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Disaster Risk Reduction in Nepal: Achievements, Challenges and Ways Forward



Government of Nepal
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1.0 Overview

Situated in a unique geological and hydro-meteorological setting of a relatively young and emerging mountain range, Nepal is exposed to a number of hazards every year in a routine manner. Lack of land use planning, unplanned urbanization, low per capita income, together with inadequate preparedness, Nepal's exposure to multi-hazards often turns into medium to serious disasters. The national dataset on disaster events and losses, maintained and updated by Ministry of Home Affairs (MoHA),¹ has recorded more than a dozen types of hazard, namely, avalanche, cold wave, drought, earthquake, epidemic, fire, flood, frost, hailstorm, heat wave, landslide, heavy rain (monsoon), snowstorm, storm, thunder storm, and windstorm.

Nepal's exposure to hazards is heightened by extreme weather and climate change related disasters.² Water-induced disasters are few in number (namely flash flood and landslide). Despite being the most predictable events they are causing greater human sufferings every year. In terms of human loss, epidemic, earthquake, landslide, flood, fire, and thunderstorm appear as the key hazards claiming more lives. Fire, flood, hailstorm, landslide and earthquake, however, are responsible for heavy loss of private and public property.

Although not a recurrent phenomenon, earthquake is the most tragic seismological hazard resulting into serious humanitarian crises.³ The Gorkha Earthquake 2015 alone resulted into 8,979 casualties, 22,300 injuries and more than 1,000,000 houses and heritage sites damaged or destroyed. Almost one-third of the population was impacted by this earthquake. Government of Nepal immediately launched relief and recovery operations amidst overwhelming voluntary supports from communities, academia, media, CBOs, NGOs, INGOs, private sector, bilateral and multi-lateral development partners, and friendly nations. The Post Disaster Needs Assessment (PDNA) accomplished within a month of the earthquake not only did an assessment of the damage and loss due to the earthquake, it also outlined a recovery strategy together with an estimation of recovery cost for 23 thematic areas.⁴ Table 1 presents the short term and medium term priority areas for a building back better of the earthquake damage, as identified by PDNA.

¹ There are also few other database available. The MoHA dataset is now maintained in Nepal DRR Portal by National Emergency Operation Centre. Alternatively, National Society of Earthquake Technology (N-SET) also maintains DesInventar database. Thirdly, Nepal Red Cross Society (NRCS) also maintains its own dataset of disaster events in Nepal but there is wider gap of NRCS dataset with MoHA dataset. Finally, Department of Water-Induced Disaster Prevention (D-WIDP) also publishes national data on water-induced disaster loss annually.

² They include avalanche, cold wave, drought, frost, hailstorm, heat wave, snowstorm, storm, thunder storm, windstorm, among others.

³ Note that Nepal is considered the 11th most earthquake-prone country in the world (NPC, 2015).

⁴ The PDNA came up with an estimation of US\$ 6.7 billion for the rehabilitation and reconstruction costs over a number of years, which the Government later revised the figure to nearly US\$ 8 billion.

Table 1: Reconstruction priorities after the 2015 earthquake, Nepal

Short-term priorities	Medium to long term priorities
<ul style="list-style-type: none"> ■ Reconstruction of damaged DRR assets and improvements on BBB principle ■ Measures to improve preparedness, response, relief and logistics systems ■ Measures to strengthen information and communication capacities for relief, response and recovery, and ■ Measures to enhance multi-hazard risk monitoring, vulnerability assessment, risk information dissemination and awareness. 	<ul style="list-style-type: none"> ■ Improvements in legal and institutional arrangements ■ Measures to mainstream DRR into the development sector, particularly housing, private and public infrastructure, social sectors (health and education), and livelihood, and infrastructure, social sectors (health and education), and livelihood, and ■ Measures to improve integration of climate change adaptation and DRR.

Source: PDNA 2015 (NPC 2015)

The PDNA also recommended that the post-earthquake recovery and reconstruction “has to be a multi-pronged effort with a strong orientation toward the poorest and the most vulnerable” with support from the private sector, NGOs, and international development partners.

Now that the country is in the verge of state restructuring as per the new constitution and in the final moment of formulating 14th periodic development plan with a thrust of shifting DRR attention from post-disaster relief to preparedness and mitigation, the AMCDRR gives us an opportunity to turn back and reflect upon what we accomplished, where we are strong and what needs to be improved.

2.0 Disaster Profile of Nepal

Nepal has fragile geology and steep topography making it 20th most disaster prone country in the world. With regard to the relative vulnerability to climate change related hazard, earthquake and flood hazard, Nepal ranks, respectively, in the 4th, 11th and 30th among 198 countries of the world. Nepal faces high magnitudes and intensities of a multitude of natural hazards.

Table 2 reveals more than a dozen of hazards in Nepal, drawn from the active dataset maintained by the MoHA, covering a period of 45 years (1971 to 2015). A total of 22,372 disaster events have been recorded during this period. Hence, annually, Nepal is exposed about 500 events of disaster. The dataset shows that fire is one of the most recurrent hazards in Nepal. Number of fire incidences was recorded 7,187 times, followed by flood (3,720 times), epidemic (3,448 times) and landslide (3,012 times).

Epidemic is critically important in the sense that it is one of the single most killer hazards claiming the lives of more than 16,500 people (41.1 percent of the total disasters-induced deaths) during the period. It is followed by earthquake, landslide and flood. Table 2 also reveals the number of persons injured, number of houses and heritages damaged or destroyed, and the number of families affected due to these disasters. It reveals that the number of persons injured due to disasters is nearly double (a total of 78,387 persons) than the number of death.

Further, it is important to note that epidemic and earthquake are the two most important disasters in terms of human injury – that resulted into injury of an absolute large number of people (92 percent of the total).

Table 2: Major disasters in Nepal and the damage and loss, 1971-2015						
Disaster type	No. of death	No. of persons missing	No. of persons injured	No. of houses damaged or destroyed	No of affected families	No. of incidents
Epidemic	16,564	-	43,076	-	512,970	3,448
Earthquake	9,771	-	29,142	982,855	890,995	175
Landslide	4,832	165	1,727	32,819	556,774	3,012
Flood	4,344	6	527	215,427	3,702,942	3,720
Fire	1,541	-	1,379	83,527	256,445	7,187
Thunderbolt	1,502	129	2,444	952	6,880	1,505
Cold wave	515	-	83	-	2,393	390
Snow storm	87	7	-	-	-	5
Avalanche	16	3	7	-	-	2
Wind storm	-	-	2	-	-	16
Hailstones	-	-	-	6	2,608	17
Heavy rainfall	-	-	-	4	5	3
Other*	1,092	-	-	15,323	-	2,892
Total	40,264	310	78,387	1,330,913	5,932,012	22,372

Note: The category 'other' represents unidentified events and was recorded till 2013.

In terms of property loss, during the period of last 45 years, a total of 1,330,913 houses, including cattle sheds, are either destroyed or damaged. Of this, 982,855 (or 73.8 percent) houses were destroyed by earthquake alone, followed by flood. Likewise, a total of 5,932,012 families have been affected by these 12 most important disasters, of which flood is attributed to affecting a large number of families (62.4 percent of the total), followed by earthquake, epidemic, and landslide.

It is important here to note that while interpreting Table 2 the Gorkha Earthquake 2015 accounts for dramatically changing the disaster profile of the country - as this single event of disaster resulted into larger number of casualties, injuries and destructions.

3.0 Gorkha Earthquake, 2015 and National Recovery Initiatives

On Saturday, 25 April 2015, a 7.6 magnitude earthquake struck Barpak in the historic Gorkha district, about 76 km northwest of Kathmandu. Nepal had not faced a natural shock of comparable magnitude for over 80 years. The catastrophic earthquake was followed by more than 450 aftershocks greater than magnitude 4.0 in Richter scale. Four aftershocks were greater than magnitude 6.0, including one measuring 6.8 which struck 17 days after the first big one with the epicenter near Mount Everest.

Almost one-third of the population of Nepal has been impacted by the earthquake. Over a million houses and heritages were destroyed or damaged. Among 75, fourteen districts were declared 'crisis-hit' for the purpose of prioritizing rescue and relief operations and another seventeen districts were declared 'partially affected.' The destruction was widespread covering residential and government buildings, heritage sites, schools and health posts, rural roads, bridges, water supply systems, agricultural land, trekking routes, hydropower plants and sports facilities.

Nepal's National Disaster Response Framework (NDRF) served as a key tool for coordination of earthquake response, facilitating decisions and instructions from the central to districts. The first meeting of the Central Natural Disaster Relief Committee (CNDRC) was held immediately after the earthquake, with the National Emergency Operation Centre (NEOC) providing an initial report to the CNDRC, recommending a focus on Search and Rescue (SAR), and lifesaving actions. Financial resources from the Prime Minister's Disaster Relief Fund were immediately allocated, and the government's cluster mechanism, comprising 11 clusters, were instantly activated.

Government of Nepal immediately made an official request for international assistance within hours of the earthquake. Several meetings with donor communities were convened to seek international assistance for search and rescue and immediate relief operations. With the limited trained human resource and available equipments, Nepal Army (NA), Nepal Police (NP) and Armed Police Force (APF) carried out effective SAR operations. They were backstopped by dozens of international military SAR teams under the Multi-National Military Coordination Centre. The network of NGOs and INGOs based in Nepal swiftly rallied to support community relief efforts. Several national and international volunteer groups (especially of youth and professionals like doctors and engineers) were voluntarily mobilized in treatment of injured, setting up temporary shelters, and supplying foods and non-food items.

National Reconstruction Authority (NRA) has been established in 25 December 2015 (2072) for five years to lead and manage the reconstruction and recovery of the earthquake. The NRA's overall goal is to promptly complete the reconstruction works damage by the earthquake, to promote national Build Back Better interest. NRA has formulated a Post Disaster Recovery Framework (PDRF) (2016-2020) on the basis of PDNA. The government has sufficiently allocated the budget for reconstruction and recovery initiatives. Similarly, almost all of the affected families have received the first installment of the grant and recovery activities have been further expedited.

4.0 Policy, Legal and Institutional Frameworks

Nepal enacted Natural Calamity (Relief) Act, the first act of this kind, in 1982 and established a network of "disaster relief committees" at various levels (Central, Regional, District and Local Disaster Relief Committee) from central to local levels for effective disaster management focusing primarily on response. Now, considering the importance of disaster risk reduction, the *Constitution of Nepal* has clearly spelled out disaster management functions to be operated in three levels of government structure.

Moreover, disaster risk reduction began to receive more attention from Government side since the 10th Five Year development Plan (2002-2007) and the subsequent periodic plans. Furthermore, in alignment with Nepal's commitment to the HFA, the Government of Nepal approved the National Strategy for Disaster Risk Management in 2009. This Strategy outlines 29 priority activities for risk reduction and mitigation. Box 1 presents major policy frameworks on matter of DRM in Nepal.

Box 1: Existing legal and policy framework on DRM

- Constitution of Nepal
- Natural Calamity (Relief) Act, 1982
- National Strategy on Disaster Risk Management, 2009
- National Disaster Response Framework, 2013
- Guidance Note on Disaster Preparedness and Response Planning, 2011
- National Strategic Action Plan for Search and Rescue, 2014
- District Disaster Preparedness and Response Plans

Recently, Government of Nepal has also developed new and comprehensive DM Act for an effective DRM effort which would prioritize DRM across government sectors and levels, with a proposed Disaster Management Council chaired by the Prime Minister. Under it, there will be a National Disaster Management Centre as a dedicated institution. After the endorsement of the Disaster Management Bill, it is hoped that, a National Council for Disaster Management chaired by the Prime Minister will be fully functional.

Furthermore, there is a high level Climate Change Council under the chairmanship of the Prime Minister already in place. The establishment and institutionalization of an authentic and open DRM System, GIS based Disaster Information Management System will be strengthened. Collected information through this system will inform decision-making for risk reduction and preparedness in a more effective manner.

Finally, in order to strengthen cross-sectoral planning and coordination in the field of DRR, DRR and CRM focal points have been established in key agencies. These focal points work in a harmonized manner to ensure that Disaster and climate change risk reduction mainstreamed within respective ministries.

5.0 Global and Regional Commitments

Government of Nepal has been participating in all world conferences on disaster management (Yokohama, 1994; Hyogo 2005; and Sendai 2015), global platforms which occurs in two year intervals from 2007 onwards, and in the Ministerial Conferences on Disaster Risk Reduction in Asia. Moreover, Nepal is one of the signatories to these world conferences and has expressed commitment to fulfill its obligations and priority action within the given time frame.

Yokohama, Japan (1994): The first world conference on disaster management was held in Yokohama, Japan in 1994 where Nepal participated and presented a national action plan on disaster management. Government of Nepal had prepared "National Action Plan on Disaster Management in 1996" incorporating all component of disaster management cycle and the Yokohama Strategy.

Hyogo, Japan (2005 - 2015): The second world conference on disaster reduction was held in Kobe, Hyogo, Japan in 2005 and Nepal participated and endorsed the goals and priorities for action between 2005 and 2015. Integration of DRR into sustainable development, develop and strengthen institutions to build resilience to hazards and emergency preparedness, response and recovery programs were the major goals of HFA.

Sendai, Japan (2015 - 2030): The Sendai Framework for Disaster Risk Reduction (SFDRR) 2015-2030 was adopted in Sendai, Japan, on March 18, 2015. The SFDRR has four priorities as given in the box 2.

Box 2: Four priority areas of SFDRR
<p>Priority 1: Understanding disaster risk;</p> <p>Priority 2: Strengthening disaster risk governance to manage disaster risk;</p> <p>Priority 3: Investing in disaster risk reduction for resilience; and</p> <p>Priority 4: Enhancing disaster preparedness for effective response and to “Build Back Better” in recovery, rehabilitation and reconstruction.</p>

Nepal being an UN member state and signatory to the global and regional commitments is entitled to fulfill its obligations related to disaster management. Nepal is trying its best with its limited trained human resources and financial resources to achieve all the priorities for action by 2030. However, Nepal needs further technical support and guidance from development partners and friendly nations by 2030.

6.0 Key National Achievements

Nepal has achieved notable progress in DRM/CRM during the last few decades. A number of legal, institutional and policy frameworks are already in place. The New Constitution of Nepal has made provisions of disaster management in different levels of governments. With the provision of Natural Calamity (Relief) Act, 1982, there are CNDRC, RNDRCs and DDRCs have been established and properly function in disaster preparedness and response adopting various policies, guidelines and standard operating procedures. Similarly, The Prime Minister’s Natural Disaster Relief Fund, and other operational level funds have been created.

All concerned government agencies have assigned one senior officer as the Disaster and Climate Change Focal Person, hence there is a good pool of human resources dedicated to DRM/CRM front and sharing and exchange of ideas has become much effective. Similarly, Government has given priority to streamline DRR into development planning process with monitoring indicators. In addition, community based disaster management activities in different disaster prone communities have been initiated and have proved to be instrumental for raising awareness managing local level disaster and revitalizing self-help spirit at community level.

Government of Nepal has prepared and implemented a fifteen-year Sustainable Development Agenda of Nepal (2002-2017). Similarly, Government has incorporated disaster management subjects in school curricula, school improvement plan and School sector development plan are prepared. Likewise, several academic and educational institutions have started various programs on disaster management. Now, majority of the schools have the school safety

programs and School Disaster Management Plan and hospital preparedness plan in place. Similarly, hospital preparedness programs are also being implemented by the Government of Nepal in public and private sector.

National Emergency Operational Centre (NEOC) has been established and operationalized at national level and functioning smoothly. Likewise, there are more than four dozen Emergency Operation Centers (EOCs) at regional and district level. The NEOC and EOCs are functioning for collecting and coordinating disaster related information, response, immediate relief and humanitarian assistance. Similarly, basic level Early Warning System has been established in the five major river basins and linking with EOCs and communities.

83 open space points have been identified within Kathmandu Valley for shelter in the event of major disasters and in few open spaces infrastructure development is under construction. Efforts are being made to ensure supply of safe drinking water, emergency kits, and shelter with warehouse capacity.

Implementation of Nepal Building Code (NBC) has been made mandatory in all municipalities. Likewise, mason trainings on safe building construction based on National building code (NBC) are being organized by both government and no-government organizations.

The establishment and institutionalization of an authentic and open DRM System, GIS based Disaster Information Management System (DIMS) have been initiated. The DRR portal has been operational for collection, analysis and dissemination of information.

Cluster approach has been institutionalized for effective implementation and better coordination in disaster management. There are 11 clusters in operation (search and rescue food security, health, nutrition, water and sanitation, education, protection, emergency shelter, logistics, emergency communication, and early recovery).

The Government has already initiated a process to operationalize the medium and light Search And Rescue (SAR) teams as well. Moreover, Get Airport Ready (GAR) is another significant activity, Nepal has initiated. Establishment of the Humanitarian Staging Area is one of the major activities under GAR initiative in Nepal. The establishment of the disaster preparedness networking was another milestone to foster coordination among disaster management related agencies and non-government agencies and serve as a bridge between government and non-government agencies.

7.0 Challenges

Nepal is in the process of state restructuring from unitary system to federal system of government. Government is in the process of promulgating various legislations in tune with the new Constitution. The existing DM Act has not covered all kinds of disasters and the cycle of disaster management. In this context, the major challenges of Nepal are as follows:

1. There is a challenge to enact comprehensive disaster management legislation and appropriate institution setups at all levels of government.

2. Nepal has endorsed the Sendai Framework. In this context, Government is in the process of formulating national disaster management strategic plan of action in line with the Sendai Framework which may require large amount of financial resources for proper implementation up to the community level.
3. Disaster Risk Reduction is mainstreaming into development planning process, however, its proper implementation is being a major challenge due to unsystematic allocation of resources and weak technical skills.
4. There is dire need of high-tech equipments and capacity development programs to operationalize SAR teams. In this scenario, there is a huge challenge to gather resources for financing and operationalizing medium and light SAR teams.
5. The available resources in national and international level should be prioritized and effectively utilized in the needy areas for DRR, especially in hardware activities.
6. There is a big challenge to establish effective and uniform disaster information system.

8.0 Ways Forward

Despite of several challenges faced by the country, Nepal is striving hard to reduce disaster risk and improve response mechanism in the country.

Based on the performance of the country since the commencement of the International Decade for Natural Disaster Reduction (IDNDR), HFA and now the SFDRR and the annual challenges posed by different disasters, Nepal is in process to develop new disaster management Act, and national strategic plan of action in line with Sendai Framework. Specifically, following are the proposed way forward for a period between 2016 till 2030:

1. Nepal is in process to develop a comprehensive disaster management Act that will widen its approach from relief/ rescue centric to risk reduction and ultimately a disaster resilient nation. Nepal will strengthen disaster management governance system from central to local levels and will initiate activities to better understand the disaster risk and its sustainable management;
2. Disaster Risk Reduction, Climate Change Adaptation, Gender and Social Inclusion issues will be further streamlined in development planning, budgeting, implementation, monitoring and evaluation in an integrated way.
3. To achieve the goal of resilient communities and nations, Government will promote and involve non-state actors and private sector in disaster risk reduction and response initiatives.
4. Disaster response and recovery preparedness activities will be strengthened at all levels through provision of adequate logistics and capacity development activities and establish medium and light SAR teams with proper guidelines, logistics support and capacity.
5. Government will initiate a massive program on community based disaster management activities in all disaster prone areas both urban and rural of the county based on the experiences of volunteerism, youth mobilization, self-help spirit from the Gorkha earthquake, 2015.
6. Streamline the development partners and NGOs for effective utilization of resources for DRR. Similarly, regional cooperation for DRR will be further strengthened in collaborative manner.



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