstorms, fires including forest fires, windstorms and accidents. These trigger with little warning and strike rapidly giving very little time to prepare for the potential disaster.

The other group of hazards termed as slow onset hazards strike and spread slowly. These hazards include droughts, insect infestations, desertification, epidemics and climate change. They take a longer time to develop into a catastrophic level, and provide longer lead times for early warning, and for decision-makers to act upon available information.

The past history of geophysical, meteorological, hydrological and climatological hazards helps identify risk at certain locations to become prepared. However, biological hazards often emanate without any history or pre-determined basis for risk, hence require national level attention. For biological hazards, a disastrous event is determined when the number of cases exceeds the agreed threshold of cases for the hazard, which is often context specific. Deaths must meet the case definition for the disease, and the end-date is when the outbreak is declared over. Infectious disease outbreaks are dynamic events and are dependent on a number of factors that can propagate or contain the spread of new cases (UNDRR, 2017)[19].

2.4 Categorization of disasters

This section intends to capture the different ways in which disasters are categorized. These categories provide an idea of how to understand potential consequences. Although they do not provide a clear demarcation of consequences in affected communities, disaster categories can be helpful to devise management roles between different agencies.

Threshold indicators of disasters

EM-DAT, the international disaster database of the Centre for Research and Epidemiology of Disasters (CRED) needs at least one of the following criteria to be entered into its database:

- Ten (10) or more people reported killed (this includes both dead and missing)
- One hundred (100) or more people reported affected (people requiring immediate assistance during a period of emergency, i.e. requiring basic survival needs such as food, water, shelter, sanitation and immediate medical assistance)
- Declaration of a state of emergency
- Call for international assistance

As shown above, EM-DAT focuses on 4 indicators: (1) human deaths (including missing); (2) affected population (needing immediate food, water and shelter and medical service); (3) overwhelmed territory declaring emergency; and, (4) need of external support. Similar indicators are used in Reporting Guidelines of progress to the Sendai Framework of Action for Disaster Reduction (UNDRR, 2017[20]), from the perspective of data availability, feasibility of collection, and measurability. They are:

- Number of deaths and missing
- Number of people injured or ill, as a direct result of disasters

[19] UNDRR (2017). Technical Guidance for Monitoring and Reporting on Progress in Achieving the Global Targets of the Sendai Framework for Disaster Risk Reduction. Collection of Technical Notes on Data and Methodology. UNDRR. Available at: https://www.unisdr.org/files/54970_techguidancefdigitalhr.pdf

[20] UNDRR (2017). Technical Guidance for Monitoring and Reporting on Progress in Achieving the Global Targets of the Sendai Framework for Disaster Risk Reduction, UNDRR

- People whose houses were damaged or destroyed
- People whose livelihoods were disrupted or destroyed

Descriptive versus numerical distinction of disasters

According to Jithamala Calldera et al (2016)[21], the descriptive terms for disasters are insufficient to clearly distinguish severity levels. Natural events that cause fatalities, injuries and property damage are identified as emergencies, disasters, calamities, cataclysms, and catastrophes. Although these words have increasing levels of seriousness, and one observer's "disaster" might be another's "catastrophe" or even "calamity," depending on personal feelings towards, and experience of, the event. To specify the scope of disasters, Gad-el-Hak (2008[22]) proposes two indicators along with their scales of measure to categorize disasters: (i) number of casualties; or (ii) geographic coverage of a hazard. See Table 3 below.

Table 3 Disaster scope

Scope or Level	Label of Disaster	Number of Casualties		Geographic Area Affected
I	Small disaster	< 10	Or	< 1 km2
II	Medium disaster	10 – 100	Or	1 – 10 km2
III	Large disaster	100 – 1000	Or	10 -100 km2
IV	Enormous disaster	1000 – 10,000	Or	100 – 1000 km2
V	Gargantuan disaster	>10,000	Or	>1000 km2

Source: Gad-el-Hak, 2008

However, the numbers or ranges proposed for casualties or the area affected under such parameters is sometimes arbitrary. To fully demonstrate the severity of a given disaster, ideally, there should be a relationship between the existing scale of hazard and the impact parameters such as fatalities, injuries, and/or economic damage.

The relationship between the available impact parameters and the existing hazard scale were studied using data from the National Oceanic and Atmospheric Administration (NOAA) database. The study found that disaster impacts are not highly correlated with the existing scales for volcanoes, earthquakes, tsunamis and tornadoes. This means that according to the available data there is no evidence of a linear relationship between impact parameters and the existing intensity scale.

A nonlinear relationship between existing scales and impact factors can exist. This hypothesis was tested using 652 volcanic eruption records from 4360 B.C. to 2014 A.D. in the NOAA database with five impact factors: number of fatalities, injuries, houses damaged, missing people, and financial damage.

Disasters based on cascading impacts

The high level of dependency by modern populations on critical infrastructure, markets and communication networks allows the impact of disasters to propagate through existing socio-economic system vulnerabilities. Where vulnerabilities overlap and interact, escalation points

[21] Jithamala Caldera, H., Wirasinghe, S.C., and Zanzotto, L. (2016). An Approach to Classification of Natural Disasters by Severity. University of Calgary. Canada

[22] Gad-el-Hak, M., (2008). The Art and Science of Large-scale Disasters. In Gad-el-Hak, M. (edt). Large-Scale Disasters. Cambridge: Cambridge University Press, pp. 5–68

are created that can cause secondary effects, with the possibility of a greater impact than the primary event (Alexander, D. and Pescaroli, G. 2019[23]).

The 2015 Gorkha earthquake led to different resulting hazards such as landslides, flood, and avalanches (Williams et al, 2018[24]) which produced cascading impacts. Similarly, the outbreak of epidemic diseases is not an uncommon post-flooding phenomenon in Nepal.

As shown in Table 4 below, Alexander, D. and Pescaroli, G. (2019) categorize cascading disasters based on escalation points. The study suggests that some disasters become catastrophes when the initial causal factor for a primary event triggers further causal factors for other events, which in turn propagate as cascades - leading to huge disaster loss and chaos. This understanding of a cascading disaster is important in the delineation of roles and responsibilities among the three tiers of government. For instance, a simple manageable flood event in a municipality could lead to an outbreak of water-borne diseases which requires provincial and federal level support.

Table 4 Categorization of disasters based on cascading impacts

Level	Description of level	Cascading characteristics
Level 0	Simple incident or major incident	No significant cascades or escalation point
Level 1	Major incident of limited complexity	Simple short cascades as secondary effects of the starting impact
Level 2	Major incident or small-scale disaster, some complex consequences	Limited cascade chains propagate to tertiary levels
Level 3	Disaster with complex consequences	Significant cascade chains with at least one escalation point
Level 4	Disaster with substantially complex consequences	Easily identifiable cascades with escalation points
Level 5	Catastrophe with complex consequences	Major initial impacts set off long causal chains of cascading consequences, some of which through escalation points generate secondary causal chains

Source: Alexander, D. and Pescaroli, G. (2019)

The above literature highlights a few important points for consideration, while categorizing levels. First, from Gad-el-Hak (2008), the foremost task for categorising disaster levels is to identify relevant indicators. Gad-el-Hak uses “number of casualties” and “geographic coverage” as indicators for different levels. Second, any small incident could turn into a catastrophic disaster due to cascading chains. Thus, it is important to factor the cascading effect, while delineating roles based on the categorisation of disasters.

2.5 National and international practices in categorizing disasters

The study team reviewed the practices in Nepal and neighbouring countries on disaster categorization through a review of relevant policies, guidelines and papers. There are varying practices in different countries. There is, however, a common approach to automatically assign responsibility for disaster management to local level government at first. In many

[23] Alexander D, Pescaroli G. (2019). What are cascading disasters? UCL Open: Environment. 2019 (1):03. University College of London. Available from: https://dx.doi.org/10.14324/111.444/ucloe.000003 Accessed on February 19, 2020

[24] Williams, J. G., Rosser, N. J., Kincey, M. E., Benjamin, J., Oven, K., Densmore, A. L., Dijkstra, T. A. (2018) Satellite-based emergency mapping using optical imagery: experience and reflections from the 2015 Nepal earthquakes. Natural Hazards and Earth System Sciences, 18(1), 185-205

countries, sub-national and national governments provide support only when the increased scale of the disaster overwhelms the local government's capacity to manage. Findings are discussed in the below paragraphs.

Nepal

Nepal's National Emergency Operation Centre's Standard Operating Procedures (NEOC SOP) 2072[25] has outlined its procedures, depending on levels of a disaster event. It classifies disasters into 4 levels. If the nature and effect of a disaster is limited to certain localities, it is categorized as Level 1. At this level, the Centre's leadership will be the Chief of the NEOC (Under Secretary), who will work under guidance from the Joint Secretary of the respective Division of the Ministry.

If the nature and effect of the disaster is at district level, the Joint Secretary of the Division will normally head the NEOC, and the Secretary of MoHA will actively guide the NEOC Team. If the nature and effect of the disaster is of regional nature (i.e. expanding to multiple districts), the Secretary of MoHA will lead the NEOC, and the Home Minister will actively guide the NEOC Team. However, there was no difference in function during the 2015 earthquake when there was no federalism and during the 2017 floods when there was federalism.

Level 4 is a national emergency situation. The Chief Secretary of Nepal Government will lead the NEOC Centre and the Cabinet will guide the NEOC Team, although this reflects a bureaucratic hierarchy over functional differences in operation of the NEOC. The deputation of leadership may change as the NEOC will be managed under the Chief Executive of the NDRRMA. However, the levels of disasters provide an emerging picture of how to categorize disasters and how to scope disaster management leadership.

The above classification of disasters used for NEOC operationalization focuses on the geographic coverage of disasters and scope of command. However, it does not define other characteristics such as the level of disasters and does not provide differentiated roles and responsibilities for disaster management.

MoHA has used another classification of disasters in its disaster database management system (BIPAD[26]). The categories are: "minor, major, severe and catastrophic." The purpose of categories is to alert the country about the scale and potential consequences of disasters, based on internal discussions in MoHA. The categorization is described as follows:

Table 5 Disaster categories used in BIPAD

Label of Disaster	Indicators
1. Minor	When there is an event with no human death (but has probable impact on human injuries, missing persons and economic loss)
2. Major	Human death count between 0 to 10
3. Severe	Human death count between 10 to 100
4. Catastrophic	Human death count greater than 100

Source: National Emergency Operation Centre.

[25] MoHA (2072 BS). Standard Operating Procedures of National Emergency Operation Centre 2072. Ministry of Home Affairs. Kathmandu

[26] BIPAD is Disaster Management Database Software System developed by Government of Nepal, Ministry of Home Affairs. Kathmandu. https://bipad.gov.np/. This site is still under construction; link may change

India

In India, the National Government formed a High-Power Committee (HPC) on Disaster Management in 1999, tasked to categorize disasters based on their origin and nature (NCDM, 2002). The HPC has categorized disasters under 4 levels: Level 0, Level 1 Disaster, Level 2 Disaster, and Level 3 Disaster (NCDM, 2002[27]) as depicted in Table 6 below. Following recommendations from the HPC, the National Disaster Management Authority (NDMA) of India has categorized different types of hazards and classified disasters to help develop the National Disaster Management Plan (NDMA, 2016[28]).

Table 6 Disaster category in India

Label of Disaster	Code	Descriptive Indicators
Level 0	L0	A situation of normalcy. Incident may not warrant significant response
Level 1	L1	The level of disaster that can be managed within the capabilities and resources at the District level. However, state authorities will remain in readiness to provide assistance, if needed
Level 2	L2	Disaster situations that require assistance and active mobilization of resources at the state level, and deployment of state-level agencies for disaster management. Central agencies must remain vigilant for immediate deployment, if required by the State
Level 3	L3	A nearly catastrophic situation or a very large-scale disaster that overwhelms the State and District authorities

Source: NCDM (2002)

India's NDMA (2016) refers to Level 0 – L0 to denote a situation of normalcy. In this case, there may be a hazardous incident that does not reach the level of disaster warranting the government to redirect resources to respond to it. Also, the duration between a forecast and an actual disaster occurrence is considered an L0, and it should be taken as a prompt to conduct risk reduction and preparedness measures, while alerting people at risk.

A Level 1 disaster is generally managed at district level. A Level 2 disaster warrants support and leadership from the State Government. Level 3 disasters correspond to catastrophic situations that overwhelm district and State capacity to respond, and Central Government efforts are anticipated. The lesson learned from India is that categorizing levels and assigning respective authority and responsibility to specific tiers of government is important to ensure accountability.

Pakistan

In Pakistan, the Disaster Risk Management Framework (NDMA, 2007[29]) classifies hazards and disasters into: "Low, Moderate, High and Very High," depending on potential "negligible, minor, moderate and major damage" respectively.

Disaster categories in both Pakistan and India do not focus on numbers or ranges of casualties, injuries or asset losses to define the levels. However, it is also crucial to assign indicators and thresholds for each level of disaster to clearly define the levels.

[27] NCDM (2002). Report of High Powered Committee on Disaster Management (2002). National Centre for Disaster Management. New Delhi
[28] NDMA (2016). National Disaster Management Plan of India (2016). National Disaster Management Authority. New Delhi
[29] NDMA (2007). National Disaster Risk Management Framework Pakistan. National Disaster Management Authority, Government of Pakistan

Assigning well-defined levels to each government will ease the process of decision-making to some extent. For this purpose, the study team reviewed disaster databases, Sendai reporting formats, and consultations with humanitarian practitioners to finalize the main indicators to define the disaster levels.

2.6 Disaster categories and humanitarian assistance strategies

To capture the practice and ease of collection of data on the ground during a crisis, the study team held consultations[30] with experts working in major humanitarian agencies (UN, Red Cross and INGOs) in Nepal. Most agencies have an internal strategy for disaster response. They have contingency/emergency operational procedures activated during a disaster response based on their internal categories of disasters. The disasters are mostly categorized as Level 1, 2 and 3, reflecting the level of resource mobilization, operational leadership required, and level of decision authority assigned to that leadership.

In all cases, humanitarian agencies regard a normal period as a preparedness phase. Some of them define preparedness as “Level 0”. In many agencies, disaster events with minor effects that do not warrant raising disaster funds or switching normal operations to emergency response mode are categorized as L0.

During the 2015 earthquake, many humanitarian organizations set up separate management structures alongside their usual organization management structures. Some organizations switched their management structure to “emergency mode”, or Level 3 equivalents, following their procedural guidelines. Some organizations reduced their operation status to Level 2 after a few days’ work, following a situational assessment. Lessons from the 2015 earthquake demonstrate that a disaster is a dynamic situation. Frequent assessment of the disaster situation helps accommodate effective and timely DRRM decisions.

The Humanitarian Country Team (HCT) in Nepal has prepared Contingency Plans for Monsoon Flooding (HCT, 2019[31]) and Earthquakes (HCT, 2016[32]). These plans consider worst-case scenarios for humanitarian assistance. The monsoon contingency planning is based on historical trend analysis, which estimates that should flooding occur under the current forecast conditions, the total population in the areas of the Tarai Region is at risk.

The HCT prepared a Contingency Plan for Earthquakes as well, building on a seismic hazard model at country-level. The plan takes into account the worst-case scenario of an Mw8.6 earthquake (Robinson et al, 2018[33]), incorporating lessons from the 2015 earthquake response. The Contingency Plans focus on coordination with the Core Group, which comprises the following priority sectors: Food Security/Emergency Nutrition, Health, WASH, Protection and Shelter/NFI. Planning assumptions include indicators for:

- Deaths
- Injured
- Household displaced
- Affected populations
- Damages that lead to disruption of basic services

[30] List of People Consulted, and Consultation Meetings in Annex 2 of this Report
[31] HCT (2019). Contingency Plan Nepal. Monsoon Flooding 2019. Humanitarian Country Team. Kathmandu.
[32] HCT (2016). Contingency Plan Nepal. Earthquake. Humanitarian Country Team. Kathmandu.
[33] Robinson, T. R., Rossera, N. J., Densmorea, A. L., Oven K. J., Shrestha S. N. and Guragain, R. (2018). Use of Scenario Ensembles for Deriving Seismic Risk. Available at: https://doi.org/10.1073/pnas.1807433115

2.7 Conclusion

Building on document review, consultations and analysis, it can be concluded that the categorization of hazards and disasters is an important strategy for effective disaster management. It helps in activating different emergency operations, establishing the required level of effort, and assigning differentiated roles to different levels of governments. The categorization of disasters, based on indicators and their thresholds, helps to delineate authority, responsibility and accountability to different levels of government. However, this needs further discussion and agreement among DRRM Stakeholders at federal, provincial and local levels.

Quantifying the threshold for disaster level

Quantitative indicators are helpful to determine thresholds to distinguish disaster consequences and take disaster response decisions. They allow local governments to immediately assess the disaster category and determine whether the response is within their existing capacity, or whether they must seek support from provincial and federal governments. Quantifying disaster severity sets clear demarcations for government capacity and resource deployment. It helps prompt decisions by minimizing vagueness in disaster response accountabilities. Importantly, timely decision-making saves lives and livelihoods.

Provision for complexity and uncertainty

There is complexity and uncertainty in managing disasters of any level. Thus, it is important to have provisions for local governments to seek support whenever assumed necessary regardless of quantitative thresholds, especially where their qualitative assessment determines that the event is beyond their capacity. The disaster consequences and management strategies largely depend on the nature of hazards, and the vulnerability of affected communities. There are complexities associated with uncertainty of occurrence and magnitude/intensity of the hazards. Therefore, it is also worth considering the subjective assessments and judgments of decision makers along with quantitative thresholds, to decide whether local or provincial government require external support to manage a disaster event.

Indicators for quick decision-making

The purpose of categorising disasters is to enhance institutional decision-making. Indicators guide us in the collection of essential data during a crisis situation. They help decision-making based on a rapid analysis of available data. While other data, including economic loss and longer-term impacts, is important, such information is generally excluded in disaster categorisation. Data collection focuses on other indicators such as human deaths, affected population, overwhelmed territory declaring emergency and need of external support For example, the EM-DAT reflect the characteristics of immediate response and relief, as mentioned in section 2.4 above.

Recommended disaster categorization levels for DRRM

As an attempt to categorize disasters, the study team has suggested criteria and indicators based on the above analysis and strategic inputs from consultations with the experts listed in Annex 2. We have considered international practice in categorizing hazards and disasters and choosing specific indicators to determine thresholds for different disaster levels. Table 7 below summarizes potential level of disasters with their criteria and indicators reflecting the nature, intensity, geographic spread of hazards and indicating the scale of disasters.

Table 7 Category of disasters

Indicators of Hazards and Disasters	Level of Disaster			
	Level 0	Level 1	Level 2	Level 3
No. of People Dead	0	<10	10 – 100	>100
No. of People injured	1-10	<100	100 – 500	>500
No. of families requiring immediate food support	1-10	<100	100 – 500	>500
No. of families displaced, requiring immediate shelter support	1-10	<100	100 – 500	>500
Geographic Spread/Coverage of Hazard	Within a Palika	Multiple Palikas	Multiple Districts	Multiple Provinces
Extent of property and livelihoods loss and damage	Owner can recover losses & damages with LG support	Owner can recover with support from Palika	Owner and Palika cannot manage recovery	Province cannot manage recovery
Availability of required emergency support services to disaster response (HR, Equipment, Materials, Space)	Required services are locally available or can be accessed nearby	Locally available, & can be organized based on additional need	Palika needs emergency support	Province needs Federal support
Potential cascading effects	Low	Medium	High	Severe
Infectious, communicable disease outbreak risk	Low	Medium	High	High and above
(Appropriate Indicators to add)				
Primary responsibility to lead response effort	**Local**	**Local**	**Province**	**Federal**
Potential back up responsibility/call	**May not need**	**District Offices e.g. DAO**	**Federal**	**International Call**

*Note: Criteria and indicators in this table are recommended examples based on evidence cited in this document. It is not an authentic decision of any authority

In Table 7, Level 0 is an incident with no human deaths/missing, few (<10) people are injured or are in need of immediate shelter or food. The hazard may be of localised nature, and no or low potential cascading effects are anticipated. This level of situation can be managed locally.

Level 1 is a situation where up to 10 human deaths/missing are reported, and less than 100 people are injured, or ill or infected. Less than 100 families may need immediate shelter or food. The potential spread and cascading effect of the hazard is likely. Many local governments could manage this level of disaster with minimum external support. However, neighbouring Palikas, provincial and federal government attention is necessary to prevent the potential spread of hazard and impacts. This level of disaster fulfils the criteria to be a recorded disaster in EM-DAT.

Level 2 is a situation where up to 100 human deaths are reported or estimated dead or missing, more than 100 people are injured, ill or infected requiring treatment and care. Up to 500 families need immediate shelter and food. An L-2 incident requires the attention of the respective provincial government to support local governments and take necessary measures to prevent spread and reduce the risk of prospective secondary effects.

Level 3 is a national scale disaster. It warrants leadership from provincial and federal government to respond. An emergency could be declared in the disaster-affected local governments, provinces or the entire country. Depending on the consequences and required response efforts, the need may exceed country capacity - leading to seeking international support.

In forecasting or estimating disaster losses in advance of an event, the levels reflect similar level of losses and damages to determine the anticipatory level of a disaster. These disaster categories allow local, provincial and federal governments to immediately assess the disaster category, to determine whether they have the capacity to respond or need external support. In any situation and level of disasters, there should be a legally binding and rapid provision and support mechanism between government jurisdictions to ensure a prompt disaster response and efficient disaster response governance.

The delineation recommendations are matched to level of disasters along with constitutional mandates, minimum capacity and existing capacity of different municipalities at local level, province level and federal level. Real case scenarios of earthquakes, floods, landslides and fires were analysed in a responsibility matrix. The conclusions drawn are included in Annex 3 of this report.

3 Minimum required and existing capacity at local level

3.1 Introduction

In the Federal Democratic Republic of Nepal, local government is closest to the people. Local government leadership is integral to disaster governance. Global commitments on DRRM, such as the Sendai Framework for Disaster Risk Reduction, set targets for local governments' preparedness for disaster management.

As mentioned in Chapter 1, the Constitution of Nepal mandates local government leadership on disaster management. However, local governments are new under the federal system, and are in the process of setting up structures, functionaries and capacity to exercise their constitutional authority. Thus, this chapter focuses on the minimum capacities required at local government level to effectively manage different levels of disasters, as discussed in the previous chapter.

Firstly, the chapter discusses the importance of locally led disaster management and local governments' capacity to lead DRRM, building on available concepts and practices. Secondly, this chapter presents analysis that leads to recommendations on the required minimum capacity at the local level. Finally, the chapter proposes key indicators in different capacity areas across DRRM themes necessary for local government to fully exercise their authority, responsibility and accountability on disaster management.

3.2 Insights into locally managed DRRM

Recognizing local government capacity. Progress towards achieving disaster resilience is possible through appropriate policies and practices when DRRM structures and mechanisms focus on enabling local communities and institutions. Comprehensive disaster risk reduction and management approaches (Guzman, 2003[34]; Shaw, 2012[35]) focus on a system that places communities at the centre of disaster management; whereby communities are supported by local, subnational, national and international actors, depending on the scale of hazards and disasters. The role of local governments, as key frontline agencies in disaster management, is unequivocal.

To achieve the commitments of the DRRM Act 2074, and for local governments to fully exercise their DRRM authority, it is necessary for them to be able to identify the shortfalls in the capacity that they need to develop. An analysis of earthquake risk shows that the entire country is at risk of earthquakes (Robinson et al., 2018[36]). Similarly, according to the disaster database managed by MoHA (DRR Portal[37]), every local government has to face multiple disaster risks, though the level of risk is differentiated by geographic disparities, level of exposure and sensitivity, cultural practices, and socio-economic conditions.

Therefore, it is essential that local governments attain optimum capacity on governance structures and mechanisms, physical infrastructure, human resources, material acquisition,

[34] Guzman, E.M. de (2003). Towards Total Disaster Management Approach. Asian Disaster Reduction Centre and United Nations Office for the Coordination of Humanitarian Affairs Asian Disaster Response Unit. Paper presented to Asian Conference. 2003. Bangkok
[35] Shaw, R. (2012). Community Based Disaster Risk Reduction. Community, Environment and Disaster Risk Management (volume 10). Rajib Shaw (Editor). Emerald Group Publishing Limited. UK
[36] Robinson, Tom R., et al. (2018) "Use of scenario ensembles for deriving seismic risk." Proceedings of the National Academy of Sciences 115.41 (2018): E9532-E9541
[37] DRR Portal. Ministry of Home Affairs. http://www.drrportal.gov.np/

skills and access to services, and effective organization of resources, to prevent hazards and vulnerability, mitigate disaster risks, and prepare and manage consequences.

Locally managed DRRM. The study team analysed the national and international policy landscapes, and concepts and practices that promote local government leadership to disaster management, as well as the support it is receiving from sub-national and national governments. Examples come from selected countries in South Asia and South East Asia based on a literature review, and consultations with experts[38] who are familiar with different country practices.

Firstly, it is commonly accepted by most experts that the enhanced capacity of local governments can have a profound impact on saving lives and assets and building community-based disaster resilience. These views are strongly supported by theories and concepts on disaster resilience (Twig, J., 2007[39]; Imperiale, A. J., & Vanclay, F., 2016[40]; Rose, A.D., 2014[41]). Locally managed disaster resilience efforts are comparatively more efficient due to a greater understanding of the local context, vulnerability and geography. Local governments have better access to indigenous knowledge, which when combined with expert judgement, synergises for a better response (Dalisay, S. N. M., 2014)[42].

Secondly, locally managed committees have a distinct advantage over outsiders as they have better knowledge of the area, understand the local context and can identify at-risk populations quickly, can assemble rescue teams and reach incident sites sooner (Jimee et al, 2015[43]). Conversely, it takes some time for external parties to fully comprehend the emergency context before mobilising resources on the ground. For example, in the 2015 Gorkha earthquake, local communities rescued a majority of 17,887 people out of a total 22,336 injured; and recovered the majority of 6,988 dead bodies out of a total of 9,256.

Thirdly, local governments are the closest political units accountable publicly. In generating local prosperity and preserving their citizens from disasters, there is the added incentive that resilience would drive inward economic investment (Oldham and Astbury, 2018)[44].

Local government's DRRM autonomy. Ultimately, local governments are mandated to conduct emergency response measures, based solely on their installed capacity. This concept is supported by a Durham University study on the modelling of a worst-case scenario of Magnitude 8.6 earthquake in Nepal - which highlights the importance of local governments' autonomy during disasters (Robinson et al., 2018).

Local government autonomy is especially relevant when infrastructure (including airports, bridges, trails, roads, hospitals, schools) collapses and services (e.g. fuel depots, sewerage, telecom towers, water supply, electricity, and communication towers) are disrupted. A disrupted international airport means that immediate emergency services for the affected population entirely depend on what is available in-country.

Similarly, disasters may isolate a province or municipality forcing the early, critical response to depend on local resources. Key learning from this suggests that local governments must manage even large-scale disasters within their existing capacity, at least for the first few

[38] See Annex 2 A2. 1. List of Experts consulted
[39] Twigg, J. (2007). A Guidance Note on Characteristics of a disaster-resilient Community. DFID Disaster Risk Reduction Interagency Coordination Group, UK. This was revised and republished in 2009
[40] Imperiale, A. J., & Vanclay, F. (2016). Experiencing local community resilience in action: Learning from post-disaster communities. Journal of Rural Studies, 47, 204-219
[41] Rose, A. D. (2014). Local disaster resilience; administrative and political perspectives. Routledge. London.
[42] Dalisay, S. N. M. (2014). Engaging Local Knowledge for Disaster Risk Reduction. Kasarinlan: Philippine Journal of Third World Studies, 29(2), 75-102
[43] Jimee, G.K., Dixit, A. M., Tandigan, M., Sharma, S. (2015). Strategy for Developing Professional Emergency Responders in Nepal. Conference Paper. ResearchGate
[44] Oldham, K. and Asthabury, K. (2018). Evolution of Disaster Risk Governance in Greater Manchester: a case study from the UK. Procedia Engineering 212 (2018) 7–14. Elsevier

critical days of a disaster, when high magnitude hazards (such as earthquake, landslides, and floods) disrupt accessibility from the outside.

Local governments must be prepared to solely manage disasters until help from district, provincial and federal governments can arrive. Even when supported by provinces and federal level agencies, local government must maintain a "one door" policy for emergency relief assistance. There needs to be a minimum DRRM capacity baseline for each local government.

3.3 Locally-led disaster management practices

3.3.1 Local level best practices

The study team reviewed efforts from government and non-government levels in setting-up frameworks and guidelines for local governments to enhance their capacity in taking leadership for disaster management. The following sections discuss some international efforts and country practices.

Bangladesh Local Disaster Management Committees. In Bangladesh, Local Disaster Management Committees have facilitating or self-mobilization roles including volunteer mobilization. Bangladesh has over 16 million volunteers with different skills for disaster response, mobilized at the community level through NGOs and government offices. Federal agencies are lead agencies in preparedness and response action (DMB, 2010)[45]. In recent years, Bangladesh has been quite successful in effectively responding to disasters such as coastal and river-basin floods.

According to the Centre for Excellence in Disaster Management and Humanitarian Assistance (CEDMHA, (2017[46]), the Disaster Management Bureau (DMB) performs specialist support functions at the national level, in collaboration with the District and Upazila authorities (sub-units of districts) and appropriate line ministries, under the authority of the Inter-Ministerial Disaster Management Coordination Committee (IMDMCC).

Philippines Good Governance Act. The Philippines has made provisions to award provinces, cities and Barangays (village, district or ward) with a seal of Good Local Governance (DILG, 2014[47]), based on their performance. Minimum criteria and indicators have been set to evaluate overall performance in different sectors. Disaster Management is one of these sectors, with 12 performance indicators.

These provisions are mandated through the Philippine's "Seal of Good Local Governance Act of 2019"[48]. The criteria and indicators set for different governments provide delineated authority, responsibility, and incentivize provinces, cities and municipalities to improve their performance.

3.3.2 DRRM frameworks for local government

Community-Based Disaster Risk Reduction Framework. The Government of Nepal, together with major development partners, launched the Nepal Risk Reduction Consortium

[45] DMB (2010). National Plan for Disaster Management (2010-2015). Disaster Management Bureau of Bangladesh, Dhaka
[46] CEDMHA (2017). Bangladesh Disaster Management Reference Handbook, June 2017. Centre for Excellence in Disaster Management and Humanitarian Assistance. Hawaii.
[47] DILG (2014). Disaster Preparedness Profile Seal of Good Local Governance. 2014 Assessment Period Department of the Interior and Local Government. Republic of Philippines. Accessed on 20 Feb 2020: https://www.dilg.gov.ph/PDF_File/reports_resources/dilg-reports-resources-20151014_2624d5db9a.pdf
[48] https://www.officialgazette.gov.ph/downloads/2019/04apr/20190412-RA-11292-RRD.pdf

(NRRC) in 2009 (Oven et al, 2016[49]). Among 5 Flagship Programmes of the NRRC, the Flagship 4 Program focused on Community-Based Disaster Risk Reduction (CBDRR). It initiated this work to define disaster resilience by developing the following nine minimum characteristics reflecting a disaster resilient community:

1. Organizational base at ward and community level (included at municipal level by default)
2. Access to Disaster Risk Reduction (DRR) information
3. Multi-hazard risk and capacity assessments
4. Preparedness and response teams
5. Reduction management plan at municipality level
6. Disaster Risk Reduction (DRR) funds
7. Access to community managed Disaster Risk Reduction (DRR) resources
8. Local-level risk/vulnerability reduction measures
9. Community-based early warning systems

Although originally developed for communities, these characteristics seem relevant to identify the minimum attributes for local government disaster resilience, with some contextual modification to harmonize with the federal governance landscape.

Guidance Note on Characteristics of a Disaster Resilient Community Framework. These characteristics draw on A Guidance Note Characteristics of a Disaster Resilient Community (John Twig, 2007)[50]. Twig (2007) compiled outputs through a rigorous consultative process with an Interagency Group of Six International NGOs, including the British Red Cross/IFRC, to develop a framework and characteristics for a disaster-resilient community, in five main thematic areas of resilience:

1. Governance
2. Risk assessment
3. Knowledge and education
4. Risk management and vulnerability reduction
5. Disaster preparedness and response

Since local government actions are embedded within local communities, the framework originally designed for communities seems relevant for adoption by local governments. Use of this framework would harmonize processes and outcomes with international and national guidelines. However, local governments can customize the framework based on their context.

Making Cities Resilient Essentials (Framework). To promote the decentralization of the DRRM agenda, the United Nations Office for Disaster Risk Reduction (UNDRR) initiated a

[49] Oven, K.J., Sigdel, S., Rana, S., Wisner, B., Datta, A., Jones, S. and Densmore, A. (2016). Review of the Nine Minimum Characteristics of a Disaster Resilient Community in Nepal. Research Report. Durham University, UK
[50] Twigg, J. (2007). A Guidance Note on Characteristics of a disaster-resilient Community. DFID Disaster Risk Reduction Interagency Coordination Group, UK. This was revised and republished in 2009

promotional campaign viz. *Making Cities Resilient*[51] as an international effort for the period 2010-2020, containing the following *Essentials*:

Essential 1: Organize for disaster resilience

Essential 2: Identify, understand and use current and future risk scenarios

Essential 3: Strengthen financial capacity for resilience

Essential 4: Pursue resilient urban development and design

Essential 5: Safeguard natural buffers to enhance the protective functions offered by natural ecosystems

Essential 6: Strengthen institutional capacity for resilience

Essential 7: Understand and strengthen societal capacity for resilience

Essential 8: Increase infrastructure resilience

Essential 9: Ensure effective preparedness and disaster response

Essential 10: Expedite recovery and Build Back Better

The three aforementioned frameworks (Community-Based Disaster Risk Reduction, Guidance Note on Characteristics of a Disaster Resilient Community Framework, Making Cities Resilient Essentials) provide sufficient evidence on the need for local government DRRM capacity to effectively exercise their mandates.

The minimum criteria and indicators provide conceptual and practical guidance to develop required local-level DRRM capacity. Where there is a lack of information about existing local government capacity, as well as uncertainty about future disaster risks, the above framework elements can be adopted with locally suitable characteristics to establish the minimum capacities of local governments.

3.4 Challenges in setting up minimum capacity targets in Palika

It is challenging to quantify the minimum DRRM capacity required for each local government. Firstly, the vulnerability and risk context for each local government varies because municipalities are different from each other in geographical size, physiography, socio-cultural and economic capacities (ranging from the lowlands of the Tarai to the highlands of the Himal), demography, natural resource base, human development, remoteness, literacy, physical infrastructure, available services, language and culture (IOM & MoFAGA, 2019[52]).

Secondly, local governments were elected in 2017 and most of them are still in the early stages of developing their organisational capacity, physical infrastructure, and legal and regulatory documents. Some local governments facing recurrent hazards have built capacity on DRRM and have better engaged with communities as local partners, with support from various agencies in the past (ADPC & UNDRR, 2019[53]; NRRC Lesson Learning Review, 2018[54]).

[51] Making Cities Resilient' Available at: http://www.unisdr.org/campaign/resilientcities/home/faq
[52] IOM & MoFAGA (2019). Needs and Capacity Assessment of Fourteen Rural and Urban Municipalities on Disaster Risk Reduction and Management in Nepal. Ministry of Federal Affairs and General Administration, Kathmandu
[53] ADPC & UNDRR (2019). Disaster Risk Reduction in Nepal: Status Report 2019. Asian Disaster Preparedness Centre (ADPC) & United Nations Office for Disaster Risk Reduction (UNDRR), Bangkok
[54] Nepal Risk Reduction Consortium, Lesson Learning Review (2018). Details on CBDRR are available at http://flagship4.nrrc.org.np/

According to the responses from 28 local government leaders (see Annex 2) during this study, there is no clarity from local governments on what DRRM capacity they require to meet DRRM challenges.

Thirdly, disaster management requirements vary during multi-hazard exposures, uncertainty around hazard occurrence, and changing disaster risks - including from the adverse impacts of climate change.

Finally, the ongoing federal transformation process may further delay DRRM from becoming a well-established priority for local governments, particularly with the delays in setting-up the DRRM bureaucratic structures and staffing. Similarly, there may be challenges in delineating DRRM roles and responsibilities and holding authorities accountable.

Nevertheless, as discussed in previous sections, local government must be prepared to manage some level of disasters independently and be at the frontline of managing disasters occurring within their political jurisdiction.

However, setting-up minimum DRRM capacity targets for local governments is an important step in the DRRM decentralization process, which will inevitably enhance their overall capacity on disaster risk mitigation, risk reduction, preparedness, recovery, and response. LG should strengthen its response capacity to varying levels of disasters, while integrating risk reduction measures into its development planning process.

3.5 Setting up criteria and indicators

Some local government leaders and experts consulted during this study have suggested that each local governments should establish their minimum capacity targets to implement their DRRM authority, as per the Constitution. Since most Palikas are struggling to understand their DRRM capacity needs, it cannot be anticipated that they will be able to make an informed decision on DRRM. Secondly, DRRM is not yet a country priority, and there is a risk that each government may set very low targets and rely on external support. This tendency undermines the domestication of the DRRM and climate change agenda. It is therefore recommended that a capacity framework be considered for each type of Palika, as per the LGO Act 2074.

On a positive note, study respondents have suggested that a guiding document on DRRM capacity needs would enhance the overall disaster resilience capacity (and coordination and collaboration) between government jurisdictions.

Based on the above findings, criteria for minimum DRRM capacity should contain the following characteristics:

1. Representative: applicable to all 753 municipalities
2. Comprehensive: encompassing the complete life-cycle and thematic components of disaster risk reduction and management with a focus on risk-informed planning
3. Harmony with existing policies and laws: enabling Palikas to contribute to targets within the DRRM National Strategic Plan of Action (2018-2030), National DRRM Policy (2075), DRRM Act (2074) and LGO Act (2074)
4. Inclusive: addressing the needs of geographic, cultural and social diversity, including gender and social inclusion issues by adopting leave no one behind principles
5. Evidence-based: drawing on evidence from Nepal and international best practices
6. Incremental: opportunity for local government to set higher capacity targets and reach them

3.6 Context of local governments in Nepal

The comprehensive model for required minimum capacity, proposed at the end of this chapter, is representative of all municipalities and physiographic regions. This section highlights the various geographical features of Nepal's geo-political jurisdictions, based on The Local Governance Operation Act 2074 (LGOA). The LGOA classifies local governments into metropolitan, sub-metropolitan, urban and rural municipalities with criteria and indicators, some of which are useful to consider capacity to deliver disaster management. We cite some of them in this section.

The attributes in the LGOA vary by geographic location: namely the Himali Region, Hill Region, Inner Tarai and Tarai Region, with the Kathmandu Valley being assigned specific criteria. The required minimum capacity for DRRM accommodates the specific needs of these jurisdictions. Some of the LGOA criteria for different category of local governments are discussed below.

3.6.1 Metropolitan cities

In Nepal, there are six Metropolitan Cities: Kathmandu, Pokhara, Lalitpur, Bharatpur, Biratnagar, and Birgunj. Kathmandu and Pokhara are in the Hilly Regions. Bharatpur is in the Inner Tarai. Biratnagar and Birganj are in the Tarai Region. As per the criteria determined by LGOA (clause 8 (1) Ga), metropolitan governments should have an annual internal revenue of at least NPR 1 billion, access to education, surface and air transport, drinking water, power supply and hospital capacity of at least 500 beds. One of the hospitals should have a minimum of 100 beds. These Palikas have a higher Human Development Index (HDI) and low Remoteness Index (RI), implying better resilience than others[55].

Conversely, these cities are at higher risk of disasters, such as urban fires, urban floodings, technological disasters, road accidents and others. Metropolis have populations ranging from 0.24 million to NPR 0.975 million, with vibrant economic activity, which means that disaster loss (human and economic loss) is more concentrated in these areas. The complexity of urban disasters stems from the multiple sectors at risk, and the multiple stakeholders involved in shaping risk, such as housing, communication networks, water, sanitation, education, health care infrastructure, and power supply networks.

3.6.2 Sub-metropolitan cities

There are eleven sub-metropolitan cities in Nepal. Hetauda is the only sub-metropolitan city from the Hilly Region. There are two sub-metropolitan cities are situated in the Inner Tarai. The remaining eight are located in the Tarai, where flooding occurs every monsoon. According to the LGOA (clause 8 (1) Kha), a sub-metropolis should have at least 0.2 million permanent residents, an annual internal income of at least 250 million NPR and basic facilities such as drinking water, road, power supply, education including higher education and hospital capacity of at least 200 beds. One of the hospitals should have a minimum of 100 beds.

3.6.3 Urban municipality

There are 276 urban municipalities in Nepal. According to the LGOA , an urban municipality must have basic urban infrastructure, such as road-side pavements, electricity, water, communication facilities, market, bank, bus station, bus park with toilet, playground, and cremation facility. The LGOA also states that urban municipalities should maintain solid

[55] NPC (2014). Nepal Human Development Report. National Planning Commission, 2014. Kathmandu. https://www.npc.gov.np/images/category/NHDR_Report_20141.pdf

waste management and landfill sites, open space, a park in every ward, and a hospital with at least 25 beds. Urban municipalities are in the process of complying with these legal provisions of the LGOA. The proposed model on required minimum capacity intends to reinforce these provisions on hospital, solid waste management, open spaces and parks (important for temporary shelters).

3.6.4 Rural municipality

There are 460 rural municipalities in Nepal. Many rural municipalities lack full accessibility by roads, particularly in the Himalayan and Hilly regions, which are important factors for response during a crisis. Rural municipalities have comparatively higher social vulnerability, low HDI, high remoteness, and less economic vibrancy compared to urban municipalities because of geographic, social and economic factors.

The LGOA has classified 29 districts within the country as Himali Districts. These are comparatively remote, rural and economically weaker than other districts. Similarly, 30 districts are in Hilly regions and 18 are in the Tarai region.

The Himali region is prone to avalanches, snowstorms, cold waves, GLOFs, flash floods, landslides and high-altitude sickness, including trekking and mountaineering accidents. The Hilly region is mainly prone to landslides and floods. The inner Tarai and Tarai regions face floods more frequently. However, the whole country is prone to several hazards, including earthquakes, droughts, windstorms, hailstorms, epidemics, and lightning.

Difficult terrain, lack of access roads and lack of infrastructure are some of the challenges demanding enhanced resilience capacities across the Himalayan region. The urban municipalities in Hilly regions have better access to services compared to rural municipalities. However, vulnerabilities are differentiated by various factors.

3.7 Proposed minimum required capacities at local level

Minimum required DRRM capacities have been proposed to fulfil legal mandates and meet practical requirements on the ground (Table 8). Suggested attributes in the proposed model are minimal, meaning that each municipality can set higher ambitions. Local governments who use this as guiding document to establish minimum requirements should focus on those elements of resilience that are most appropriate in their context.

The capacity components of this proposed model are categorized into: DRRM governance, risk and vulnerability reduction, knowledge and education, preparedness and response. Criteria within these components encompass nine minimum characteristics devised by the NRRC, UNDRR's 100 Resilient Cities campaign, and existing humanitarian clusters in Nepal. In the development of these criteria for minimum capacities, we have also considered capacity approaches contained in the various disaster preparedness planning documents of the Humanitarian Country Team (HCT). However, these capacity criteria and indicators in table 8 and 9 are subject to improvement as the DRRM context changes. It is expected that stakeholders need to assess and set up capacity targets through further consultation.

3.8 Existing capacity at local level

Building on the above sections on the capacity required from local government to exercise its DRRM authority, this section looks at the existing DRRM capacity of local government. This existing capacity enables LG to establish administrative structures, logistical mechanisms, and action plans to implement effective disaster risk reduction and management measures. However, it is important that local governments identify their own capacity development areas that require strengthening. This can be through analysis of their existing capacities and identification of gaps.

Firstly, this section details local governments' mandates in the DRRM Act 2074 and LGO Act 2074. Secondly, it analyses existing operational capacity for planning and implementation of DRRM interventions, to identify possible institutional capacity gaps. Thirdly, this chapter draws lessons from other countries practices on institution strengthening. Finally, we discuss the implications of existing capacity gaps for recommendations on delineation of government roles and responsibilities.

We were unable to survey each local government to assess their existing capacity gaps. Nonetheless, efforts have been made to collect and collate extensive information from 28 local government representatives. We reviewed contemporary studies that outline the existing capacities of local governments (IOM & MoFAGA, 2019[56]; ADPC, 2018[57]; The Asia Foundation, 2019[58]; MOIAL Gandaki, 2019[59]; Dhanagadhi, 2020[60]; and Dhangadhi 2020a[61]).

Building on section 3.2 through 3.7, the following capacity areas are suggested to build the main components of DRRM: governance, risk and vulnerability reduction, knowledge and education, disaster preparedness, response, recovery and rehabilitation.

3.9 Local government mandates on Disaster Risk Reduction and Management

Within local governments' authority provided by jurisdiction, as a minimum, the Federal Acts - DRRM Act 2074 and LGO Act 2074 - assign them specific roles on DRRM. Table 8 below gives a synopsis of these roles. Section 11(2) of the Local Government Operation Act (LGOA) lists the following disaster management-related functions of local government:

Table 8 Local government capacity provisions by jurisdiction

Local Government Operationalization Act		Disaster Risk Reduction and Management Act
1	Mobilization of municipal police for (1) Protection of public land, buildings, heritages and resources; and (2) Disaster management related search, rescue, relief, reestablishments	Prepare and implement disaster management plan in harmony with integrated and sectorial policy, plans and programmes approved by Executive Committee or Provincial Executive Committee
2	Baseline data collection and database management	Direct concerned local level to allocate budget for disaster management
3	Safe settlement development and implementation	Manage disasters mobilizing NGOs, private sector, NGOs, local volunteers and other actors
4	Formulation and implementation of policy, laws and regulations to disaster	Provide training to local government members, staff, volunteers, and

[56] MoFAGA (2019). Needs and Capacity Assessment of Fourteen Rural and Urban Municipalities on Disaster Risk Reduction and Management in Nepal, IOM, MOFAGA, GON, 2019
[57] ADPC (2018). Nepal Baseline Assessment Country Report: Program for Strengthening Capacity of Governments, Local Humanitarian Organizations and the Private Sector on Preparedness for Emergency Response in Asia, ADPC, 2018
[58] The Asia Foundation (2019). The Roles of Local Governments in Disaster Management and Earthquake Reconstruction, Democracy Resource Center. https://asiafoundation.org/wp-content/uploads/2019/08/Nepal_Role-of-Local-Government-in-Disaster-Management.pdf
[59] MoIAL Gandaki (2019). Pokhara Metropolitan Disaster Risk Profile. In: Pradesh Bipad Jokhim Parshwachitra (Province Disaster Risk Profile). Ministry of Internal Affairs and Law (MoIAL). Gandaki Pradesh. Pokhara
[60] Dhanagadhi (2020). Climate Change and Disaster Risk Profile of Dhanagadhi Sub-metropolitan
[61] Dhanagadhi (2020a). Disaster Preparedness and Response Plan of Dhanagadhi Sub-metropolitan

Local Government Operationalization Act		Disaster Risk Reduction and Management Act
	management	communities to DRRM
5	Local level disaster preparedness and response plan, early warning systems, search and rescue, pre-stocking of relief materials, coordination and distribution of relief materials	Implement National Building Codes and concerned rules in building physical infrastructures
6	Flood and landslide risk mitigation, flood plain management and land use management	Formation of disaster preparedness and response committees to community awareness, disaster preparedness and response planning and programming, and disaster response
7	Assessment and mapping of risk and vulnerability	Organize mock-drill exercises to disaster response.
8	Co-ordination and collaboration with provincial government, communities, NGOs and private sector	Organize rescue and relief in disaster affected areas
9	Establishment and operationalization of DRRM fund	Monitor to ensure private and business sector are following disaster risk reduction rules
10	Monitoring and evaluation of community based DRR programs	Develop and operationalize early warning system at local level
11	Rehabilitation and Reconstruction	Establish and operationalize Local Emergency Operation Centre
12	Local level disaster related data collection, research and innovation	Update database of lost and damaged documents
13	Local level emergency operation	Identify disaster affected families, determine level of effect and provide identity cards
14	Community-based disaster risk management programs	Keep disaster response equipment like fire-fighting engines ready to use
15	Others related to disaster management	Carry out disaster management following Executive Committee, Province Executive Committee and DDMC directions
16	Establish & operationalize emergency fund	Other work as directed

3.10 Institutional structures for DRRM

In addition to their responsibility to attain their required DRRM capacity, local governments should also possess adequate institutional structures to effectively implement these DRRM capabilities.

According to information given by provincial governments during consultation workshops[62] organized by MoHA, designed to share and discuss federal policies and guidelines, including Disaster Preparedness and Response Planning Guidelines, most local governments have formed Disaster Management Committees at Palika level. Consequently, most Palikas have allocated 'Emergency Funds,' but do not have rules and procedures to spend them.

Only a few urban and rural municipalities have set up committed units for disaster management and environment-related issues. Few municipalities have established local Emergency Operation Centres (LEOCs). Since municipalities lack adequate equipment and trained staff, the establishment of these LEOC units does not necessarily strengthen LG capacity. Similarly, several municipalities are yet to establish DRRM structures such as fire-fighting and emergency management units.

Growing exposure and vulnerability to climate-induced hazards increases the need for strengthened capacity. Institutional capacity gaps are worth considering when preparing for and responding to new forms of hazards in new areas such as the cyclone in Bara & Parsa in 2019 (Spotlight, 2019[63]), and the Jure landslide in 2014 (MoI, 2014[64]; van der Geest, 2018[65]). These newly emerging threats suggest that existing LG DRRM capacity is very low, compared to need.

Local governments under Nepal's federalization model have the potential to transform DRRM from a traditional response-relief approach to a more comprehensive disaster risk reduction and resilience approach.

3.11 Existing capacities at local level

Building on research referenced in this and previous Chapters, table 9 below summarizes our understanding of the key capacities at Palika level, with evaluations supported by the views of respondents consulted during this study. Our assessment of local government capacity consists of the following qualitative indicators:

1. **None (N):** No or negligible capacity in the component or area in almost all municipalities.

2. **Low (L):** Some capacity exists in a few municipalities but is insufficient. The majority do not have capacity. There is lack of functional capacity, although some municipalities have initiated a capacity-building process. For example, a disaster preparedness and response plan may exist, but there is insufficient capacity to implement the plan; there may be a disaster management committee, but members are unfamiliar with mandates, roles, responsibilities and accountability issues.

3. **Moderate (M):** A majority of municipalities can assume a DRRM role and respective DRRM responsibilities but require support. Certain capacity gaps exist in all municipalities, though structures are evolving and progressive. Example: there is an existing allocation of fund for disaster response.

4. **Progressing (P):** Palikas have initiated the DRRM capacity-building process and will achieve their required capacity with or without external support. There is clarity on the scope of support that federal and provincial governments can provide to local

[62] These workshops were organized in each provincial capital in 2019. UNDP and PIF supported MoHA to organize these workshops
[63] Spotlight (2019). Tornado in Bara: A New Threat. Spotlight Vol 12. No 17. DOI 584/074-75
[64] MoI (2014). Report on Jure Landslide, Mankha VDC, Sindhupalchowk. Ministry of Irrigation (MoI). Kathmandu
[65] Van der Geest, K. (2018). Landslide Loss and Damage in Sindhupalchok District, Nepal: Comparing Income Groups with Implications for Compensation and Relief. Int J Disaster Risk Sci 9, 157–166 (2018). https://doi.org/10.1007/s13753-018-0178-5

governments. Example: formulation of required laws, SOPs, Early Warning Systems, DRRM database, awareness-raising materials.

5. **Satisfactory (S):** Palikas have the required capacity in the thematic areas, or for anticipated disaster actions. Example: existing scenario-based disaster preparedness and response plan, efficient response and relief distribution mechanism including human resources.

The existing capacity criteria and indicators for different components of DRRM are discussed in the following sections.

3.11.1 Municipal governance

The majority of local governments consulted during this study have drafted laws on disaster management. These laws are based on the model circulated by the designated federal government ministry, the Ministry of Federal Affairs and General Administration (MoFAGA). They have approved Fund Mobilization Guidelines or made decisions to set up a DRRM emergency fund. Most local governments are in the process of devising policies and plans for disaster management. However, where sustainability and scaling-up of DRRM capacity is in question, institutional arrangements - such as DRRM Municipal taskforces - are created through external support.

Almost all local governments have been carrying out disaster management on an ad hoc basis, including the allocation of funds for disaster response and relief. However, the amount of funds for disaster response and relief are not established based on a needs assessment, but instead on a hoc basis. However, this funding situation will improve, based on LG experience on how much they normally need over the fiscal year.

For example, Dhanagadhi sub-metropolitan city had to cope with a devastating windstorm in 2019. The municipality managed relief and recovery on an ad hoc basis, with support from different agencies. However, the municipality had not formulated a properly structured disaster management committee, disaster management plan, legal instruments policies, or a DRRM Act and operating guidelines. Post-disaster, the sub-metropolitan formulated requisite DRRM policies, plans and institutional structures (Dhanagadhi, 2020[66]).

Most local governments do not have guidelines on humanitarian assistance. Relief (both cash and material) is distributed on a case by case basis. Some of the lack of guidelines could ideally be sorted out through federal and provincial guidelines or framework laws as rescue and relief is a nation-wide issue.

It should be noted that rural municipality disaster funds are mostly between NPR 0.05 and 1 million. Similarly, urban municipalities have allocated NPR 1 to 2 million; and metropolis and sub metropolis jurisdictions have allocated NPR 2.5 to NRs. 5 million.

Most local governments lack strategies, guidelines or plans to mainstream DRRM into development planning and implementation. Thus, development plans rarely consider disaster risks. Moreover, local governments lack a proper understanding of hazards, vulnerabilities and disaster risks. This deficiency is precipitated by a lack of human resources, poor DRRM technology and physical infrastructure assessment, inadequate hazard mapping, and the need to devise strategies to effectively prepare for and respond to different disaster risks (IOM & MOFAGA, 2019[67]; OPM, 2019[68]).

[66] Dhanagadhi (2020). Decisions of 38th Meeting (2076-10-17) of Municipal Government. Dhanagadhi http://dhangadhimun.gov.np/sites/dhangadhimun.gov.np/files/2076_10_17.pdf Accessed on 15 February, 2020
[67] IOM & MoFAGA (2019). Needs and Capacity Assessment of Fourteen Rural and Urban Municipalities on Disaster Risk Reduction and Management in Nepal. IOM & MOFAGA. Kathmandu

Many local governments have initiated the establishment of Local Emergency Operation Centres (LEOCs) and Environment & DRR Sections, with assigned officers and staff to work there. There is a need to enhance the DRRM understanding and skills of these LEOC staff. Data garnered from local government and respondent interviews suggests that over 90% of Palikas[69] have formed local DRRM committees, whereas 60% of local governments have ward-level DRRM committees. However, the overall capacity of these committees remains inadequate, and there is no strategy to strengthen their capacity.

Local governments have scant resources to mitigate hazards and cope with disasters. Some urban municipalities have fire engines (mostly 1 engine) and associated staff. There are limited personnel in the municipal health sector, including women health volunteers spread across communities. Although some officers are assigned to look after DRR issues, there are no dedicated persons for disaster learning centres or LEOCs.

There are limited human resources to undertake immediate needs assessments after hazard strikes, such as the Initial Rapid Need Assessment (IRA) and the Multi-Cluster/Sector Initial Rapid Need Assessment (MIRA). The Nepal Red Cross Society District Chapters have maintained a roster of trained personnel for that purpose. However, local government themselves do not have an HR roster for DRRM. In addition, municipalities have yet to develop strategies and plans to develop human resources including trained and equipped volunteers for disaster preparedness and response.

The Policy and Institutions Facility (PIF) supported three local governments in Karnali to prepare their Disaster Risk Profile, including their capacity to manage disasters (Shivavalaya, 2019[70]; Simta, 2019[71] and Narayan, 2019[72]). According to research, these local governments did not have adequate human resources, organizational structure, policies, plans or implementation mechanisms for disaster risk reduction and management. The IOM & MoFAGA (2019) study identifies a lack of technical capacity of political and administrative staff, unavailability of administrative buildings, poor compliance to directives by elected representatives, deficit knowledge and skills to promulgate local laws, and sluggish implementation of annual programs and budgets.

Our study also indicates that locally elected officials have differences in their understanding of disaster management approaches and strategies. For example, many of those consulted considered that the formulation of laws and arrangement of human resources and budget are the responsibility of Central Government, and their role is merely to implement.

3.11.2 Vulnerability and risk reduction

Vulnerability and risk assessments: The IOM & MoFAGA (2019) found that there had not been any efforts to assess multi-hazards and vulnerability in municipalities. Of the 14 municipalities consulted, only Dhangadhi and Gulariya municipalities had engaged with at-risk populations. The concept of Vulnerability and Risk Assessments and Risk Sensitive Land Use Planning (RSLUP) are still unknown to most municipalities.

Hazard risk mapping: Hazard and vulnerability capacity assessments are mostly project-based. Some municipalities have initiated hazard, vulnerability and risk assessments to prepare disaster risk profiles. For example, Neelakantha municipality in Dhading and Dhanagadhi sub-metropolitan city in Kailali have documented hazards and related

[68] OPM (2019). Climate change and disaster risk and vulnerability context of Province 5. Study Report Submitted to Province 5 Planning Commission. Oxford Policy Management Ltd. Kathmandu
[69] Representatives from 28 local bodies were consulted as part of this research by OPM's consultant. List of people consulted has been included in Annex 2
[70] Shivalaya (2019). Climate and Disaster Risk Profile 2019. Shivalaya Rural Municipality. Jajarkot.
[71] Simta (2019). Climate and Disaster Risk Profile 2019. Simta Rural Muicipality. Surkhet. Nepal
[72] Narayan (2019). Climate and Disaster Risk Profile 2019. Narayan Municipality. Dailekh. Nepal

information[73]. However, these are few examples where local governments have utilized external support. Scientific mapping of various hazards is an enormous challenge for local governments and warrants provincial or federal support.

Mainstreaming DRR in development: Physical infrastructure development was clearly an articulated priority of all local governments consulted. Physical infrastructure includes road works, potable water systems and electricity networks. Although they may have the constitutional mandate, currently, local governments do not have the technical capacity or political clout to mainstream risk reduction issues (DRRM) in development interventions.

It should also be noted that most urban municipalities are in the process of enforcing National Building Codes which consider seismic safety and the robustness of public and private buildings. However, there seems to be a lack of consideration for multiple hazard impacts and risks to properly inform DRRM development planning.

Knowledge networks and specialized technical capacity are essential to enable Palikas to integrate DRRM into their development practices and to target at-risk groups. However, disaggregated data on gender, caste, persons with disabilities (PWDs), the elderly and children does exist in all municipalities. This information can be useful in planning risk reduction and relief initiatives for specific vulnerable groups, and to reinforce the Government's Leave No One Behind (LNOB) priorities.

Early Warning System (EWS): Through radio, television, online news portal and social media, every Palika has access to the Department of Hydrology and Meteorology (DHM) weather forecasts. DHM also provides real-time forecasting of flood risk for 12 or more rivers, mainly in the Tarai region. Since the EWS has to build on an end-to-end system, the Palikas' main role is to act on available information and organize effective response actions.

Reviewed documents and consultations suggest that Palikas do not have adequate institutional structures or trained staff to effectively respond to disaster risks information available through the EWS. Studies suggest that the EWS can be an opportunity to address the issues of gender, culture and language diversity needs (Shrestha et al, 2014[74]; Practical Action, 2016[75]; Kafle, SK, 2017[76]; Meechaiya et al, 2019[77]). We could not find any evidence as to how these opportunities are operationalized in practice.

There are weather monitoring stations and flood gauge stations (manual and automatic) that can provide information to Local governments to strengthen their weather-induced disasters risk management practices (Practical Action, 2016).

3.11.3 Knowledge and education

Knowledge and education include awareness and understanding of disaster risks and mitigation measures. Relevant criteria for knowledge and education include the level of public awareness on multiple hazard risks and differentiated vulnerabilities and a range of skills or coping measures across development and humanitarian sectors.

[73] Draft documents of Nilakantha Municipality were shared by Man Thapa, ADPC. NRCS, ADPC and OPM supported Dhanagadhi Sub-metropolitan to prepare disaster risk profile, DPRP

[74] Shrestha, MS; Kafle, S; Gurung, M; Nibanupudi, HK; Khadgi, VR; Rajkarnikar, G (2014). Flood early warning systems in Nepal: A gendered perspective. ICIMOD Working Paper 2014/4. Kathmandu: ICIMOD

[75] Practical Action (2016). Early Warning System in Practice: Experiences of Nepal. Practical Action. Kathmandu. Available at - https://infohub.practicalaction.org/bitstream/handle/11283/620598/Flood-Early-Warning-Systems-in-Practice.pdf?sequence=1&isAllowed=y

[76] Kafle SK (2017) Disaster Early Warning Systems in Nepal: Institutional and Operational Frameworks. J Geogr Nat Disast 7: 196. doi: 10.4172/2167- 0587.1000196

[77] Meechaiya, C; Wilkinson, E; Lovell, E; Black, S and Budimir M (2019). The governance of early warning system: opportunities under federalism. BRACED working paper. http://www.braced.org/resources/i/The-governance-of%20Nepal's-flood-early-warning-system

Public Awareness: A literature review shows that there are a number of project-based initiatives that included public awareness campaigns, such as mock-flood exercises, community drills, and awareness campaigns. These mostly took place in flood and landslide prone communities. After the 2015 Gorkha earthquake, awareness-raising activities were combined with relief and reconstruction in affected communities. These public awareness activities were supported by different agencies such as government, private companies and NGOs. The campaigns received support from telecom companies to deliver targeted messages, particularly in the health sector.

It was difficult for this study to qualify the existing level of public awareness on DRRM at local level. However, those consulted were confident that the level of public awareness is much lower than what is required to manage multiple hazard risks and differentiated vulnerabilities.

Skills: This study was unable to determine existing skills available to manage hazards. Although there is lack of systematic information, it is evident that there is considerable gap between need and existing ability.

According to the IOM & MoFAGA (2019[78]) study, none of the 14 municipalities assessed have systems to track and record disaster loss and damage data. Few municipalities have provisions to maintain loss and damage registers. Consultations with experts and relevant agencies revealed that this is common issue.

3.11.4 Preparedness for response

According to consultations with local government leaders and experts (Annex 2), most local governments do not have municipal relief supply warehouses. Some of them told may have peripheral access to regional warehouses managed by the province and federal government. It is also notable that there is lack of concrete plans or formal agreements to avail resources to the Palikas during a crisis: e.g. first aid, health supplies, nutrition support, Water Sanitation and Hygiene (WASH), emergency shelter, camp co-ordination, emergency communications, early recovery systems, and logistics facilities. However, there are linkages with federal and provincial supply centres in some cases like health emergencies.

For fire preparedness, some municipalities operate fire-brigades on a resource-sharing basis with neighbouring rural/urban municipalities. For flood preparedness, a community-centred Flood Early Warning System exists for major river basins. The Review of Disaster Preparedness and Response Plans of 18 Tarai districts prepared in 2017 reveals that school premises are largely used as temporary disaster relief shelters.

3.11.5 Rehabilitation and reconstruction

Lessons on reconstruction highlight that local governments' capacity and resources at Palika level are already stretched thin across several sectors (The Asia Foundation, 2019[79]). The Asia Foundation (2019) found that local governments prioritise less reconstruction of earthquake damages, because the National Reconstruction Authority (NRA) is the primary reconstruction agency.

Local governments are mandated to conduct rehabilitation and reconstruction. However, it is evident that existing local government capacity is yet to be sufficiently tested since they have been operational. Two windstorm events occurred in 2019: one in Bara and Parsa, and the

[78] IOM & MoFAGA (2019). Needs and Capacity Assessment of Fourteen Rural and Urban Municipalities on Disaster Risk Reduction and Management in Nepal. IOM & MoFAGA. Kathmandu. 2019

[79] The Asia Foundation (2019). The Roles of Local Governments in Disaster Management and Earthquake Reconstruction. Democracy Resource Center. The Asia Foundation. Kathmandu. Accessed at: https://asiafoundation.org/wp-content/uploads/2019/08/Nepal_Role-of-Local-Government-in-Disaster-Management.pdf on 17 February, 2020

other in Kailali and Kanchanpur. Local governments in both Bara and Parsa were unable to lead the reconstruction effort. By contrast, local governments in Kailali and Kanchanpur were able to lead support to homeowners whose houses were damaged, with backstopping from the Chief District Officer and some provincial government ministries.

3.12 Strategies to meet capacity gaps

One way to fill the capacity gap is to share capacity between local governments and receive backup support from provinces or federal agencies. There are intergovernmental co-ordination mechanisms, such as District Disaster Management Committees (DDMC), that forge collaboration between local governments and exchange support for disaster response.

Local governments can also create bilateral agreements amongst themselves to avoid having to discuss disaster response measures during crisis time. An example of this is sharing of fire engines. However, there are few examples of Palika resource-sharing available since local governments are new to the game.

For this purpose, we have reviewed international best practices to draw lessons for Nepal:

Sister municipality solidarity in Japan: In Japan, each municipality is paired with another municipality as a “sister” or “twinned” municipality, supporting the affected municipality during an emergency/disaster. As neighbouring municipalities might be equally affected during disasters, the sister municipality is identified from a distant geographical location. Support ranges from human resources and relief materials to the provision of warehousing and logistics facilities and economic/funding for short-term, medium-term, and long-term support, including reconstruction efforts (Jimee et al, 2019; Numada et al 2012).

For example, if a municipality is overwhelmed with their crisis management, human resources can be deployed from the sister municipality to complement the overwhelmed disaster response team in the affected municipality. This is a good example of horizontal collaboration that Nepal should consider institutionalising among local governments from distant regions, to create synergistic capacity for municipalities facing disasters.

Borrowing capacity from federal agencies: In the Philippines, the National Disaster Risk Reduction and Management Plan (NDRRMP) 2011 - 2028, which fulfils the requirements of their Republic Act 10121 (RoP, 2010[80]), allocates roles and responsibilities to federal agencies, sub-national agencies and local agencies for each thematic area; and assigns lead roles to the appropriate agency.

The local government can access technical and resource capacity from other agencies, in the absence of their own capacity - based on the prevailing understanding between them. This can be a very useful model for Nepal. For example, local governments can acquire understanding capacity and information from the Department of Hydrology and Meteorology (DHM) for flood forecasting, early warning, hazard and risk mapping, and use the information for their territory. This prevents duplication of work and closes the gap in local-level expertise.

Intergovernmental collaboration through DIMS in Indonesia: In Indonesia, intergovernmental collaboration is maintained through their disaster information management system. The National Agency for Disaster Management of Indonesia has a strong disaster management database system, the *Indonesian Disaster Data and Information* (DIBI[81]), at national level, part of which is managed by local governments for their territories. This helps local government plan and implement disaster response and recovery. This can be a very

[80] RoP (2010). Philippine Disaster Risk Reduction and Management Act of 2010. Act No 10121. Republic of Philippines. Manila. NDRRMP is attachment 41 to the Act; brings legally binding power
[81] http://dibi.bnpb.go.id |Accessed on 19 February 2020

useful practice for Nepal. MoHA has already initiated a similar mechanism through the setup of the Building Information Platform against Disaster (BIPAD[82]).

3.13 Implications of capacity gaps for delineation of DRRM authority

The significant capacity gaps between required and existing institutional capacity cannot be overlooked while designating and delineating authority at local level. The aforementioned strategies for intergovernmental co-ordination help to bridge some of the capacity gaps experienced by local government.

It is envisioned that local government will build and update their required capacity over time. Therefore, responsibility should be transferred to Palikas as much as possible. There must be mandatory provisions for local government to seek support from provincial or federal governments, based on a realistic assessment of their needs during a crisis.

Table 9 Minimum and existing capacity framework for local governments

Components of DRRM	Criteria[83]	Existing Capacity (for example)
1. **Governance**		
Policy, legal and Regulatory system	1. DRRM committee down to ward level 2. DRRM Act, policy, strategy, guidelines, targets DPRP, LDCRP, LAPA 3. DRRM fund management guidelines 4. Metropolitan Urban Development Strategy 5. Building codes, by laws for physical infrastructure construction 6. Guidelines for reconstruction and rehabilitation	In process/progress
Standing Operation Procedures (SOPs)	1. SOPs for emergencies, SOPs for distribution of relief materials, SOPs on HEOC, SOPs for co-ordination with provincial, district and federal government 2. Contingency Health Plan, WASH Plan, multi-sectoral Nutritional Plan 3. Comprehensive School Safety Plan (CSS) for schools linking with School Improvement Plan (SIP)	None
DRRM Plans	All required plans to address existing risk	Low
Human Resource	Required human resources to DRRM	Low
2. **Risk and Vulnerability Reduction**		
Hazard, vulnerability and risk assessment	Hazard, vulnerability and disaster risk profile	Low

[82] https://bipad.gov.np/ | Accessed on 09 March 2020
[83] Criteria and their indicators can vary between Metropolitan, Sub-metropolitan, Urban and Rural municipality in Himalayan, Hilly and Tarai Region

Components of DRRM	Criteria[83]	Existing Capacity (for example)
Disaster Risk Reduction	1. DRRM Fund allocated from local budget for risk reduction activities 2. Risk sensitive land use planning (RSLUP) 3. DRR in public infrastructure (schools, hospitals, banks, malls, road, drinking water supply) 4. Incentives of tax rebate and low interest credit for involvement of private sector in DRR, for e.g. retrofitting, risk insurance 5. Provision for solid waste management and landfill site 6. All public buildings disability- friendly	Low
Early Warning System	EWS for technically possible hazards - flood, cold wave, heat wave, epidemics, windstorms, heavy rain	Low
3. **Knowledge and Education**		
Public Awareness	Awareness campaigns at ward level	Low
Information Management and Sharing	Establishment of at least one Information Centre	None
Training	Required training for anticipated capacity to address vulnerability	Low
Education	Informal education linked with DRRM, School level DRR activities in school development and management plan Formal education with DRR curriculum	Low
4. **Preparedness and Response**[84]		
Access to forecast, early warning, local hazard monitoring and surveillance	Access to seasonal outlooks and weather forecasts, flood and other hazard early warning Local monitoring of hazards, surveillance and community level dissemination of alerts and warnings. Early action based on alerts and warning to concerned communities.	Low
Health (including surveillance)	Hospital with at least # of beds (eg.500 for metro, 200 for sub metro, 100 for urban and 25 for rural) or as per population ratio First Aid supplies At least one Trauma Centre (in metropolis and sub-metropolis)	Low

[84] Sub-components under these components are from Humanitarian Clusters. Indicators may vary in individual Local Government. Relief items are proposed for at least 10% of population for 7 days.

Components of DRRM	Criteria[83]	Existing Capacity (for example)
Water, Hygiene, Sanitation (WASH)	Drinking water during emergency Women's sanitary requirements Water purification arrangements	Low
Emergency Shelter	Tarpaulin, NFI kits, temporary shelters	Low
Food Security and Nutrition	All as per National Relief Standards For all children, old age and other people with specific requirement due to disability, gender	Low
Camp Coordination and Camp Management (CCCM)	Open spaces for emergency shelters and camps distributed across wards and settlements (Tol) considering disability, gender and social issues Sufficient for at least 30 percent population	None
Protection	1. Ability to fulfil special needs of women, pregnant women, children, elderly and disable 2. Protection of basic human rights during crisis 3. Psycho-social support	Low
Education Continuity	1. Contingency plan for school continuity 2. Child friendly spaces 3. Temporary learning spaces 4. Early Childhood Development (ECD) supplies	None
Logistics for Humanitarian Assistance	1. Warehouse 2. Distribution Points 3. Helipad	Low
Emergency Communication	Ability to access required information disseminate in the communities	Low
Early Recovery	Seed support etc. as per post event need assessment including ability to carry out post event livelihood losses and recovery need assessment.	None
5. **Rehabilitation and Reconstruction**		
Resettlement	Criteria including policies, availability of land, access to technology, skills, materials, fund	None, Low
Reconstruction	Criteria including policies, access to technologies, fund and so on	None, Low

4 Existing and minimum required capacity at provincial and federal level

4.1 Introduction

In previous chapters, we discussed the existing capacity at local level. This chapter focuses on institutional capacity at provincial and federal level. The chapter commences by presenting the roles and responsibilities of provinces and federal agencies, in line with the Constitution and referring to the DRRM Act 2074 and LGO Act 2074. Then it summarises key information on seven Provinces, highlighting the differences and similarities on associated risks from major hazards based on the review of some recent studies.

The chapter then discusses the requisite and installed capacity across the provinces, based on stakeholder consultations. These capacities are analysed across the same thematic areas as for local government. We then examine requisite and installed capacity at federal level. Finally, the chapter highlights the implications of gaps and opportunities for delineation of governmental roles and responsibilities.

4.2 Functions of provincial government on Disaster Risk Reduction and Management

Chapter 13 of the Constitution of Nepal defines the structure of provincial government. It highlights the decentralization of legislative, financial and administrative powers to the seven provincial governments. It also allocates concurrent authority on disaster management to the provinces, along with federal and local governments.

In exercising the concurrent authority between the three tiers of government, the roles of provinces are particularly prominent in bridging between federal and local government disaster management responsibilities, to ensure efficient and effective coordination.

The DRRM Act 2074 assigns coordinating, facilitating and monitoring roles to the provinces, in addition to supporting local government on disaster management. The Act makes provision for one Provincial Disaster Management Council and a Provincial Disaster Management Executive Committee. The Ministry of Internal Affairs and Law (MoIAL) is assigned DRRM roles for each province. Although institutional structures can be assigned to DRRM responsibilities under the MoIAL, to date, none of the provincial governments have established such structures[85].

According to the DRRM Act 2074, the main role of the Provincial Disaster Management Council is to ‘prepare policies and plans; and provide policy-related guidelines and directives to the Provincial Disaster Management Executive Committee’.

The DRRM Act 2074 assigns at least 19 functions to each Provincial Disaster Management Executive Committee, including the formulation and implementation of necessary policies, laws, programmes, plans, and guidelines, in line with federal DRRM laws. Provincial Disaster Management Committees have been assigned responsibility and authority to assess disaster events and recommend to the federal government whether to declare a partial or province-wide state of emergency.

[85] We reviewed Province Disaster Profile of each province. Some profiles were in the process of endorsement by respective province government while we reviewed them. We also consulted with the experts involved in preparing these profiles and Province Disaster Management Strategic Plan

However, like local governments, provincial governments are recently formed jurisdictions. They are still the process of strengthening their operationalization within the federal landscape. Therefore, they require adequate institutional capacity across the DRRM spectrum to fully exercise their roles, responsibilities and accountability mechanism.

4.3 Functions of federal government on Disaster Risk Reduction and Management

The Constitution has allocated concurrent DRRM authority to the federal government. The DRRM Act 2074 assigns governments with the overall responsibility to ensure effective DRRM practices and to support provincial and local governments to carry-out their respective DRRM authority, responsibilities and accountability.

At the federal level, various structures exist for disaster management. The DRRM National Council and DRRM Executive Committee are the apex bodies, mandated to formulate and implement necessary policies, strategies and plans for Nepal. The Ministry of Home Affairs is the nodal ministry for DRRM. However, all ministries and departments have significant roles to play in DRRM.

As discussed in chapter 2, different federal ministries and their various departments have varying DRRM responsibilities according to the nature of hazards. For example: (i) the Department of Hydrology and Meteorology (DHM) monitors weather, forecasts rainfall, and issues alerts and warnings of flood risks; (ii) the Department of Health works on surveillance, prevention and the control of disease outbreaks; and, (iii) the Department of Agriculture works to control disease outbreaks.

These agencies have not yet fully adapted to the federal governance structures, nor is it clear how they will support the provinces and local governments on disaster management. In this regard, the role of the NDRRMA is crucial in connecting the mandates and responsibilities of the federal ministries and their departments with provincial and local government needs and responsibilities.

4.4 Brief overview of disaster risk in provinces

It is important that the provinces formulate policies, rules and plans based on available evidence on risk and vulnerability. This section attempts to identify the various disaster risks for each province, based on available research on earthquakes (Robinson et al, 2018)[86], landslides (Patley et al, 2007[87]; Williams et al, 2017[88]), floods (HCT, 2019[89]), and past disaster information (MoHA, 2017[90]; MoHA, 2019[91]; MoHA, 2009[92]).

Except for Province 2, all 6 other provinces extend across the Himalayan, Mid-Hills, Inner Tarai and Tarai regions. Province 2 lies in the Tarai region and is home to multiple river flood plains that originate from the high mountains, Mid-hills and Siwalik (Chure) range. All provinces are at risk from earthquakes, disease outbreaks and climate change impacts, with historical disaster data demonstrating that fires, lightning strikes, and windstorms are

[86] Robinson, T. R., Rossera, N. J., Densmorea, A. L., Oven K. J., Shrestha S. N. and Guragain, R. (2018). Use of Scenario Ensembles for Deriving Seismic Risk. Proceedings of the National Academy of Sciences 115.41 (2018): E9532-E9541

[87] Petley, D. N., Hearn, G. J., Hart, A., Rosser, N. J., Dunning, S. A., Oven, K., & Mitchell, W. A. (2007). Trends in landslide occurrence in Nepal. Natural hazards, 43(1), 23-44

[88] Williams, J.G., Rosser, N.J., Kincey, M., Benjamin, J., Oven, K.J., Densmore, A.L., Milledge, D.G., & Robinson, T.R. (2017). Satellite-based emergency mapping: Landslides triggered by the 2015 Nepal earthquake

[89] HCT (2019). Contingency Plan Nepal. Monsoon Flooding, 2019. Humanitarian Country Team. Kathmandu

[90] MoHA (2017). Nepal Disaster Report 2017. Ministry of Home Affairs. Kathmandu

[91] MoHA (2019). Nepal Disaster Report 2019. Ministry of Home Affairs. Kathmandu

[92] MoHA (2009). Nepal Disaster Report 2009. Ministry of Home Affairs. Kathmandu

frequent occurrences (Table 10). Within a province, exposure and vulnerability differs for different hazards (OPM, 2019[93]). Municipalities and districts are differently vulnerable to hazards such as earthquakes (figure 1).

Table 10 Brief overview of provinces

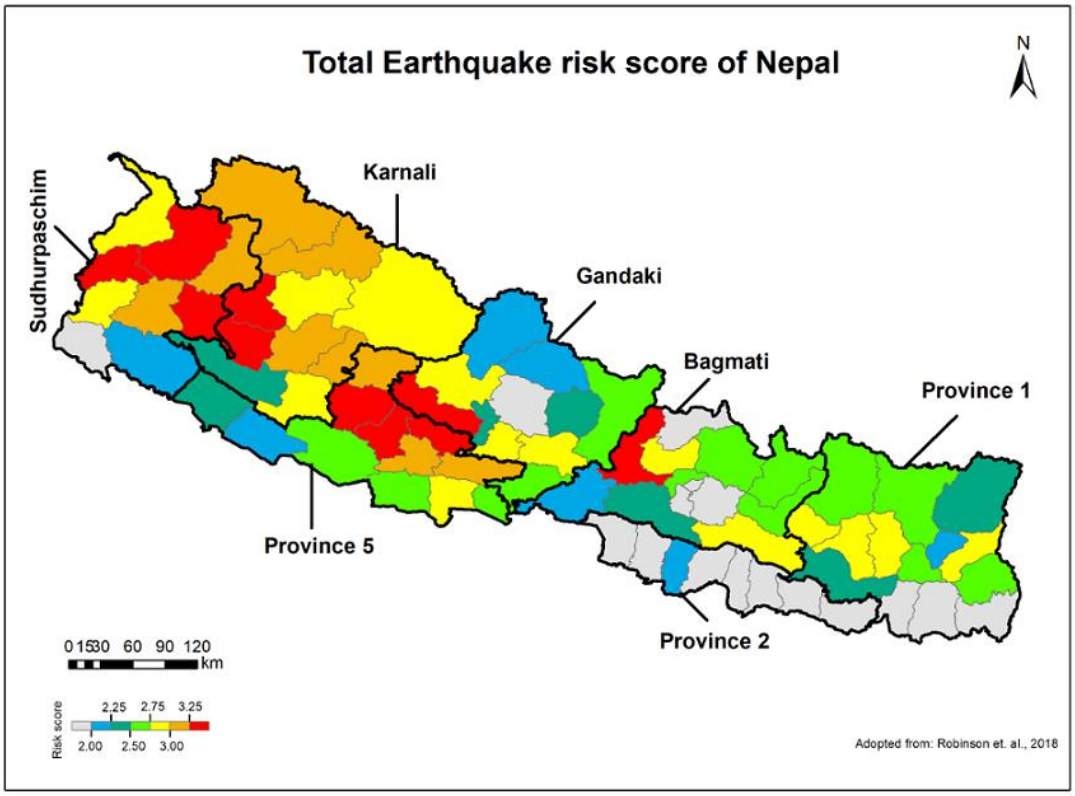
Provinces	Physiography	Risk and hazards (earthquake, flood, Landslides, fire, lightening)	Human Development Index (HDI)	Multi-dimensional Poverty Index (MPI)
Pradesh 1	14 districts in Himalaya, Hill and Tarai	Second lowest earthquake risk Tarai faces floods and hilly region susceptible to landslides, fire	0.553	0.085
Pradesh 2	8 districts in Tarai	Province is highly prone to flood, fire, windstorm. Earthquake risk is lowest	0.485	0.217
Bagmati Pradesh	13 districts, mostly in Hill and Himalaya. 1 in Tarai	Earthquake risk-medium. Prone to frequent flood and landslide	0.560	0.051
Gandaki Pradesh	11 districts, out of which 8 are in Himalaya and Hill	Prone to frequent landslides, floods, lightening Earthquake risk-medium	0.568 (highest)	0.061
Pradesh 5	13 districts in Tarai, Inner Tarai and Hilly region	Earthquake risk-medium Prone to frequent landslides, floods, lightening	0.508	0.133
Karnali Pradesh	10 districts across High Himalayas and hilly and Inner Tarai region	Prone to landslides and flood, lightning Most at risk of earthquake.	0.467(Lowest)	0.230
Sudurpaschim Pradesh	Nine districts across Himalayan, hilly and Tarai	Most at risk of earthquake Prone to landslides, floods	0.491	0.146

Source: Robinson et al (2018); Patley et al (2007) and Williams et al (2017)

The map below adopted from Robinson et al (2018) shows the earthquake risk in Nepal across districts.

[93] OPM (2019). Climate change and disaster risk and vulnerability context of Province 5. Study Report Submitted to Province 5 Planning Commission. Oxford Policy Management Ltd. Kathmandu

Figure 1: Earthquake risk in Nepal across the district



Source: Robinson et. al, 2018

4.5 Required and existing capacities of provincial government

Existing and installed provincial capacity. Despite their institutional infancy, provincial governments have initiated some DRRM policies and plans that are context-specific for the provinces (IOM & MoFAGA, 2018[94]). Table 11 presents a summary of the minimum required institutional capacity for provincial governments, along with a qualitative assessment of the installed capacity based on a review of available documents and consultations with key DRRM stakeholders.

Table 11 and Table 12 generally reveal the existing institutional capacity of province government and federal government as low-to-moderate, with some variation. Capacity levels are defined as follows:

1. **None (N)**: No or negligible capacity in the component or area in all Provinces.
2. **Low (L):** Some capacity exists at provincial level but is insufficient. There is lack of functional capacity, although some DRRM structures and mechanisms are in place. Example: MoIAL as the nodal agency for provincial DRRM, though the ministry does not have adequate capacity for disaster management.
3. **Moderate (M)**: Provinces can take on some DRRM roles and responsibilities but require support. There are capacity gaps for major disasters, though some structures are evolving. Example: existing allocation of funds for disaster response.

[94] IOM (2018). Disaster risk reduction and management consultations at provincial level https://nepal.iom.int/sites/default/files/publication/One%20Pager%20Consultations-5Aug-Final.pdf

4. **In Progress (P):** Provinces have initiated DRRM institutionalization process and will achieve required capacity with or without external support. There is clarity on the scope of work. Example: existing formulation of legal policies.

5. **Satisfactory (S):** Provinces have the requisite DRRM institutional capacity in the thematic area or for DRRM anticipated action.

The following sections discuss the status of provincial level governments in different aspects of disaster management capacity.

4.5.1 Provincial DRRM governance

Policy, legal and regulatory system: As of now, the parliaments of Pradesh 1, Pradesh 2, Bagmati Pradesh, and Sudurpaschim Pradesh have approved provincial DRRM Bills. The study team learned that Gandaki Province, Province 5 and Karnali Province have prepared their respective DRRM bills and are in the process of submitting them for discussion by their respective provincial parliaments. These emerging Provincial Acts may contradict the Federal Act (DRRM Act 2074) and may present functional and/or operational ambiguities between government jurisdictions.

Provinces are yet to formulate guidelines and procedures for setting up and operationalize institutional structures for DRRM functions. These functions include but are not limited to disaster risk mapping, risk reduction, risk monitoring and early warning, disaster response and relief and recovery. The provinces should also prepare or adopt federal guidelines on managing different hazards and vulnerable sectors to prevent risk and to effectively manage disasters.

Recently, each province prepared a DRRM Policy and DRR Strategic Action Plan, with support from UN Agencies. These documents require endorsement by their respective provincial cabinets. As of 15th March 2020, Bagmati Province has approved their documents and three other provinces (Province 1, Province 2, Gandaki Province; Province 5, Karnali Province; and Sudurpashchim Province) are in the process of draft approvals.

Institutional structures and mechanism for DRRM: As mentioned above all provinces currently lack effective functional structures and efficient coordination mechanisms for DRRM. Provincial cabinet decisions reveal that there is a political commitment to DRRM. However, this has yet to translate into institutional actions. The Ministry of Internal Affairs and Law (MoIL) is the nodal agency to undertake DRRM in each province. However, implementing structures for DRRM are lacking in all provinces.

Provinces are delivering disaster response and humanitarian services through District Administration Offices (DAO) and local governments. Most MoIAL officials consulted during this study responded that they had provided rescue gear to security forces through their DAOs and relief materials through local governments.

MoHA handed over five Regional Emergency Operation Centres (REOCs) and warehouses to the respective MoIAL of Province 1, Bagmati Province, Gandaki Province, Karnali Province, and Sudurpashchim Province. These REOCs and warehouses were established before the emergence of provincial governments and were under the jurisdiction of the Regional Administration Offices of the previous non-federal structure.

It is important to note that provincial governments allocated up to NPR 50 million for DRRM in their annual budgets for the fiscal year 2076/077 (2019-20 AD). Since there is no DRRM plan for risk reduction investment per se, this budget is more of a reactive allocation to respond to a potential disastrous event.

Human Resources: There is distinct lack of human resources designated to deliver DRRM in each provincial government. Since provincial DRRM structures and mechanisms are not

yet decided except for MoIAL functioning as nodal ministry, it difficult to carry out further analysis on human resources. However, the overall feedback from our reviews and consultations clearly reflects that the existing human resource capacity across all provinces is almost negligible.

4.5.2 Provincial risk and vulnerability reduction capacity

According to the Human Development Index (HDI) and the Multidimensional Poverty Index (MPI), Karnali Pradesh is deemed to be the most vulnerable and the least prepared in terms of DRRM capacity among the provinces. There are differentiated vulnerabilities in each province because of the physiographic distribution of their populations, which affects access to basic services and developmental outcomes. Vulnerability and capacity levels between provinces also differ based on the nature of hazards and exposure to different hazards. For example in Province 2, vulnerability to fires and windstorms is very high, but earthquake vulnerability is less than in other provinces. This is because Province 2 has numerous private houses built with light wooden materials and thatched roofing that are more resistant (Robinson et al, 2018).

As mentioned in earlier sections, each provincial government is in the process of developing DRRM legal instruments, establishing structures, and setting up implementing mechanisms, though risk and vulnerability reduction seems not to be an actionable priority. With existing provincial DRRM capacity being very low, there is an urgent need for disaster risk mapping, establishment of a comprehensive DRRM database, and the need to devise and implement hazard mitigation, vulnerability reduction and overall resilience building strategies.

As revealed in their annual plans and progress updates, provincial governments are helping local governments and communities to sporadically mitigate floods, landslides, fires and other hazards. Some development investments such as irrigation, road works, population health, public education, electricity grid works, communication networks, and forest conservation practices all contribute to reducing exposure to hazards. It is also the case that development initiatives may also be at risk of failure due to a lack of consideration of risk mitigation measures and operational safety in design, construction and operation.

In this context, some provincial governments could assume responsibility for certain river basin management projects that federal agencies are currently managing, such as: the Peoples' Embankment Programme and the President Chure Conservation project. This shift in responsibility could diminish risk for those provinces especially given that there are no consolidated provincial plans on hazard, risk and vulnerability reduction.

It is therefore hoped that this study and consequent actions to establish the delineation of roles, responsibilities and accountabilities amongst the three tiers of government will also ensure that risk-informed planning/development is prioritized at provincial level.

4.5.3 Provincial DRRM information, knowledge and education

The overall status of public awareness on hazards, vulnerabilities, and disaster risks was discussed in chapter 3 (section 3.11). There is no systematic provincial initiative to raise public awareness or enhance the skills and practices to reduce disaster risk or promote preparedness and response. Therefore, a systematic approach to public education and outreach on DRRM is essential.

Provinces lack human resources to run even their basic functions. In this context, there is little leeway to build and strengthen DRRM capacity through raising public awareness, integrating DRR into the education curricula, providing skills training on DRRM and organizing mock exercises based on different disaster scenarios.

In each province MoIAL has assigned staff to work in the emergency operation centres. However, the centres have yet to be fully equipped and operational. In many MoIAL, assigned staff did not know the function of emergency operation centres. Moreover, there is no database or information management system on DRRM. The federal government has initiated the DIMS - BIPAD[95], which will take some time to be populated with reliable data and become fully operational.

4.5.4 Provincial preparedness capacity for disaster response

Two provincial Humanitarian Staging Areas (HSA) have recently been operationalized within the Dhangadhi and Nepalganj airport premises. Another five provincial HSAs are under construction in Bhairahawa, Birganj, Biratnagar, Surkhet and Pokhara, near dry ports or airports. Although these facilities are under federal management, there is strong cause for these HSAs to come under provincial disaster management logistics capacity and be managed by Province Government Agencies with assistance from the NDRRMA.

While there is nominal existence of EOCs in other provinces under their respective MoIAL, the provinces of Pradesh 5 and Sudurpashchim Pradesh have initiated a process to set-up their respective EOCs and warehouses. They will also locate a helicopter in each province to carry out emergency rescue operations. However, the provincial stocking of rescue and relief materials is only being discussed and not yet implemented.

Surprisingly, there are no disaster preparedness and response plans in any provinces. Provinces have not prepared emergency plans for key sectors, such as: health, potable water supply, food security, electrification, evacuation shelters, or public education.

4.5.5 Provincial rehabilitation and reconstruction capacity

The Karnali Province budget mentions the rehabilitation of families who lost their assets during the 2017 Bheri river flood, but many are yet to be resettled. Which agency needs to lead on resettlement in unclear. With support from the Nepal Army under the auspices of the federal government, Province 2 helped facilitate the rebuilding of cyclone damaged houses in Bara and Parsa in 2019, but delays have occurred due to unclear responsibilities.

In this context, unless there are adequate human resources and legally binding responsibilities and accountabilities, there will continue to be ambiguities in reconstruction and rehabilitation efforts between federal, province and local governments. Thus, the sharing of roles and responsibilities must consider the consequences of disasters.

Reconstruction and rehabilitation efforts also demand significant public participation and are technically complicated and politically sensitive. For example, the reconstruction of damage from mega disasters may warrant a national mechanism to respond, like the National Reconstruction Authority (NRA[96]). In such cases, there needs to be clarity on what federal, provincial and local governments collaborate on.

In the case of medium and small-scale disasters, provincial governments can provide back-up to local governments to help rehabilitate affected populations. For example, private house reconstruction can be facilitated through government grants, loans, technical guidelines and monitoring services.

The reconstruction of national heritage sites (archaeological and natural monuments) is under the accountability of the federal government, including those registered as UNESCO

[95] https://bipad.gov.np/

[96] Established by the Act relating to reconstruction of the Earthquake Affected Structures, 2072. The main aim of NRA establishment is: 'for the reconstruction of the damage caused by the (2015) earthquake'. See details at: http://www.nra.gov.np/en

World Heritage sites. The Constitution has allocated sole authority (schedule 6) of ancient monuments and archeologically important sites to the federal government; and also in concurrent authority (schedule 9) to be shared between federal, provincial and local government. Similarly, participation of local communities and cultural and faith groups are equally important. Political consensus, with the appropriate expert advice and support, is needed in each case to assign appropriate roles to the right government authorities.

4.6 Required and existing capacities of federal government

The federal government has overarching roles on DRRM. It bears overall responsibility and ultimate accountability to ensure the proper implementation of constitutional authority on DRRM at the federal, provincial and local government level.

However, under the new federalization model, institutional structures are still under transformation. There are bureaucratic hurdles impeding implementation of federal structures for overall governance.

The federal government has a rich pool of resources through its various ministries and departments potential to use at the federal level and also to help build DRRM capacity.

4.6.1 Federal governance capacity

Policy, legal and regulatory system: As mentioned above, federal policies, legal and regulatory instruments have the scope to guide provincial and local governments. Although there are noted gaps between DRRM demand and existing legal instruments to address the 27 types of natural and non-natural hazards, there are nonetheless several guiding documents which do provide sufficient mandates to implement DRRM implementation. Some of these are listed below (all dates mentioned below are in AD):

- Nepal Government (Work Division) Regulations, 2017
- Disaster Risk Reduction and Management Act, 2017. DRRM Regulations, 2019
- National Disaster Risk Reduction National Strategic Action Plan (2018-2030)
- National Disaster Risk Reduction and Management Policy, 2018
- National Climate Change Policy, 2019
- Public Health Act, 2018
- Infectious Disease Act, 1964
- Building Act 1998; Building Bye Laws 2015; Building Codes 2015
- Guidelines for the Relocation and Rehabilitation of High-Risk Settlements 2018
- Water Induced Disaster Management policy 2015
- Land Use Policy 2012
- National Urban Development Strategy 2016
- Disaster Preparedness & Response Planning Guidelines 2010 (revised in 2019)
- Guideline for the Relief to Cold Wave Victims 2012
- Dead Body Management Guidelines 2012
- National Disaster Response Framework and Action Plan 2013 (revised in 2019)
- National Strategic Action Plan on Search and Rescue 2014
- Regional Warehouse and Warehouse Management Guidelines 2015

- Standard Operation Procedure of NEOC 2015
- Disaster Assessment Guidelines 2015

The National Planning Commission (NPC) is the apex body responsible for the preparation of periodic development plans. Since the first Five Year Plan of 1956-61, DRRM is a priority issue. The NPC is now preparing its 15th Plan for 2020-2025. The *Fifteenth Plan Approach Paper* includes DRRM and Climate Change as a cross-cutting subject area of the Plan (NPC, 2019[97]).

Institutional structures and mechanisms: The policy, regulatory and legal frameworks have helped to establish appropriate DRRM structures and mechanisms for Nepal and its respective government agencies. The legal instruments also provide specific mandates to relevant ministries and departments to establish and make operational their respective DRRM institutional structures.

The DRRM Act 2074 grants several legal, institutional and operational mandates to the federal government, with structural arrangements such as the National Council, the Executive Committee and the NDRRMA - under MoHA, which is directed by the Home Minister). The DRRM Act assigns overall and specific mandates to the NDRRMA to lead, facilitate and support federal, provincial and local governments on disaster risk reduction, response and reconstruction.

All federal ministries and departments have established units and assigned officers to undertake DRRRM-related work. Federal agencies, such as the MoFAGA support local governments by preparing and sharing model laws[98] such as the model DRRM Act. The local government leaders and experts consulted during this study (Annex 2) commented that these supports have been helpful to strengthen local government's DRRM governance.

Under MoHA's jurisdiction, there is provision for a network of emergency operation centres, which is comprised of: 1 National Emergency Operation Centre (NEOC); and 77 District Emergency Operation Centres (DEOC), one for each district. To date, only 55 districts have set up DEOCs, and their EOC operational capacity is nominal. Because of this, federal agencies must provide required support to these nascent provinces and local governments to incorporate DRRM policy and regulatory mechanisms.

The Prime Minister's Disaster Management Fund is a well-established fund for large-scale disaster response. There is also a Central Disaster Relief Fund. The federal government manages an unfrozen (designated) fund, targeting provincial and local governments for disaster management activities. These funding mechanisms need to improve their delivery mechanisms for smooth, transparent and effective fund flow to provincial and local governments. All DRRM funding mechanisms would be better governed through an umbrella law to guide federal, provincial and local level DRRM funding considering the national DRRM funding landscape.

Human Resources: At federal level, there seems to be better human resource capacity compared to provincial and local governments. This resource has been further enriched by a pool of early responders from the Nepal Army, Nepal Police and Armed Police Force Nepal. The presence and access to a pool of DRRM experts and service providers outside of the federal bureaucracy from international development and humanitarian partners has added greatly to Nepal's federal capacity.

Considering Nepal's high exposure to various natural and non-natural hazards, and the complex vulnerabilities amid uncertainty, existing capacity is very low and is a matter of grave concern. It is notable that Nepal lacks adequate DRRM human resources with

[97] NPC (2019). Fifteenth Plan (FY 2076/77-2080/81) Approach Paper; National Planning Commission (NPC); Kathmandu
[98] https://mofaga.gov.np/model-laws

sufficient risk management skills, technology capacity, equipment and logistics for risk mapping, monitoring and prediction skills, and reduction, preparedness, response and recovery.

4.6.2 Federal risk and vulnerability reduction capacity

There have been several studies over the past decade assessing Nepal's exposure to hazards and disaster risks (ADPC, 2010[99]; Robinson et al, 2018; Patley et al, 2007; Williams et al, 2017). However, assessments are project-based and rarely harmonised. There are also variations in methodological standards. They mostly depend on secondary data and do not provide a country-wide hazard map, vulnerability and disaster risk assessments. There is very little evidence of application of previous studies recommendations and results.

Different federal agencies are responsible for specific hazard-related risk reduction activities. Apart from MoHA, all other line ministries and the National Planning Commission (NPC) are responsible for the integration of DRRM into national development planning. It is a matter of great concern that sectorial integration is lacking in practice. This is reflected through an increasing loss and damage trend, occurring because of unplanned infrastructure development, and negligence of disaster risk considerations in development investments and service delivery practices.

Respective ministries at federal level are responsible for leading the disaster preparedness and response clusters (MoHA, 2019[100]). For instance, the Ministry of Health and Population (MoHP) leads the health and nutrition clusters and the Ministry of Water Supply and Sanitation leads the WASH sector. The HCT are developing disaster impact scenario-based response plans encouraging sectorial leaderships in disaster management.

Some departments, such as DHM, provide information services for various hazard risks through weather and flood forecasting. Similarly, the Department of Urban Development and Building Codes, and the Department of Irrigation and National Earthquake Monitoring Centre (within the Department of Mines and Geology) provide technical information relevant to their area of concern. However, they are struggling due to a lack of sufficient human resources, current technology capacity, and not very efficient coordination and mobilization mechanisms. Finally, making use of available information from these departments on disaster risks and recommended actions is rarely considered within their development priorities.

Building on processed data from hydrological and meteorological stations, the DHM develops climate scenarios (MoFE, 2019[101]), periodic weather forecasts, and forecasting of extreme weather events, including flash floods and early warning alerts. There are 27 flood forecasting stations on major rivers where downstream community flood risk is forecasted through computer modelling.

A localized text messaging system operates in partnership with Nepal Telecom (NTC) and NCell (telecom service providers) to send flood risk information to their subscribers. DHM also provides information through social media and toll-free telephone numbers, active 24/7 during the monsoon season.

Similarly, the Department of Health Services (DoHS) monitors possible epidemics and disease outbreaks on a regular basis for early response and prevention through an Early Warning and Reporting System and Integrated Disease Surveillance System.

[99] ADPC (2010). Nepal Hazard Risk Assessment. Asian Disaster Preparedness Centre (ADPC). Bangkok
[100] MoHA (2019). National Disaster Response Framework. Ministry of Home Affairs. Kathmandu
[101] MoFE (2019). Climate Change Scenarios of Nepal. Ministry of Forests and Environment (MoFE). Kathmandu

The overall sectorial response capacity is low and could benefit from these forecast information and alert systems. Since over 80 percent of Nepal's major hazards are related to weather, it is imperative that jurisdictional responsibilities be assigned to take responsive action on these alerts and early warnings.

4.6.3 Federal information, knowledge and education capacity

Currently, there are no systemic plans or guidelines in place for DRRM public education and awareness-raising. However, awareness raising campaigns and messages are in place for specific hazards. These campaigns are managed through different communication media such as radio, television, print, online and social media. Many disaster awareness activities are taking place through the assistance of national and international development partners, including INGOs.

MoHA maintains a database within its disaster portal (MoHA, n.d.[102]). MoHA is building the Disaster Information Management System (DIMS)[103] viz. BIPAD at national scale, with the aim of developing a comprehensive DRRM information platform useful for local, provincial and federal governments.

Apart from MoHA, the Department of Health Services maintains a database of health-related epidemics[104]. There are also designated research agencies, universities and training centres that generate useful DRRM-related information and knowledge. However, the value of these agencies continues to be criticized for their inaction to ensure efficient DRRM mobilization.

To integrate DRRM knowledge within formal curricula, different universities offer Disaster Risk Management, Climate Change Management and Earthquake Engineering courses as part of their Masters-level programmes. Staff College, a national training centre for bureaucrats, offers introductory and detailed DRRM courses.

In addition, different federal agencies are leading training activities in relevant sectors. For example, the Department of Urban Development and Build Construction (DUDBC) has developed courses and conducts mason training on safe building construction (as per the NBC). These are organized through both government and non-government organizations, such as the National Society for Earthquake Technology (NSET).

The Nepalese Army and Nepal Police have Disaster Management Units. The Nepal Army (Nepal Army, n.d.[105]) and Armed Police Force (APF) are running a Disaster Response Training Centre (APF. n.d.[106]). The Red Cross leads training on emergency management, search and rescue, first aid and fire-fighting. However, more training platforms are needed to embed DRRM at provincial and local levels.

Federal agencies, particularly bureaucrats, have access to various training opportunities, educational courses, learning forums, workshops, and conferences abroad provided by development partners and donors. However, for various reasons, training outcomes are far from anticipated as the bureaucrats trained in DRRM are often transferred to other job positions, where they have very little chance to use their DRRM knowledge and skills.

[102] MoHA (n.d.). DRR Portal. http://www.drrportal.gov.np/
[103] https://bipad.gov.np/
[104] https://heoc.mohp.gov.np/
[105] Nepal Army (n.d.). Nepalese Army and Disaster Management. Accessed on 07 March, 2020 at https://www.nepalarmy.mil.np/page/bpd and https://www.nepalarmy.mil.np/upload/publications/special/english_part1.pdf
[106] APF Nepal (n.d.). Armed Policy Force Nepal Introduction. Accessed on 07 March, 2020 at https://dmtc.apf.gov.np/page.php?view=Welcome-to-Disaster-Management-Training-School

4.6.4 Federal preparedness for response capacity

To enhance preparedness for effective response and recovery, a clustered approach was institutionalized, with UN agencies and IFRC co-leading relevant DRRM cluster activities with concerned ministries. The National Disaster Response Framework (NDRF) created 11 humanitarian clusters: Health, Water Sanitation & Health (WASH), Emergency Shelter, Food Security, Nutrition, Camp Coordination & Camp Management (CCCM), Protection, Early Recovery, Education, Logistics, and Emergency Communication.

The federal government has been pushing for disaster preparedness since 2010, with a focus on seasonal hazards. Unfortunately, there is no tangible outcome which can be expressed as "reduced losses and damages" (except perhaps reduced flood casualties due to flood alerts shared by the DHM and NEOC). MoHA is however establishing Humanitarian Staging Areas (HSAs) which will help in responding to mega disasters.

4.6.5 Federal rehabilitation and reconstruction capacity

Post-2015 earthquake, the GoN established the National Reconstruction and Rehabilitation Authority to lead and co-ordinate all reconstruction related activities. The NRA approach has demonstrated moderate GoN capacity for reconstruction management at provincial local government levels. In the future, it will be the NDRRMA who will lead and facilitate rehabilitation and reconstruction. The structural flexibility of the NDRRMA to expand its capacity will be key to manage reconstruction (Bhandari and Hodder, 2019[107]). The structure of the NDRRMA is yet to become clear.

4.7 Intergovernmental collaboration for DRRM

At federal level, authorities have yet to build a coherent DRRM picture and mechanisms jointly with provincial and local governments. Additionally, federal agencies have to be able to properly coordinate DRRM inter-agency policies, plans, and corresponding actions amongst themselves.

There is a noted reluctance to expedite the transformation of DRRM structures and functions under the federalized decentralization process. Delays in establishing the NDRRMA, mandated by the DRRM Act in 2017, is one primary example. Federal ministries need to adequately coordinate with each other and harmonize each other's DRRM work efforts. For example, MoHA and MoFAGA could send guidelines and instructions to local governments maintaining inter-agency synergies. Parallel instructions confuse local government authorities. The DRRM Act and LGO Act provisions could have matched better to each other (Table 8).

Coordination at provincial level is even more challenging. There is a lack of institutional structures, inadequate staffing and poor functional ability to undertake designated roles/responsibilities. However, provincial governments are trying to coordinate with local and federal governments through budget and policy support although current efforts are insufficient. This gap in inter-governmental collaboration and coordination may be resolved with adequate DRRM institutional structures in place, improved staffing, and greater resource mobilization.

As discussed in previous chapters, one way to fill the gaps at provincial and federal level is to systematically synergise installed DRRM capacity through intergovernmental co-ordination efforts. However, this requires an in-depth analysis of each province's capacity and enabling inter-governmental coordinating mechanisms, particularly with local government.

[107] Bhandari, D. and Hodder, C. (2019). Learning from Nepal NRA to inform the National Disaster Risk Reduction and Management Authority. Oxford Policy Management. Kathmandu

While the lack of adequate inter-governmental coordination with provincial and local government is partly attributed to a lack of human resources, the problem at federal level has more to do with bureaucratic siloes. Thus, the creation of DRRM institutional and legal structures, and the simple fulfilment of staffing needs may be insufficient to address inter-governmental coordination gaps.

There are indeed some DRRM structures and mechanisms in place for intergovernmental co-ordination, but these are not functioning well for various reasons. For example, the District Disaster Management Committee (DDMC) has great potential to function as a coordinating and collaborating mechanism at local level. The Chief District Officer (CDO), a federal government official, is the Chair of the committee and members are politically elected local government leaders. However, local and province government leaders feel that CDOs seem to want to continue to exert their traditional central government power over local governments and undermine the role of provincial governments. They cite examples such as the windstorm in Bara and Parsa districts in 2019, (Karna and Bhandari, 2019[108]), where they feel local and province government could have played a bigger role such as managing relief collection and distribution, which is untenable under a federal decentralized structure.

The provincial Chief Ministers are integral members of the DRRM National Council, which provides a strong mechanism for coordination between federal and provincial governments. However, meetings are always ad hoc and rarely discuss inter-governmental coordination issues.

The DRRM Executive Committee is another platform designed to ensure collaborative actions among federal agencies. The committee is yet to create synergy between federal agencies and produce harmonized support to province and local level. The NDRRMA is mandated to lead and coordinate its DRRM mandate across federal departments and between federal, provincial and local governments, including government agencies, civil society and private sector organizations. There are significant challenges in carrying out this role. This is due, in part, to bureaucrats and political leaders not being held fully accountable and not being incentivised to coordinate.

The institutionalized delineation of DRRM roles, responsibilities and accountabilities must take into account the sharing of institutional capacity amongst the three tiers of government while holding all government authorities fully accountable, to ensure these efforts galvanize the DRRM agenda.

Table 11 Minimum required and existing capacity for provincial level

Components of DRRM	Minimum required capacity at Provincial Level	Existing Capacity
1. Governance		
Policy, legal and regulatory system	All required legal instruments, policies, strategies and plans in place according to scope of their jurisdiction	In process
Guidelines, Standing Operation Procedures, Protocols, Standards	SOPs on search & rescue, relief Relief standards, contingency plans for humanitarian sectors, Business Continuity Plan, Recovery Plans	None
Institutional Structures	Strong institutional structures and effectively functional mechanisms for coordination, collaboration and partnerships	Low

[108] Karna, R., and Bhandari D. (2019). Inter-Governmental Coordination in the Response and Relief to Windstorm Disaster in Bara and Parsa. Oxford Policy Management.

Components of DRRM	Minimum required capacity at Provincial Level	Existing Capacity
Human Resource	For example: DRRM officers, fire-fighting squad, health personnel, IT and database personnel Trained volunteers – 500 (additional to government) At least 200 squad (6 persons in 1 squad = 1,200 trained personnel from government departments in different skills) for medium search and rescue considering all types of HR DRRM skills required	Low
2. Risk and Vulnerability Reduction		
Hazard, vulnerability and risk assessment and mapping	Hazard profile of province Vulnerability profile Risk profile	Low
Risk Reduction Initiatives	Hazard mitigation measures, vulnerability reduction and capacity enhance measures	Low
Hazard Monitoring, Surveillance	Ability to monitor all types of hazards and their potential disaster risk Ability to forecast cascades and tailored hazards Ability to put system of response	None
Mainstreaming DRR activities into Development	Guidelines, evaluation mechanisms, staff terms of reference, budget, technology to mainstream DRR into development	None
Early Warning system	Technology based early warning system	None
3. Knowledge and Education		
Public Awareness	Guidelines, ICT materials, programmes, exercises	None
Information Management and Sharing	DIMS, websites, portals and other viable mechanisms for information sharing and feedback collection	Low
Training	Training on emergency, search and rescue, rapid response, relief, rehabilitation Availability and implementation of required training to fulfil awareness & skill needs for DRRM	None
Education	Formal and informal education linked to DRRM School level DRRM activities Formal education with DRR curriculum Disaster safety practices as part of formal and informal education	None

Components of DRRM	Minimum required capacity at Provincial Level	Existing Capacity
4. Preparedness and Response[109]		
Forecast, Risk Monitoring, Early Warning, Surveillance	All hazard surveillance and dissemination mechanism functional at province scale Ability to predict and manage cascade effects	Low
Health	First aid supplies At least one Trauma centre in each major city Health Centres, hospitals for emergency Sufficiency on ambulance, air ambulance Status of health personnel Status of medical supplies (medicine, equipment, other accessories) Provision of backup and contingency	Low
Water, Hygiene, Sanitation (WASH)	Awareness on potential risk and prevention measures, disinfection skills, materials availability Drinking water as per standards, basic hygiene kit Women's sanitary requirements Waste disposal & management facilities	Low
Emergency Shelter	Emergency Shelter in coordination with Local Govt	Low
Food Security and Nutrition	Food stock for at least 3 months for the whole population Arrangement for backup support and import	Low
Camp Coordination and Camp Management (CCCM)	Open spaces Camp management HR and guidelines Other essentials for camp management	Moderate
Protection	Ability to fulfil special needs of women, pregnant women, children, elderly and disable Protection against any violence & security threat Psycho-social counselling facility	Low
Education	Contingency plan for school/education continuity Provision child friendly spaces in temporary camps	None

[109] Sub-components under these components are from Humanitarian Clusters. Indicators may vary in individual province government

Components of DRRM	Minimum required capacity at Provincial Level	Existing Capacity
	Temporary learning spaces Early Childhood Development (ECD) supplies	
Logistics for Humanitarian Assistance	Warehouse, cold storages. At least one HSA per province, mobile HSA in strategic location SAR tools (life jacket, stretchers, fire engine, water reservoir tank). Transport facilities, equipment. At least 1 helicopter/province	In process
Emergency lifeline services like Communication, water, hospitals	Emergency communication mechanisms Back up and alternatives for communication, electricity, water supply, access to emergency services	Low
Early Recovery	Insurance provision, Social security programme, Effectiveness of disaster risk financing. Provision of seeds and supplies to reinstate agriculture, books and supplies to reinstate school education, recovery of local markets and other lifeline services Quick restoration of water supply, electricity, road/transport, communication, fuel supply	Low
5. Rehabilitation and Reconstruction		
Resettlement	Rehabilitation of damaged water supply, fuel supply, communication, access road, natural resources, agriculture land, irrigation systems, industries, service centres Quick restoration of local market	This capacity has not been tested in practice
Reconstruction	Reconstruction of damaged infrastructures Restoration of losses of assets and livelihoods resources/sources Relocation of at-risk communities	This capacity has not been tested in practice

Table 12 Minimum required and existing capacity at federal level

Components of DRRM	Minimum required capacity at Federal Level	Existing Capacity
1. Governance		
Policy, legal and regulatory system	All required legal instruments, policies, strategies and plans in place according to scope of their jurisdiction guiding all levels	Moderate
Guidelines, Standing Operation	SOPs on search & rescue, relief	Moderate

Components of DRRM	Minimum required capacity at Federal Level	Existing Capacity
Procedures, Protocols, Standards	Relief Standards, contingency plans for humanitarian sectors, Business Continuity Plan, Recovery Plans at national scale guiding all levels	
Institutional Structures	Strong institutional structures and effectively functional mechanisms for coordination, collaboration and partnerships	Moderate
Human Resource	For example: DRRM officers, fire-fighting squad, Health personnel, IT and database personnel Trained volunteers – 2,000 (additional to government affiliated) At least 700 squad (6 persons in 1 squad = 4,200 trained personnel from government departments) for medium search and rescue considering different types of HR required	Low
2. Risk and Vulnerability Reduction		
Hazard, vulnerability and risk assessment and mapping	Hazard, vulnerability and risk profile for all hazards at national scale. Ability to help province and local governments in need.	Low
Risk Reduction Initiatives	Hazard mitigation measures, vulnerability reduction measures, capacity enhance measures	Low
Hazard Monitoring, Surveillance	Ability to monitor all types of hazards and their potential disaster risk. Ability to forecast cascades and tailored hazards Ability to put system of response	Low
Mainstreaming DRR activities into Development	Guidelines, evaluation mechanisms, accountabilities, budget, technology Ability to help province and local governments in execution	Low
Early Warning system	Technology based early warning system	Moderate
3. Knowledge and Education		
Public Awareness	Guidelines, ICT materials, programmes, exercises	Low
Information Management and Sharing	DIMS, Websites, portals and other viable mechanisms for information sharing and feedback collection	Low
Training	Training on emergency, search and rescue, rapid response, relief, rehabilitation Availability and implementation of required training to fulfil awareness and skill needs for	Low

Components of DRRM	Minimum required capacity at Federal Level	Existing Capacity
	DRRM	
Education	Formal and informal education linked to DRRM School level DRRM activities Formal education with DRR curriculum Disaster safety practices as part of formal and informal education	Low
4. Preparedness and Response[110]		
Forecast, Risk Monitoring, Early Warning, Surveillance	All hazard surveillance and dissemination mechanism at province scale Ability to predict and manage cascade effects	Low
Health	First aid supplies At least one trauma centre in each major city Health centres, hospitals for emergency Sufficiency on ambulance, air ambulance Status of health personnel Status of medical supplies (medicine, equipment) Provision of back up and contingency	Low
Water, Hygiene, Sanitation (WASH)	Awareness on potential risk and prevention measures, disinfection skills, materials availability Drinking water as per standards, basic hygiene kit Women's sanitary requirements Waste disposal & management facilities	Low
Emergency Shelter	Emergency shelter capacity in coordination with provincial and local government Tarpaulin etc. stockpile and backup supplies	Low
Food Security and Nutrition	Food stock for at least 3 months for the whole population in conjunction with local and province government stock Arrangement for backup support and import	Low
Camp Coordination and Camp Management (CCCM)	Support LGs to set aside open spaces to accommodate at least 1/3 of population Ability to set up temporary settlements/camps Ability to supply essentials for shelters	Moderate

[110] Sub-components under these components are from Humanitarian Clusters. Indicators may vary to different components of disaster response and humanitarian clusters

Components of DRRM	Minimum required capacity at Federal Level	Existing Capacity
Protection	Ability to fulfil special needs of women, pregnant women, children, elderly and disable Protection against any violence & security threat Psycho-social counselling facility	Low
Education	Contingency plan for education continuity during emergency. Ability to protect child rights during emergency. Ability to provide educational supplies	None
Logistics for Humanitarian Assistance	Warehouse, cold storages across the country National system of HSAs and emergency as well as humanitarian logistics Air and land transport services	Moderate
Emergency lifeline services like communication, water, hospitals	Emergency communication mechanisms Backup and alternatives for communication, electricity, water supply, access to emergency services	Low
Early Recovery	Insurance provision, social security programme, effectiveness of disaster risk financing Provision of seeds and supplies to reinstate agriculture, books and supplies to reinstate school education, recovery of local markets and other lifeline services Quick restoration of water supply, electricity, road/transport, communication, fuel supply	Low
5. Rehabilitation and Reconstruction		
Resettlement	Rehabilitation of damaged water supply, fuel supply, communication, access road, natural resources, agriculture land, irrigation systems, industries, service centres Quick restoration of local market	Low
Reconstruction	Reconstruction of damaged infrastructures Restoration of losses of assets and livelihoods resources/sources Relocation of at-risk communities	Moderate

5 Recommendations – roles, responsibilities and accountabilities

5.1 Conclusion

Based on analysis in previous chapters, this section presents key arguments that shape the study recommendations on the institutional roles, responsibilities and accountability of governments to respond to the nature, intensity, and frequency of hazards and scale of disasters.

1. **Delineation according to nature of hazards and disasters**: the Constitution's provisions for local government exclusive and concurrent authority on DRRM have decentralized DRRM governance and empowered local government leadership. However, there is some vagueness attached to the roles, responsibilities and authority of the three tiers of government. For efficient DRRM governance, it is essential that we delineate institutional roles based on the characteristics of disasters as meticulously as possible.

   Local governments' roles and responsibilities continue even in bigger crisis scenarios where provinces or the federal government need to take command. Therefore, the delineation must consider the scope of LG's DRRM functions, as discussed in Annex 3, based on the nature of the hazard and associated impacts while assigning responsibilities, dividing roles, and holding accountability between agencies at federal, province and local level for disaster response and relief.

2. **Consideration of consequences:** Localized hazards, such as food poisoning, a small fire or a landslide could impact only a small population and be managed locally. A similar small-scale flooding or landslide in a strategically important location could affect a larger population and even bloc major trading routes.

   Information on the hazard's overall impact and the level of response needed help in delineating the roles and responsibilities between different government levels. A quick decision-making mechanism is vital to determine whether a local jurisdiction can manage independently or requires external support.

3. **Disaster categorisation through indicators**: Indicators are helpful in determining the level of disaster and requisite support, while providing a framework for delineating institutional roles, responsibility and authority. The importance of rapid decision-making during a crisis demands that indicators be readily applicable for local governments. Otherwise, administrative processes may delay and hamper decision-making and relief efforts. Reflecting on real event examples such as discussed in Annex 3 and leading simulation exercises can provide the confidence to make quick and informed decisions when a disaster hits.

   Disaster Indicators: Indicators such as: human deaths/missing persons, injuries, or population in need of immediate food and shelter indicate the scale of disasters. These indicators allow for comparatively easy data collection. Conversely, the more complex quantification of disaster consequences is not always possible or useful in assessing level of relief mobilization.

   Nature of Hazard Indicators. Like hazard scale indicators, indicators on the nature of hazards and their impacts are also important. However, choosing nature of hazard indicators to determine the level of a disaster is complex. The nature and intensity of hazards is a dynamic, and an assessment of disaster impacts is not solely dependent on the hazard's nature and intensity. Hazard categorization is context specific and involves a compromise between the availability of easily measurable indicators such as those

discussed in chapter 2 and having the confidence to make decisions based on the available indicators.

4. **Assigning roles and making exceptions**: Based on indicator thresholds such as those discussed in chapter 2, disasters can be categorised and management roles can then be assigned to local, provincial and federal governments or their respective agencies. Giving sole responsibility to local governments to handle certain levels of disasters ensures a modicum of accountability. Otherwise, local, provincial and federal governments may respond with unnecessary duplication of efforts or perhaps even no effort at all due to the confusion on roles and levels of responsibility.

   Provisions for the delineation of management roles between government institutions must be made for certain types of disaster incidents that are unprecedented or extraordinary and may cross jurisdictional boundaries. For example:

   - A new and unprecedented pandemic, such as the COVID-19 pandemic, that demands direct attention and decision-making from the federal government irrespective of its magnitude or location spread.

   - A small landslide or lightning severely injuring a person in a remote area where road access is impossible and the victim cannot be treated locally and may require air support from the provincial government or federal government.

   - A small hazard, such as the bursting of a small upstream water tower, with a high probability of cascading downstream hazards, demands rapid scientific assessment or local government's risk assessment following the initial incident.

   Thus, criteria to assign institutional management roles to local government may, under exceptional circumstances, be inadequate and demand intervention from federal or provincial governments. Different government authorities, local governments in particular, should develop efficient mechanisms and protocols of decision making for unprecedented hazards.

5. **Capacity of government or agency to undertake roles & responsibilities:** Arguably, disaster management roles and responsibilities are also a function of the institutional capacity to assume responsibility for a given disaster. Each level of government should be clear on their disaster management scope and responsibility, based on their established capacity.

   Each government should be accountable to build its minimum institutional capacity (e.g. human resources, professional and technical skills, governance tools, disaster relief supplies) to assume its roles/responsibilities within its respective jurisdiction. It is noteworthy that there are different categories of local governments. Based on their geographic location and social and economic conditions, local government's vulnerability contexts vary. They require relevant institutional capacity based on their exposure to particular hazards such as floods, disease outbreaks and windstorms.

6. **Existing realities:** Provincial governments are new political and administrative structures. With federalization, local governments were reformulated with new geographic boundaries, political and legal mandates. Both local and province level governments are in their nascent stages. Therefore, federal government agencies have a responsibility to ensure that provincial and local governments build their institutional capacity on DRRM to enable them to effectively exercise their authority.

7. **Quantitative as well as qualitative indicators:** The delineation of authority should not only depend on quantitative disaster indicators such as numbers of death, injuries and people needing urgent food and shelter support, but should also be reinforced with flexible qualitative indicators that adopt the following key principles:

- Leaving No One Behind to ensure broad-based and equitable participation, accountability and transparency.
- Coordination and collaboration between federal, provincial and local governments.
- Prevention of loss through preparedness and early action to ensure quicker recovery, reestablishment and reconstruction efforts.
- Consideration of sectorial hazards such as health, agriculture, forestry and market which may need to lead by key agencies.

8. **Synergistic alliances and complementarity**: As with Japan, two or more municipalities may consider building alliances (sister cities) to maximize their capacity-building efforts, and strengthen their disaster deployment capabilities during a crisis, especially where the scarcity of human resources or relief supplies in the affected municipality overwhelm their relief efforts. For example, Nepalganj and Biratnagar could build an alliance with Dhanagadhi and Dipayal Silgadhi. If one is overwhelmed, the staff/material capacity of its sister municipality could be sent to complement the disaster response. The sister municipality would most likely be located in a different part of the country and should not be affected simultaneously by the disaster. It would therefore be able to share resources more efficiently than a neighbouring municipality which may be affected by the disaster at the same time.

5.2 Recommendations

1. **Categories of disasters**: Considering existing DRRM practices in Nepal and other countries, disasters can be categorized into 4 levels namely Level 0 to Level 3. This categorization is useful in delineating the roles, responsibilities and authority between the three levels of government, and in developing operating procedures, alert protocols and executing forecast based early actions.

2. Decision making: Establishing these categories and determining the overall impact of disasters is insufficient to provide adequate guidance to help delineate government roles, responsibility, and authority. Whatever the level of a disaster may be, local government reserves the right to request external support if they find they are ill-equipped to respond to a disaster event. Local governments must aim higher to build their capacity to manage larger category disasters. This is in line with the Constitution's devolution of power and sole authority to local government. This decentralized mandate should be endorsed through the relevant federal government agencies, most notably the NDRRMA.

It is recommended that each local and provincial government review their overall operational and administrative capacity, at least yearly, while revising and updating their disaster preparedness and response plans. It is also recommended that each government adjust their qualitative and quantitative criteria and indicators to the different components of disasters, as suggested in chapters 3 and 4 and that they update their minimum capacity targets and existing institutional capacity to respond.

Similarly, it is recommended that the NDRRMA review and revise disaster category criteria and indicators periodically, with inputs from local, provincial and federal governments. This will help DRRM planning process at local, provincial and federal level and build national capacity.

3. Jurisdiction: It is constitutionally mandated that local governments possess sole authority on DRRM interventions. It is also clear that all three levels of government must share authority, responsibility and accountability for disaster management considering a balance between institutional capacity to respond and political and operational jurisdiction. All governments must have more defined jurisdictional roles and responsibilities and should be

held accountable for fulfilling those roles and responsibilities, either to lead or support DRRM.

It is also recommended that incentives be introduced to hold local, provincial and federal governments accountable for achieving or not achieving established targets. For example, local governments may achieve DRRM targets and receive additional performance grant financing from federal and provincial government budgets.

4. Consideration of extensive and limited disaster risks: As an example, earthquakes are one of the most extensive and fastest striking hazards in Nepal. It can impact the entire country in a single event within a few seconds. It is therefore recommended to delineate roles and responsibilities between local, provincial and federal governments based on the earthquake risk for different DRRM actions to prevent losses, encourage preparedness and response measures, and execute recovery activities. Different areas, infrastructures and populations in Nepal will be impacted differently by the same earthquake.

Hazards of limited scope such as lightning strikes, snake bikes or traffic accidents need to be assessed for their potential impact. They then need to be assigned to specific agencies at the local, provincial and federal level with associated roles, responsibility and accountability for relevant government agencies.

For instance, responsibility to monitor windstorms and lightning risks can be assigned to the Department of Hydrology & Meteorology (DHM), with the field response to potential consequences (e.g. death, injury and property damage) assigned to local governments. Unless beyond their capacity, local government can, for example, manage lightning impacts exclusively.

5. Consideration of combined capacity and differentiated responsibility: While actions may be conducted through local government generally, such activities should be guided by a vision of collaborative national capacity.

There are national DRRM systems, such as early warning systems and humanitarian logistics systems that fall within the federal jurisdiction. However, they rely upon different government agencies to contribute to the whole system. These differentiated but complementary responsibilities include, inter-alia:

a. Human resources required for all phases of disaster risk reduction and management, which also consider specific requirements depending on the nature of hazards and associated disaster impacts. Although resources and skill sets may vary between local, provincial and federal government jurisdictions, together they are stronger.

b. The **federal government** bears the ultimate responsibility for the mainstreaming of DRRM across Nepal. Federal agencies are responsible and accountable for Level-3 disasters and need to provide demand-driven support to the provinces and local governments.

c. The federal government must establish harmonized policies and institutional support systems to ensure effective disaster risk reduction and management, in alignment with constitutional mandates and federal legal frameworks.

d. The federal government's roles, responsibilities and accountabilities are to support provincial and local governments to manage disasters. The federal government is also responsible for undertaking residual responsibilities from local and provincial governments; and for collaborating with international actors during national emergencies.

e. In a national level emergency, the federal government must ensure effective collaboration and coordination with international emergency services and between the provinces.

f. Federal government must be capable and should hold residual responsibility of coping with unprecedented hazards, such as the Bara-Parsa cyclone or COVID-19. The federal government must take immediate strategic action, in collaboration with the provinces and local government, irrespective of clarity on the level of disaster.

g. Federal agencies must assume responsibility for seismic, meteorological and hydrological monitoring systems and advanced forecasting and early warning systems as it is untenable for the provinces and local governments to establish these costly systems separately.

h. Standard operating procedures for federal, provincial and local agency actions immediately following a disaster will enable a more systematic disaster response.

i. For most disaster management responsibilities, as in India with state-led responsibility, **provincial leadership** is crucial in Nepal. Provincial and local governments can carry out many disaster management initiatives with appropriate support from federal agencies.

j. Provincial governments should aim to manage Level-2 scale disasters without federal support and must collaborate with federal agencies for Level 3 disaster management. Moreover, provinces must support preparedness activities and backstop disaster response efforts led by local governments.

k. Provincial governments should rapidly assess the disaster impact and recommend to the federal government whether to declare a localized or province-wide emergency.

l. Provincial governments are accountable for providing overall guidance to local governments on their capacity building through supportive policy frameworks, institutional arrangements, human resource development, and material support.

m. **Local governments** should be responsible and accountable to ensure that they have enough resources and logistics facilities in anticipation of level 0 and level 1 disasters. Some logistical capacities, such as open spaces and emergency shelters, should be able to accommodate at least one third of the total population. It is important that local governments stock sufficient foodstuff and non-food items (or have one week of private sector/local vendor provisions for the population). Appropriate targets can also be set by the provinces and federal government.

n. Local governments must prepare to manage a level - 2 and 3 disaster over the first few critical hours/days, as they are closest to reaching those in need, and it can take some time for external agencies to be able to reach there to complement local efforts.

o. Local government must develop the capacity to assess immediate relief needs for hazard affected communities using nationally endorsed tools and methods.

p. Local governments must establish and manage relief distribution points/camps to distribute relief supplies and services following a disaster at any level. Similarly, local governments must be responsible for managing databases of vulnerable populations, vulnerability profiles, and disaster risks profiles of their territory.

q. **Municipalities** must seek technical support from their federal and provincial counterparts for hazard mapping, risk monitoring, risk reduction, and mainstreaming DRR into development as these risk management measures generally cover a wider geography area.

r. There should be differentiated responsibilities between rural and urban municipalities in high mountain regions, the mid-hills and Tarai region, and sub-metropolitan and metropolitan jurisdictions considering the context and capacity.

s. Municipalities must immediately inform respective district agencies, provincial governments and concerned actors of any disaster incidents - irrespective of the level of disaster. This allows sufficient time for district, province and federal actors to more efficiently ready their support.

t. Similarly, municipalities should take early action, based on early warning systems provided by the province or a federal agency such as the National Emergency Operation Centre (NEOC).

6. Intergovernmental and inter-agency coordination and collaboration: Coordination and collaboration between governments is vital for the delineation of roles, responsibilities and accountabilities on disaster risk management. This can occur between municipalities, between provinces, between two or more ministries, or between departments at the same level; or between federal, provincial and local government institutions.

The following is recommended:

a. As mentioned in Japan's 'wide area support system', **municipalities must collaborate**, as sister municipalities, to share and combine resources such that the unaffected municipality can assist the impacted areas or regions.

b. The **NDRRMA** is the agency mandated to facilitate and maintain overall coordination, collaboration and partnerships amongst the different agencies within the three tiers of government.

c. The NDRRMA must coordinate with relevant federal ministries and departments to enhance capacity to respond, such as: monitoring, forecasting, or search and rescue.

d. Developing and strengthening a national disasters database system and maintaining a robust disaster information management system falls under federal responsibility to be executed by the NDRRMA in collaboration with province and local governments.

e. The NDRRMA could be appropriate agency to facilitate establishment and operationalization of early warning systems by federal, provincial and local government agencies in collaboration with non-governmental agencies, civil society organizations, and the private sector.

f. Existing coordination mechanisms with private sector, NGOs, and diverse groups of civil society actors outside government must be strengthened at every level. To ensure a high level of pluralist inter-agency collaboration, the NDRRMA must facilitate existing formal and informal coordination and collaboration mechanisms, such as: humanitarian cluster groups, donor groups, I/NGO networks, private sector and civil society organizations.

g. The **CDO**'s role and responsibility to mobilize federal and provincial resources to help local governments is crucial (e.g. mobilization of security personnel for disaster preparedness and response). Similarly, the capacity of the **District Emergency Operation Centre** (DEOC) is key to ensure overall disaster management coordination.

h. Coordination and collaboration with Nepal's development partners, UN Agencies, intergovernmental organizations, and INGOs is vital to the disaster management agenda. This falls under the **federal government**'s jurisdiction.

The above recommendations are used for delineating roles and responsibilities for different scenarios of disaster events (see Annex 3).

Annex 1 Key questions of the study

1. Background

The Constitution of Nepal (2015) shares the disaster risk reduction and management (DRRM) related authorities between federal, provincial and local level governments. While local levels have received the exclusive right to disaster management, all three level of governments share the disaster management. Successively, the Disaster Risk Reduction and Management Act (2017) laid out structures along with representation, roles and responsibilities of the actors at the federal, provincial and local levels including DDMC[111].

The DRRM Act has set up the National Disaster Risk Reduction and Management Authority (NDRRMA) (written "Authority" hereafter), which is being established, to coordinate and implement DRRM related functions nationally. The DRRM (2019) Regulations further elaborate the functions of different government decision-making mechanisms. The Government of Nepal has also endorsed a *National Disaster Risk Reduction and Management Strategic Plan of Action (2018-2030)*, which describes a comprehensive planning framework encompassing different steps of DRRM and navigates the government actors, and other stakeholders including the humanitarian agencies, in adopting appropriate processes.

However, there is less clarity on who will do what in planning and implementation of disaster risk reduction and management at federal, province and local level. This is because it is unclear how to share roles and responsibilities between federal levels according to the nature and intensity and effect of disastrous events. To fill the gap, it is essential to identify mechanisms to ensure coordinated actions between different levels. It is also important that there is variation in the capacity of local governments, districts and provinces to respond to different contexts. Thus, there is a need to rationally share the roles, responsibility and accountability between three levels of government for effective disaster management.

The Disaster Risk Reduction and Management National Council (written as 'Council' hereafter) tasked[112] the Ministry of Home Affairs (MoHA) to propose a legal draft on the delineation of authority, responsibility and accountability between federal, provincial and local levels according to the nature, intensity and consequence of the disaster. MoHA asked the Policy and Institutions Facility (PIF)[113] to provide technical assistance in carrying out this study and develop a basis for delineating authority, responsibility and accountability.

This study may later involve consultations at various government decision-making levels. It will help streamline the DRRM responses and support the implementation of the DRRM Act clarifying the scope of authority, responsibility and accountability between federal, province, district and local level. This will help the NDRRMA to lead and coordinate through appropriate institutional structures and coordination mechanisms to develop national capacity for DRRM. It will also enable other DRRM stakeholders to effectively coordinate with the Authority, once this delineation is formally established.

[111] District Disaster Management Committee (DDMC) is headed by Chief District Officer (CDO). Chair/Mayor of local governments and some federal government agencies based on the districts are members. Its main role is to lead and support disaster preparedness and response in the district. For details: DRRM Act (2074)
[112] Decision 2 of the meeting of the Council on May 5, 2019 (Baisakh 22, 2076)
[113] Policy and Institutions Facility is policy support window of DFID/Nepal's disaster resilience portfolio to support Government of Nepal. It is managed by Oxford Policy Management. For details, contact at: pifnepal@opml.co.uk

2. Key questions to answer

1. *What are the disaster categories (based on nature, intensity, risk and consequences) and level of engagement of local, provincial and federal governments*?

* There are 23-25 natural and or human-induced hazards according to DRRM Act which should be categorized according to nature, intensity and consequences of disasters,

* And segregate (or group) them into (1) local governments can/should manage alone without external support, (2) local governments lead management with support from district - DDMC, (3) local governments lead management with support from respective DDMC and province government, and (4) local governments need lead support from province and federal government,

Considering the capacity of local, province governments and jurisdiction.

2. *What is the minimum and optimum/maximum required capacity of local and provincial governments to reduce/manage (response and relief in particular) disasters to implement constitutional and legal mandates following fundamental principles of disaster management (also consider disaster category and engagement framework):*

* minimum and maximum capacity required of different local governments [metro, sub-metro, urban and rural municipalities in different parts of country] to prepare for and respond to disasters.

* It is also to identify situations where the municipality should (or should not) ask for support from provincial and or federal government to manage the disaster. Or, under what scenarios respective provincial and federal governments should lead in responding to a disaster in a target municipality or municipalities.

3. *What are the existing capacities of local governments to solely manage or lead disaster management? The capacity areas could be assessed in terms of HR, infrastructure, equipment, material and budget for key humanitarian actions (on search & rescue; humanitarian clusters).*

* It is also to assess the existing capacity of 7 provincial governments to support and lead (as per need) disaster management.

4. *What are different levels of supports local, province governments can do each other including to build institutional and operational capacity to disaster management?*

* Including overall and specific roles of a CDO: whether, how and at what level can CDO/DDMC help support, if so required to, local governments to prepare for and respond to disasters without federal takeover of the response and relief, for all categories of disasters.

* Consider existing (if not, option for) efficient mechanism to coordinate and collaborate on disaster management in between local, province and federal government agencies.

Also, consider the following:

* The DRRM Authority in place with full mandate (in the near future);

* CDO (and security agency) role to help search & rescue and initial disaster relief; potential coordinating and backstopping role until local governments attains the optimum capacity to lead in disaster response;

* Social, gender, cultural and geographic disparity (e.g. remoteness) issues on disaster consequences (impact) that warrants quick and practical decisions to intervene to manage disasters.

Annex 2 List of experts and stakeholders consulted in the study

A2. 1 List of experts consulted in the study

SN.	Name	Organization	E-mail
1	Ramesh Guragain	NSET, Nepal	rguragain@nset.org.np
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3	Narayan Marasini	NSET, Nepal	nmarasini@nset.org
4	Asim Shrestha	UNICEF Nepal	ashrestha@unicef.org
5	Luna Khadka	DPNet Nepal	khadkaluna@gmail.com
6	Ram Bhandari	JICA Nepal	BhandariRam.NP@jica.go.jp
7	Damodar Adhikari	WHO Nepal	adhikarid@who.int
8	Jurgen Hurst	WFP Nepal	jurgen.hulst@wfp.org
9	Mandira Shrestha	ICIMOD	mandira.shrestha@icimod.org
10	Moti Thapa	WFP Nepal	moti.thapa@wfp.org
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17	Santosh Gyawali	USAID Nepal	sgyawali@usaid.gov
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19	Shyam Jnawali	NDRC Nepal	shyam.jnavaly@gmail.com
20	Dilip Gautam	Freelance Expert	dilipgautam65@gmail.com
21	Binod Ghimire	Freelance Expert	binod.resilience@gmail.com
22	Dinesh Gurung	Action Aid Nepal	dinesh.gurung@actionaid.org
23	Krishna Karkee	Women Humanitarian & DRR Platform	kkarkee@gmail.com
24	Surya Bahadur Thapa	DPNet Nepal	subatha3@gmail.com

A2. 2 List of local government leaders consulted in the study

SN.	District	Local level	Mayor/Chair
Sudurpachhim Province			
1	Kailali	Dhangadhi Sub- Metropolitan City	Mr Nrip Bahadur Bad
2	Darchula	Bash Rural Municipality	Mr Dilip Budhathoki
3	Achham	Mangalsen Municipality	Mr Padam Bdr Bohora
4	Dadeldhura	Amargadhi Municipality	Mr Bishweshwor Ojha
Karnali Province			
5	Humla	Kharpunath Rural Municipality	Mr Karna Bdr Rawal
6	Mugu	Chhayanath Rara Municipality	Mr Harijung Shahi
7	Surkhet	Birendra Municipality	Mr Devkumar Subedi
8	Jajarkot	Bheri Municipality	Mr Chandra Prakash Gharti
Province Number 5			
9	Bardia	Gularia Municipality	Mr Muktinath Yadav
10	Pyuthan	Mallarani Municipality	Mr Amardhowj Rana
11	Dang	Santinagar Rural Municipality	Mr Kamansingh Dhami
12	Rupandehi	Butwal Sub- Metropolitan City	Mr Shivaraj Joshi
Gandaki Province			
13	Kaski	Pokhara Metropolitan City	Mr Man Bahadur GC
14	Lamjung	Kwholasothar Rural Municipality	Mr Prem Bdr Ghale
15	Gorkha	Palungtar Municipality	Mr Dipakbabu Kandel
16	Mustang	Loghkar Damodarkund Rural Municipality	Mr Lopsang Chompel Bista
Bagmati Province			
17	Makawanpur	Hetaunda Sub-Metropolitan City	Mr Hari Bdr Mahat
18	Chitwan	Khairani Municipality	Mr Ladalmani Chaudhary
19	Kabhrepalanchok	Namobuddha Municipality	Mr TP Sharma
20	Nuwakot	Suryagadhi Rural Municipality	Mr Santa Bahadur Ghale
Province Number 2			
21	Rauthat	Rajdevi Municipality	Mr Dhiren Kumar Singh
22	Sarlahi	Ramnagar Rural Municipality	Mr Krishna Prasad Barma
23	Janakpur	Janakpur Sub metropolitan City	Mr Lalkishor Sah
24	Saptari	Tilathi Koiladi Rural Municipality	Mr Satish Kumar Sah
Province Number 1			
25	Morang	Biratnagar Metropolitan City	Mr Bhim Parajuli
26	Bhojpur	Sadananda Municipality	Mr Birbal Rai
27	Sankhuwasabha	Chainpur Municipality	Mr Bharat K. Khatri
28	Udayapur	Belka Municipality	Mr Durga K. Thapa

Annex 3 Analysis of delineation of roles based on event scenarios

If past disaster events in Nepal were to happen again, which level of government would be accountable and responsible for disaster risk reduction and management as per the recommendations from this study? In these sections, the proposed recommendations are tested through historical disasters.

Table A 3.1 shows a brief summary of responsibilities applicable to all hazards for different aspects of disaster risk reduction and management.

Five events: Gorkha earthquake[114], 2015, Taplejung Fire[115], 2019, Jure Landslide, 2014[116] , Tarai flood, 2017[117] and lightning in Madi rural municipality, 2020[118] are used as scenarios. The context of the disasters is shown briefly categorising them into disaster levels based on recommendations and assigning roles and responsibilities to three levels of government.

The basis for delineation is the following:

1. Local levels manage disaster (level-0 and level-1), provinces and federal agencies extend support only if requested by Palikas.
2. Provincial levels manage disaster (level-2) with support and coordination from Palikas; federal agencies support only if requested by the province.
3. Federal agencies with support and coordination from provinces and Palikas manage disaster (level-3); federal level decides whether or not international support is needed.
4. In the existing context, where Palikas and provinces are struggling on building capacity; the delineation of DRRM activities is proposed in the spirit of intergovernmental collaboration as per Table 3.1, which is based on the DRRM Act, 2017, the Constitution of Nepal, 2015, and the Local Governance Operation Act, 2017. As the provinces and Palikas build their capacities, they can solely take responsibility and accountability for disasters in their jurisdictional area.

[114] The characteristics of event are acquired from Post Disaster Needs Assessment (PDNA), 2015
[115] The characteristics of event are acquired from DRR portal
[116] The characteristics of event are acquired from DRR portal and
Ministry of Irrigation (MoI), Nepal government, 2015 http://www.sabo-int.org/case/2014_aug_nepal.pdf
[117] The characteristics of event are acquired from PFRNA, 2017:
https://www.npc.gov.np/images/category/PFRNA_Report_Final.pdf
[118] The characteristics of event are acquired from DRR portal

A 3.1 Delineated Roles and Responsibilities for a Level 3 (L3) Disaster

S.N	Activities	Local level	Provincial Level (Provincial Agencies)	Federal Level (Federal Agencies)	District Agencies
1	Search and Rescue	Support	Coordinate	Lead	Lead and coordinate
2.	Emergency First Aid	Support	Coordinate	Lead	Lead and coordinate
3.	Hazard Monitoring	Lead at local level, Support province and federal agencies	Lead at provincial level, Support federal agencies	Lead	Lead and coordinate
4.	Hazard mitigation	Support	Coordinate	Lead	Lead and coordinate
5.	Initial Impact Assessment	Lead, Support district agencies	Lead at provincial level, Support federal agencies	Support	Lead and coordinate
6.	Security and Safety	Support and coordination	Support and coordinate	Lead	Lead
7.	Relief(collection, purchase and transportation)	Support	Lead at provincial level	Lead	Lead and coordinate
8.	Mobilizing Humanitarian Staging Areas	No Role	Support federal agencies	Lead	Coordinate
9.	Province & Mobile Humanitarian Staging Areas Operationalization	No Role	Lead	Lead and coordinate as necessary	Coordinate
10.	Operationalization of Distribution Points	Lead	Support	Support	Support
11.	Temporary Shelter Management	Support	Lead (support if cannot lead)Coordinate	Support (Lead if Province cannot lead)	Lead and coordinate
12.	Relief distribution (food, cash transfer, non-food emergency items)	Lead	Support and coordinate	Support and coordinate	Support and coordinate
13.	Evacuation and Relocation of population at risk to safe sites (within Palika)	Lead	Support and coordinate	Support and coordinate	Support and coordinate
14.	Evacuation and Relocation of at risk population to safe site (inter-Palika)	Support	Support and coordinate	Lead	Lead and coordinate

15.	Early warning and information dissemination	Support and coordinate	Support and coordinate	Lead	Lead and coordinate
16.	Dead body Management (human and animals)	Lead	Support and coordinate	support	Lead and coordinate
17.	Debris management	Support	Support and coordinate	Lead	Lead
18.	Emergency operation	Support and coordinate	Support	Lead	Lead and coordinate
19.	Emergency education and continuation	Support	Support and coordinate	Lead	Lead and coordinate
20.	Emergency WASH	Support	Support and coordinate	Lead	Lead and coordinate
21	Social Protection	Support	Support and coordinate	Lead	Lead and coordinate
22	Special needs of women, adolescent girls, children and disabled	Support	Support and coordinate	Lead	Lead and coordinate
23	Independent investigation on impact assessment and future risk	Support	Support and coordinate	Lead	Coordinate
24	Post disaster needs assessment	Support	Support and coordinate	Lead	Coordinate
25	Rehabilitation	Lead	Support and coordinate	Support and coordinate	Coordinate
26	Employment, early recovery and livelihood	Lead	Support and coordinate	Support and coordinate	Support and coordinate
27	Monitoring and Evaluation	Support	Support and lead as designated	Lead	Support and coordinate
28	Reconstruction	Support and lead as designated	Support and lead as designated	lead	Support and coordinate
29	Preparedness (Awareness, training, capacity building at community/ward level)	Lead	Support and coordinate	Support	Support and lead as designated

A 3.2 Real event scenarios for delineation analysis

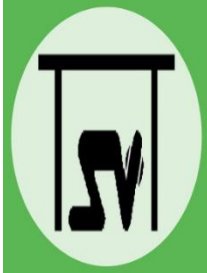
Disaster category: Level-3

Scenario 1: Earthquake (April 25 & May 12, 2015)

Magnitude: 7.8 and (second 7.3) in Richter scale | **Epicenter: Gorkha and Dolakha**

No. of death:	9256	Availability of required emergency support services:	With existing capacity, local and province governments cannot cope with the situation
No. of injured:	22,326	Potential cascading effects:	Disease outbreak potential, social disruption, potential damage to essential and lifeline services (although it was not in the case)
No. of families in need of immediate food:	Nearly 100,000	Primary responsibility to lead response efforts:	Federal government
No. of families in need of immediate shelter:	Huge but accurate data unknown	Potential back up responsibility/call:	International call
Houses damaged:	498,852 completely and 256,697 partially		
Geographic spread/coverage of hazard:	31 districts (14 severely, 17 partially)		
Extent of property and livelihood loss and damage:	Unknown		

Delineation of Roles and Responsibility (level - 3, Earthquake)



Disaster Risk Reduction

- **L** Enforce building codes and bye laws in house construction, risk sensitive land use.
- **P** Support municipality in vulnerability and risk reduction measures.
- **F** National policies, laws, guidelines, financing and capacity building to earthquake safety.

Preparedness for Response

L **P** **F** Maximum possible preparedness to rescue, relief to affected and other responses at all levels.

Hazard Monitoring

- **L** Post-earthquake situation monitoring, initial need assessment.
- **P** Situation monitoring at province scale, initial and future need assessment.
- **F** Situation monitoring at national scale, future situation forecasts, need assessment.

Early Warning

Alert for cascading hazards, social disruption risks, other hazards risks monitoring and warning.


Response
L
Collect preliminary information on death, injury and damages. Mobilize community and local task forces for search and rescue, emergency relief, shelter, camp etc. Ask CDO for search and rescue support. Ask province and federal agencies for additional support. Lead relief and other actions within local government capacity and support province, federal efforts.
P
Gather preliminary information via CDOs and LGs, mobilize province capabilities to search and rescue, assess immediate, initial and mid-term need assessment, recommend to federal government on emergency declaration, set up emergency shelters and camps, activate humanitarian staging areas etc.
F
CDO mobilizes security personnel to search and rescue in each district, Nepal Government mobilizes national capacity (includes mobilization from other non-affected provinces) to search and rescue, declares of state of emergency, requests for international support, activates humanitarian clusters, leads overall disaster response, recovery and reconstruction, supports local and province governments such as to relief distribution, emergency shelter management and relief material distribution.
Recovery, Rehabilitation
L
Detail loss and damage assessment, lead livelihood recovery as per existing capacity, support for other actions.
P
Support and lead recovery, rehabilitation as per existing capacity.
F
Overall lead of recovery and rehabilitation actions, post-disaster need assessment, prepare and implement reconstruction plan in collaboration with province and local level.
Index
L
Local level agencies
P
Provincial level agencies
F
Federal level agencies

Disaster category: Level-1

Scenario 2: Fire in Phungling Municipality, Taplejung (May 01, 2020)

No. of death:	0 (0-10)	Availability of required emergency support:	Municipality has ambulance, no fire bridgade, needs security force mobilization to control fire
No. of people injured:	2 (0-10)		
No. of families evacuated (may need of immediate food):	7 (0-10)	Potential cascading effects:	Low
Number of families may need immediate shelter:	29 (10-100)	Infectious, communicable disease outbreak risk:	Low
Geographic spread/coverage of hazard:	Phungling Municipality	Primary responsibility to lead response effort:	Palika
Extent of property and livelihood loss and damage:	Within a Palika	Potential back up responsibility/call:	District

Delineation of Roles and Responsibilities (Level- 1, Fire)

Disaster Risk Reduction

- **L** Household and community level prevention and mitigation measures. Fire safety promotional activities, insurance. Provision of fire extinguishers, sprinklers, promote fire alarm installation at household level.
- **P** Support municipality for fire prevention and mitigation measures upon request.
- **F** Guidelines, building codes, operational safety protocols (i.e. gas and kitchen appliances for fire safety).

Preparedness for Response

- **L** Arrangement of trained and equipped fire brigades, ambulance, rescue and first aid; seasonal fire alerts, water reserve for fire suppression, fire alarm testing, insurance.
- **P** Preparedness to backup support to local governments for fire suppression and rescue, insurance. Hospital preparedness for burn treatment.
- **F** Preparedness to backup support to local governments for fire suppression and rescue, insurance policies. Hospital preparedness for burn treatment.

Hazard Monitoring

- **L** Fire risk monitoring, detection and control operations at household and community level.
- **P** Fire hazard monitoring and backup support to local governments.
- **F** Fire hazards monitoring and backup support to local governments.

Early Warning

Seasonal fire hazard alerts. Fire monitoring and alert system guidelines, protocols.

Fire extinguishing and rescue

- L: Fire extinguishing, rescue, first aid and hospitalization of injured, burnt, safety and security of affected families and their remaining properties, relief support.
- P: Support municipality as necessary (fire extinguishing, rescue, treatment, relocation).
- F: Support municipality as necessary if local and province capacity overwhelmed.

Rehabilitation

- L: Support families for treatment of injured, temporary shelter, restoring livelihoods.
- P: Support municipality as necessary (treatment, relocation, rebuilding livelihoods).
- F: Support municipality as necessary if local and province capacity overwhelmed.

Reconstruction

- L: Support families for reconstruction of damaged houses, facilitate insurance payments.
- P: Support municipality as necessary (reconstruction and Build Back Better).
- F: Support municipality as necessary if local and province capacity overwhelmed. National guidelines, standards for fire safe construction.

Index L Local level agencies P Provincial level agencies F Federal level agencies

Disaster category: Level-2

Scenario 3: Landslide in Sindhupalchok (August 02, 2014)

Scenario

Number of death	156	Extent of property and livelihood loss and damage:	Local and province cannot mitigate hazard and response disaster with existing capacity
Number of injured:	27		
Number of families in need of immediate food:	219	Potential cascading effect :	High due to major trading road blocked, and lake formed by the dam of landslide debris blocked Bhotekoshi river flow
Number of families in need of immediate shelter:	219		
Geographic spread of hazard:	Point hazard but affected more than 20 districts	Responsibility to lead disaster response:	Federal (existing capacity of local and province is low)
Infectious, communicable disease outbreak risk:	Low	Potential back up responsibility/call:	International call

Delineation of Roles and Responsibility (Level - 2, landslide)

Disaster Risk Reduction

- **L** Soil conservation, landslide control and risk mapping, risk sensitive land use enforcement, relocation of at risk communities.
- **P** Provincial level vulnerability and risk assessments, land use zoning, watershed management, support local government for risk sensitive land use etc.
- **F** Prepare legal and policy mandates technical guidelines on risk sensitive land use planning, monitoring of landslide risk and support local and province for enforcement

Preparedness for Response

- **L** Temporary relocation of at risk community to safer places, monitoring landslides, prepositioning of evacuation machines, temporary shelter arrangement, training to volunteers.
- **P** Support local government, prepositioning of equipment to rescue and debris clearance.
- **F** Seasonal hazard risk alert, preparedness for search and rescues, debris clearance, cascading hazards mitigation.

Rescue, Relief

- **L** Mobilize local level capacity to search and rescue, relief, temporary relocation, assess loss and damage and ask for support if the disaster is beyond local capacity to cope.
- **P** Monitor situation, mobilize capacity to search and rescue where necessary, coordinate with local and federal agencies and recommend to declare emergency in selected areas if necessary.
- **F** CDO to mobilize security forces immediately to search and rescue, federal agencies to assess existing and potential disaster risk due to landslide, support evacuation of at risk communities to safe shelters, declaration of state of emergency, mobilize national resources for debris clearance and risk reduction (such as landslide dam made lake).

Recovery, Rehabilitation

- **L** Support families to livelihood recovery, relocation and reconstruction of houses with provincial and federal support as necessary, support province or federal agencies recovery and reconstruction needs assessment.
- **P** Support local government to manage relief if local capacity overwhelmed, lead or support recovery and reconstruction needs assessment in collaboration with federal level.
- **F** Support local government to manage relief if local and provincial capacity overwhelmed, lead recovery and reconstruction needs assessment, prepare recovery and reconstruction plan in coordination with province and local level.

Reconstruction

- **L** Lead activities within local government capacity, support province or federal agencies as appropriate.
- **P** Coordinate, support and monitor as per existing capacity.
- **F** Lead and support as per need.

Note: role of L, P and F on different components and activities of reconstruction should be determined based on the post disaster need assessment reports and detail reconstruction plan.

Index: **L** Local level agencies **P** Provincial level **F** Federal level agencies

Scenario 4: Lightning

(May 10, 2020, Madi Rural Municipality, Kaski)

Disaster category: Level-0

Scenario

Number of death :	0	Availability of emergency support services:	Palika may need support to rescue injured
Number of injured :	2 (assumed, actual unknown)		
No. of families affected reported:	2	Potential cascading effects:	None
No. of families may be in need of immediate shelter:	None	Infectious communicable diseases outbreak risk:	None
Geographic spread of hazard:	Localised	Primary responsibility to lead response effort:	Madi Rural Municipality, Kaski
Extent of property and livelihood loss & damage:	Not known	Potential back up responsibility /call:	May need airlift to injured by lightning

Delineation of Roles and Responsibility for Level-0 Lightning

Disaster Risk Reduction

- L: Awareness and promote lightning arrester in houses.
- P: Promotion of lightning arrestors via policy and programmes.
- F: Weather monitoring system stren gthening.

Preparedness for Response

- L: Awareness and alert. Rescue and first aid readiness.
- P: Rescue and hospital readiness.
- F: Weather monitoring, alert, rescue and hospital readiness.

Hazard Monitoring and warning

- L: General alert.
- P: Monsoon Preparedness.
- F: Research, develop and install early warning system.

Search, Rescue, Relief

- L: Palika leads response and asks province or CDO to support for immediate rescue.
- P: Support to affected families. Rescue and treatment of injured as per Palika request.
- F: CDO mobilizes security for rescue if required.

Rehabilitation and Reconstruction

- L: Support affected families as per norms (no need in this case).
- P: None.
- F: None.

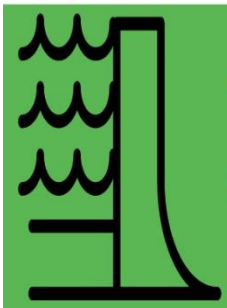
Index L Local level agencies P Provincial level agencies F Federal level agencies

Disaster category: Level-3

Scenario 5: Flood in Terai and hill districts (August 10-13, 2017)

No. of death:	134	Extent of property and livelihood loss and damage	Province cannot manage recovery
No. of injured:	22		Availability of required emergency support services to disaster response: Province needs Federal support
Total population affected:	Around 1.7 million (actual 1,688,474)		
Number of families in need of immediate food:	500,000 (estimated)		
Number of families in need of immediate shelter:	Around 200,000 (post flood needs assessment report: more than 90,000 houses destroyed)	Potential cascading effects:	High
		Infectious, communicable disease outbreak risk:	High
Geographic spread/coverage of hazard:	25 districts (19 Tarai and inner Tarai districts severely affected, 2 Tarai districts and 4 hill districts moderately affected, all provinces as of now)	Primary responsibility to lead response effort:	Federal
		Potential back up responsibility/call:	International call

Delineation of roles and responsibility (level - 3, flood)



Disaster Risk Reduction

- **L** Vulnerability and risk mapping, embankment, drainage and culverts construction, legal and policy measures, risk sensitive land use etc.
- **P** Provincial scale vulnerability and risk assessment, flood mitigation, embankments etc.
- **F** Structural and non-structural approaches to flood mitigation and risk reduction, national policy and guidelines etc.

Preparedness for Response

- **L** Evacuation routes, shelters, early warning system operationalization, training to volunteers, mock flood exercises, stocking of relief items, update database of at risk community.
- **P** Prepare to support rescue, relief, recovery and reconstruction support in case local capacity overwhelmed to cope with disaster.
- **F** Prepare to support immediately to rescue, relief, recovery and reconstruction support in case local and provincial capacity overwhelmed to cope with disaster.

Hazard monitoring and early warning

- **L** Access to weather and flood forecasts, local level rainfall and flood monitoring.
- **P** Hazard monitoring and coordination between federal and local agencies for flood response.
- **F** Weather and flood forecasting, rainfall and flood monitoring and early warning, prepare to mobilize federal agencies to potential response measures.

Flood rescue

- **L** Emergency operation of LEOC, evacuation of at risk population to safe shelters, rescue of affected population, initial loss and damage and need assessment, decide whether province and federal support is required.
- **P** Monitor situation, mobilize capacity to flood rescue where necessary, coordinate with local and federal agencies and recommend to declare emergency in selected districts.
- **F** Federal agencies to provide impact based flood risk forecasts and early warning. CDO to mobilize security forces immediately after flood warning to support evacuation of at risk communities to safe shelters, declaration of state of emergency, support LG on search & rescue, mobilize national resources and ask for international support if necessary

Relief and early recovery

- **L** Lead relief distribution to affected families, shelter management, livelihood recovery support, support recovery and reconstruction needs assessment.
- **P** Support local government to manage relief if local capacity overwhelmed, lead or support recovery and reconstruction needs assessment in collaboration with federal level.
- **F** Support local government to manage relief if local and provincial capacity overwhelmed, lead recovery and reconstruction needs assessment, prepare recovery and reconstruction plan in coordination with province and local level.

Recovery, Rehabilitation

- **L** Lead livelihood recovery, lead relocation of affected families with support from province or federal agencies.
- **P** Support and coordinate recovery and relocation of affected families.
- **F** Prepare post disaster recovery and reconstruction plan in coordination with local and province government.

Reconstruction

- **L** Lead activities within local government capacity, support province or federal agencies as appropriate.
- **P** Coordinate, support and monitor as per existing capacity.
- **F** Lead and support as per need.

Note: role of L, P and F on different components and activities of reconstruction should be determined based on the post disaster need assessment reports and detail reconstruction plan.

Index L Local level agencies P Provincial level agencies F Federal level agencies