Government of Nepal
Ministry of Home Affairs

Nepal Disaster Report 2017

The Road to Sendai

December 2017

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GOVERNMENT OF NEPAL

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Nepal is prone to a multitude of natural as well as human induced disasters that cause loss of numerous lives and property worth billions every year causing a setback in the socio economic development of the nation. The wrath of disaster affects people of every region, gender and economic status across the country but, the vulnerable communities in particular are severely affected.

Nepal is still struggling to rise from the devastating effect of the 2015 Gorkha earthquake that deeply scarred the lives of the people and stagnated the economic growth of the country. While the reconstruction activities are in the full swing, the government has also directed its focus on strengthening disaster preparedness, emergency response and mitigation measures to reduce the impact of disaster. In this regard, the promulgation of the Disaster Risk Management Act 2017 can be considered a paradigm shift in disaster management approach. It replaces the largely Response Centric Natural Calamities (Relief) Act, 1982 with a disaster risk reduction based approach that focuses on managing every cycle of disaster.

During the last two years, Nepal has witnessed a magnitude of disasters like aftershocks, floods, landslides and fire that have hampered the reconstruction efforts and also impeded the development activities. However, the Ministry of Home Affairs, Nepal Army, Nepal Police, Armed Police Force and other government agencies have worked relentlessly for the rescue, relief, recovery and rehabilitation to the best of their capacity. However, more needs to be done to improve our service delivery as well as to encourage community resilience and volunteerism.

Nepal Disaster Report, 2017 published by the Ministry of Home Affairs chronicles disaster events and reflects upon efforts and response by the Government of Nepal towards disaster management in the last two years. The report also sheds light upon Nepal's commitment to achieve the targets of Sendai Framework for which the efforts to strengthen its institutional and legislative frameworks have already been initiated. The recently promulgated Disaster Risk Reduction and Management Act, 2017 has envisioned the establishment of National Disaster Risk Reduction and Management Authority and stipulated the role of Central, Provincial and Local Governments for disaster risk reduction and management. Similarly, the government is working to prepare the National Disaster Risk Reduction and Management Policy and its Strategic Action Plan in line with the priorities of the Sendai Framework.

I am hopeful that this report will be a useful document for students, researchers, policy makers and other government and non- government agencies seeking knowledge on the disaster scenario and Disaster Risk Reduction initiatives in Nepal.

I would like to highly acknowledge the efforts made by the staffs of Disaster Management Division especially Joint-Secretary Mr.Kedar Neupane and Mr.Krishna Bahadur Raut and their entire team. Similarly, the initiatives taken by the executive committee and the technical support extended by the members of UNDP and Disaster Preparedness Network, Nepal are highly appreciable.

Ram Bahadur Thapa "Badal"
Minister

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Foreword

Nepal is exposed to the risk of multiple hazards, which pose a threat to people's lives as well as to the economy of the country, every year. This risk has seen an upward rise with the probable increase in frequency and magnitude of hazards. The last Gorkha earthquake, April 2015 and its numerous aftershocks, was a rude experience that has refocused our attention on disaster risk management in Nepal.

Over the years, the Government of Nepal (GoN) has shifted from a reactive to a proactive approach towards disaster risk management (DRM) and has undertaken efforts in strengthening legal frameworks, policy and planning, organizational aspects, institutional capacities and partnerships for Disaster Risk Management (DRM). Ministry of Home Affairs (MoHA) enacted the Disaster Risk Reduction and Management (DRRM) Act in Oct 2017, which provided comprehensive opportunities for building disaster resilience from the community to national levels. The DRRM Act has emphasized on disaster risk reduction as key priority and has also recognized the importance of preparedness for response, relief and rescue. The Act proposes the setting up of Disaster Risk Reduction and Management National Council and Executive Committee at the federal level while it stipulates setting up of provincials, districts and local levels disaster risk reduction and management committees - a clear multi-tier institutional structure. In addition to these committees at different levels, the Act provides for a new office of the National Disaster Risk Reduction and Management Authority, an apex executive institution for coordinating and implementing disaster management functions in the country. It further fosters the principles of risk-informed development process and socially inclusive approach for reducing risks & managing disasters. GoN has recently developed the National Disaster Risk Reduction Policy and Strategic Action Plan, aligned with SFDRR, which will serve as a road map to guide the course of actions for DRM in Nepal till 2030.

MoHA has been publishing the Nepal Disaster Report (NDR) biennially. Hence, this ministry is pleased to bring out the NDR – 2017, for the period of 2015 and 2016. The publication of NDR is the joint efforts of GoN and stakeholders who have been contributing towards disaster risk management in Nepal. The NDR 2017 is a compilation of a review of the disaster scenario and efforts undertaken towards the same, in the past two years. It is expected that the report would be useful for professionals, researchers, students, public and stakeholders in understanding the current disaster situation and the future course of action in order to build resilience to multiple disaster risks.

Further, I recognize the technical support provided by UNDP and the secretarial support extended by DPNet-Nepal in preparing this report. Likewise, I would like to thank the editorial board members and MoHA officials at Disaster Management Division for their valuable time and effort in bringing this report in this form.

Finally, I take this opportunity to extend my sincere thanks to all stakeholders including ministries, departments, donors, UN Agencies, I/NGOs, academia, private sector and individuals who have contributed in the preparation of this report. Thank you.

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Prem Kumar Rai
Secretary

Office of the United Nations
Resident Coordinator

संयुक्त राष्ट्र संघको आवासीय
संयोजकको कार्यालय

Foreword

The fifth National Disaster Report (NDR) represents a major achievement for the Ministry of Home Affairs (MoHA). Covering the 2015 to 2017, it presents a wealth of information and analysis – much of it related to the April 2015 earthquake and subsequent aftershocks. Colleagues from MoHA have done an admirable job in consolidating data from a broad variety of sources and translating it into a document which is both accessible and concise.

In reading the latest NDR one is reminded of the overwhelming impact of the 7.6 magnitude earthquake which occurred on Saturday 25th April 2015. The NDR also captures the cross-government response and the challenges that the Nepali authorities faced in responding to the needs of earthquake affected persons. The candour of the latest NDR is refreshing; it does not shy away from recognising the difficulties and issues that impeded the earthquake response. In being open and reflective we are all able to learn lessons that might improve future responses.

Emanating from the fifth NDR is the country's will toward stronger disaster management and resilience. Whilst the impact of the 2015 earthquake are felt to this day, the Government of Nepal during 2016 and 2017 showed a commitment to fundamentally strengthen how it manages disaster risk. The enactment of the Disaster Risk Reduction and Management Act in September 2017 is *the* best example of the Government's leadership on the disaster resilience agenda, and commitment toward sustainable development.

I would like to commend MoHA's vital role in disaster management and the important contributions that different Government officials from MoHA have made over a number of years on disaster resilience and preparedness and response. The UN looks forward to continuing our collaboration with the Government of Nepal on this agenda in the years to come.

Valerie Julliand

UN Resident Coordinator in Nepal

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Acknowledgements

Since 2009, the Ministry of Home Affairs has been publishing Nepal Disaster Report (NDR) in every two years. The National Disaster Report 2017, fifth in the series, attempts to archive the disaster events, their impacts and elucidates the approaches to disaster risk management. Particularly, the report provides an overview of the human and financial impacts of disasters during the period of two years from 2015 to 2017, and focuses mainly on Nepal's efforts to implement its commitments towards the Sendai Framework for Disaster Risk Reduction (SFDRR).

To describe the period of 2015-2017 as highly eventful would be an understatement. Whilst the impacts of the 2015 earthquakes are felt upto this day, much has been achieved in terms of recovery and reconstruction, though much more is needed and the efforts are continued. Undoubtedly, one of the major achievements in 2017 was the enactment of a new 'Disaster Risk Reduction and Management Act'. In years to come, I am sure this will be seen as a watershed moment for Nepal in the area of disaster management. I would like to commend the efforts of the Ministry of Home Affairs, parliamentarians, civil society, academics and many others who supported the enactment of the bill through many years of hard work and dedication.

Nepal Disaster Report, 2017 is the result of the unrelenting effort of the Disaster Management Division of the Ministry of Home Affairs, United Nations Development Programme (UNDP), the Disaster Preparedness Network (DPNet) and other supporting partners. I would like to express my deepest appreciation to the whole team for their invaluable contribution in shaping this report.

I would like to express my special gratitude to the contributions made by colleagues from across the Government of Nepal in preparing the NDR 2017. In particular, the former Home Secretary and current Chief Secretary, Mr. Lok Darshan Regmi provided concrete guidance and framework to the editorial team of the fifth NDR. Former Secretary MoHA, Mr. Mohan Krishna Sapkota provided a strategic vision during the drafting process. Secretary MoHA, Mr. Prem Kumar Rai provided necessary insight and direction to the team involved in the drafting process to bring out NDR 2017 in final shape. Former disaster management division head Mr. Krishna Bahadur Raut supported and guided the editorial team and experts right from its inception.

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I would like to acknowledge with much appreciation the crucial role played by the members of the Editorial Board; Mr. Umesh Kumar Dhakal,Mr. Shankar Hari Acharya and Mr. Chakrapani Pandey under-secretaries of MoHA, Mr. Vijaya P Singh, ACD,UNDP and Dr. Haridarshan Shrestha, representative DPNet Nepal. Their constructive inputs as well as their understanding of the disaster landscape of Nepal have been instrumental in the development of the NDR,2017.

I would like to thank Mr. Man B. Thapa and Dr. Youba Raj Luintel, the two DRM experts who supported the entire drafting process of this report under the guidance of editorial board.My sincere thanks go to Mr. Krishna Raj Kaphle, SPO, CDRMP, for his coordination and support provided to prepare the report.

I believe that the NDR 2017, like the earlier NDRs, will contribute informing actors, stakeholders, policy makers, researchers and people at large about the gravity of the problem, together with many of its political-economic, financial, human and environmental consequences. I am very confident that the NDR 2017 will serve as a reference document for policy makers, researchers, advocates, students ,DRM practitioners and stakeholders in many respects.

Kedar Neupane
Joint Secretary
Disaster Management Division
Ministry of Home Affairs
Government of Nepal

Editorial

Due to its rugged topography, ecological adversity, prevalence of a number of flood-prone rivers, rapid and unplanned urbanization, poverty, inequality and uneven development, Nepal is exposed to a variety of natural and man induced disasters. More than 80 percent of the total population of Nepal is at risk from natural hazards, such as floods, landslides, windstorms, hailstorms, fires, earthquakes and Glacial Lake Outburst Floods. Nepal is also in a seismically active zone with a high probability for massive earthquakes. All these factors place Nepal among the 20 most disaster-prone countries in the world.

A review of disaster data for last the 45 years indicates that the incidences of disasters are growing every year in Nepal. The available information system on disaster captures the human impacts of disaster, economic losses and environmental damages and show that disaster erodes about two percent of national GDP annually. Nepal is one of the countries in South Asia where 'affect to killed ratio' due to disaster is high. This clearly indicates that our emergency response mechanisms need serious improvement and up-scaling and our future activities must focus not only on disaster response but also on preparedness and mitigation.

The present NDR 2017 focuses on how to achieve the Sendai Framework on Disaster Risk Reduction (SFDRR) (2015-2030) successfully, building on the achievements during Hyogo Framework for Action (HFA 2005 – 2015) period and other on-going political, administrative reforms including the new Disaster Risk Reduction and Management Act, 2017.

The NDR 2017 has six chapters that present an overview of disaster scenario of a period of two years (2015 and 2016). **Chapter 1** is introduction, containing the background, purpose and process of NDR 2017 and a summary of the methodology, key messages of the earlier NDRs and lessons learnt from HFA. **Chapter 2** is a review and analysis of disaster statistics from 2015 and 2016, a review of the DIMS and disaster management stakeholders, key hazards, issues of safeguarding development gains. **Chapter 3** describes the 2015 mega-earthquake, documenting experiences on relief operation, recovery and reconstruction and volunteerism. **Chapter 4** focuses on DRM regulatory frameworks such as the Constitution of Nepal (2015), DRRM Act (2017), and other policy frameworks. **Chapter 5** describes how to achieve SFDRR based on HFA achievements, initiatives taken since Yokohama Strategy (1994) and other international commitments and efforts on mainstreaming Disaster Risk reduction (DRR) and Climate Change Adaptation (CCA) into development process. The last chapter, **Chapter 6** focuses on how Nepal can achieve SFDRR targets within its stipulated time frame (together with SDGs), possible challenges while striving to achieve SFDRR and key priorities for the next few years.

Executive Summary

NDR 2017: Purpose and Process. Nepal is exposed to a variety of natural hazards and human induced disasters. More than 80 percent of the total population of Nepal is at risk from natural hazards, such as floods, landslides, windstorms, hailstorms, fires, earthquakes and Glacial Lake Outburst Floods (GLOFs). The country is among the 20 most disaster-prone countries in the world. In part, this is because Nepal is in a seismically active zone with a high probability for massive earthquake. Globally, Nepal ranks 4th and 11th in terms of its relative vulnerability to climate change and earthquakes, respectively (Maplecroft 2011, BCPR 2004 cited in MoHA 2015). Out of 21 cities around the world that lie in similar seismic hazard zones, Kathmandu city is at highest risk in terms of impact on people.

Ministry of Home Affairs (MoHA), Nepal Government has been producing biennial disaster reports (Nepal Disaster Report – NDR) since 2009 with support from different development partners and stakeholders such as UNDP, Disaster Preparedness Network (DPNet-Nepal), Nepal Red Cross Society (NRCS) and others. The published series of NDRs includes NDR 2009, NDR 2011, NDR 2013 and NDR 2015. The publication of NDR 2017 has been a joint initiative between MoHA, UNDP and DPNet-Nepal.

The main purpose of NDR 2017 is to highlight Nepal's experiences in DRM over the last two years (2015 and 2016), documenting key learnings and challenges in the course of managing disaster risk and identifying future priority actions for effective disaster response, risk reduction and recovery.

Data for the report was collected and analyzed using both qualitative and quantitative techniques. Key documents (published and unpublished) on DRR and CCA were obtained from relevant ministries and departments, development partner organizations and academic institutions working on disaster risk management issues. This was complemented by open access online documents retrieved mostly from the worldwide web and interactions held with disaster risk management professionals. The NDR has also compiled information on loss of lives, damage of houses, disappearance of people and injury from various disaster events that happened in Nepal during the period of the review.

Key Hazards, Human Casualties and Socio-Economic Losses. Disaster dataset maintained by MoHA in its archives records disaster loss and damage data for a total of 16 kinds of active disasters in Nepal. Noted in alphabetic order they are: *asinapani* (heavy rainfall with hailstones), avalanche, boat capsize, cold wave, drowning, earthquake, epidemic, fire, flood, heavy rainfall, high altitude,

landslide, lightning, snow storm, wind storm, and the "other" category. This well illustrates Nepal's vulnerability to multiple hazards.

According to the MoHA dataset, 13 types of disasters were recorded during the last two years with a total number of 2,940 disaster events. Of the total disaster events, incidents of fire are the highest in number (N=1,856), followed by incidents of lightning (N=299), landslide (N=290), flood (N=244) and heavy rainfall (N=118). In terms of death, disappearance as well as human injuries, earthquakes caused the most loss. For example, during 2015 and 2016, a total of 9,708 human deaths were recorded as a result of different disasters, out of which the mega Earthquake of 2015 alone claimed 8,970 lives (92.5 percent) (MoHA 2016). Landslides, lightning, fire and floods together claimed the lives of 666 people in total in those two years.

In terms of damage, disaster statistics maintained by MoHA reveal that a total of one million, eighty-five thousand, seven hundred ninety-seven houses were damaged during the review period, of which 98.7 percent houses were damaged by the earthquake. A host of other disasters, caused by fire and landslide (each damaging 0.3 percent houses of the total damaged) and flood, heavy rainfall and windstorm (each damaging 0.2 percent houses of the total damaged) further affected Nepal.

More than seven hundred nine billion rupees worth of economic loss was recorded during the review period, out of which about 99.5 percent of loss was due to earthquake alone. Fire caused the second most severe economic loss though it was far less (0.3 percent) as compared to that of the earthquake.

In terms of impacts on environment and resources, the earthquake triggered at least 2,780 landslides and many ground cracks in 31 districts, significantly damaging settlements, infrastructures, agricultural lands, forests and water resources. Satellite imagery identified that the frequency of landslides was three times greater than before the earthquake. A large avalanche in Langtang valley destroyed the popular trekking destination of Langtang village and flattened the nearby forest completely.

Macroeconomic impact assessment conducted by NPC as part of the PDNA reveals that the "total damage to existing stock of assets has been estimated at over NRs. 500 billion, with economic losses that flow from this destruction, estimated at nearly NRs. 200 billion – taken together both figures represent an economic force equivalent to about one third of Nepal's GDP and well over 100 percent of the Gross Fixed Capital Formation" (NPC 2015b, p. 76). The report concludes that "the earthquake upset the nation's high aspirations for swifter economic progress in the short run"

shaking the national hope the country graduating from its current status as a Least Developed Country (LDC) to a developing country, possibly by 2022.

Experiences from the Relief Operations. Relief operations started from the second hour of the earthquake in 2015 and lasted till 19 May 2015. Government of Nepal remained quick and swift during the initial phase of search, rescue and relief response. The first meeting of the Central Disaster Relief Committee (CNDRC) took place at NEOC within the first two hours of the tremor, and the first emergency meeting of the Cabinet took place within the first four hours. These meetings managed to (a) immediately release NRs. five hundred million at the disposal of the CNDRC, (b) call for international humanitarian support, and (c) declare emergency in 11 "crisis-hit" districts (MoHA 2016), among other decisions. Certain institutional and policy frameworks put in place earlier enabled this quick initial response. Predefined roles and responsibilities of the NEOC and other institutions for taking time-bound actions, as outlined in the National Disaster Response Framework (NDRF), 2013 was extremely helpful in managing disaster response.

However, sudden and immediate breakdown of communication and information networks impacted the pace of response as restoring them took time. On the fifth day of the earthquake, the Government made a number of decisions about relief provisions. Families who had lost immediate family members, or whose houses had collapsed or were completely damaged, were to get immediate relief in cash. However, there were troubles in identification of actual needs for relief materials and services and in managing the supplies. To address this mismatch between the actual relief materials needed on ground and the volume of supply from donations, the CNDRC on 30 April 2015 instructed the government secretaries to ascertain the list of relief items based on actual need, for endorsement by CNDRC.

In the later stages of the relief response, CNDRC was found to be less effective in resolving issues of coordination and monitoring of relief operations. Existence of numerous actors required one streamlined channel for relief response. However, the existence of two parallel systems for coordination and monitoring, one through government channels and one outside of the government channels created great confusions.

Experiences from the Ongoing Recovery and Reconstruction. From 19 May 2015, the Government of Nepal took firm steps towards transitioning from relief phase to recovery phase. Following the enactment of the NRA Act on 20 December, the National Reconstruction Authority (NRA) was constituted on 25 December 2015 with a mandate to manage, oversee and coordinate recovery and reconstruction work in the earthquake affected districts. In May 2016, the NRA brought the *Post Disaster Recovery Framework* (PDRF) to provide strategic guidance on carrying

out recovery and reconstruction activities in an integrated manner with sectoral priorities identified and sequenced and availability of resources earmarked for actual recovery and reconstruction work.

Despite the fact that reconstruction of private houses has been one of NRA's top priorities, reconstruction of private houses has not yet gathered momentum in two years after the devastating earthquake that destroyed over 765,000 houses. As of August 2017, a total of 632,047 beneficiaries had signed the grant agreement and 603,072 of them had collected the first tranche; however only 56,687 beneficiaries have received the second. There is no clear record of how many houses have actually been completed so far.

A study conducted by NRA to identify vulnerable settlements after the 2015 earthquake, recommended that a total of 2,751 families of 112 communities have to be relocated to safer places (NRA, 2017b). NRA has enforced a new procedure for safer relocation of the families of the hazard-prone settlements that have been affected by the earthquake and has started the rehabilitation process by buying land in safer locations for them. Similarly, policy and process of establishing integrated settlement has been prepared.

Post-2015 DRM Regulatory Framework in Nepal. Nepal's Constitution, for the first time, mentions the DRM under Article 51 and Schedules 5 to 9, and has clearly assigned DRM as a concurrent responsibility of the three tiers of government, particularly of the local governments. Article 51 stipulates the policies that the state shall pursue with regard to DRM. For instance, the sub-article G that relates to "policies concerning protection, promotion and use of natural resources," does mention that the state shall formulate policies related to development of sustainable and reliable irrigation through prevention of water-induced disasters and river management.

On 24 September 2017, the legislative-parliament unanimously passed a new Disaster Risk Reduction and Management Act, 2017. In many respects, the Act is considered more progressive and comprehensive than the existing Natural Calamity Relief Act, 1982 since it also recognizes risk reduction as an important and integral part of risk management. The Act proposes a clear multi-tier institutional structure of disaster risk reduction and management at the center, the provinces, the districts and the local levels. It further fosters the principles of risk-informed development and sociologically comprehensive approach for managing disasters.

The government of Nepal is recently developing the National Disaster Risk Reduction Policy and the Strategic Action Plan aligned with SFDRR, one that will replace the NSDRM, 2009. The new NDRR Policy and Strategic Action Plan will serve as a road map to guide the future course of action for DRM in Nepal till 2030. There is hope that these two policy documents will serve as a turning point for Nepal to be a disaster resilient nation.

Carving the Road to SFDRR. The Sendai Framework of DRR (SFDRR) aims at substantially reducing disaster risk and losses in lives, livelihoods and health and in the economic, physical, social, cultural and environmental assets of persons, businesses, communities and countries by 2030. The framework has set seven targets and several indicators to measure progress against these targets. The seven targets aim at contributing in reducing (a) mortality, (b) number of affected people, (c) economic losses, and (d) damage to critical infrastructure and in increasing (e) the number of national and local DRR strategies, (f) level of international cooperation, and (g) availability of and access to multi-hazard early warning systems and disaster risk information.

Nepal's disaster management actions between 2010 and 2015 were guided by the five priority actions identified under Hyogo Framework for Actions (HFA), which were further elaborated in Nepal's NSDRM, 2009. Nepal's performance in translating HFA's commitments into reality achieved mixed success (MoHA 2015, UNDP Nepal 2015). The progress and achievements made by Nepal against the HFA priority actions also remained uneven – as evidenced in national progress reports submitted to UNISDR. The final report submitted to the UNISDR, entitled "National Progress Report on the Implementation of the Hyogo Framework for Action" (MoHA 2015) and an independent assessment of DRM integration into development plans (UNDP Nepal 2015) show ample scope for improvement in future course of actions. The agenda of strengthening policy and institutional framework for DRM remained unattained during the HFA period. The much-awaited new DRRM Act could not materialize during the period.

With regard to progress on empowering local communities for disaster risk management and institutionalizing resilience building at local levels, MoFALD, with support from NRRC, introduced criteria-based community resilience system based on standardized approaches, which guided the process of capacity building of the local communities. Using this approach, over 635 VDCs and municipalities were considered for building risk-resilience. At the municipal level, 58 municipalities have developed capacities to respond to fire disaster and were equipped with fire brigades.

To enhance national capacities to prepare and respond to disasters, MoHA, with the support of UNDP, established NEOC in Kathmandu and expanded the network of EOCs in 5 regions, 49 districts and 1 municipality. All the EOCs are equipped with emergency communication systems and maintain a tailor made Disaster Management Information System through SAHANA, a web based platform for collecting data on disaster loss and damage and provide support for disaster preparedness and response during emergencies.

The National DRR Policy and Strategic Action Plan for Nepal (2017-2030), currently being finalized by MoHA, is an important step towards fulfilling Nepal's commitments to SFDRR. The national DRR policy ensures long-term commitment of the Government towards DRR, and the Action Plan

translates SFDRR priorities and targets into national contexts towards making Nepal a safer and resilient country.

The new constitution of Nepal (2015) envisions the local governments taking responsibility of DRM supported by provincial and federal governments. However, to be able to take this responsibility, the newly formed local government will require trained human resources, adequate finances and enhanced institutional capacities.

The official records of the Government show that CNDRF released a little more than NRs. twenty-one billion, nine hundred ninety million (NRs. 21,990,192,958) towards disaster relief and response activities in the period of 2015-2017 along with the expenditure of the Government line agencies in both years of a little over NRs. eighty-five billion, eight hundred forty-nine million, most of which was spent by NRA alone. From the non-government sector, little more than one hundred twenty one million USD was mobilized during the review period by the reporting UN agencies, while Nepal Red Cross Society (NRCS) and five I/NGOs was able to raise and spend a over NRs. two billion, four hundred sixty-eight million and one billion two hundred eighty one million repectively during the reporting period.

Apart from SFDRR, Nepal has shown strong commitment towards the implementation of SDGs, the Paris agreement on climate change and other regional and global frameworks for making development risk-informed. To translate these commitments into actual actions, Nepal's planning and budgeting systems, from federal to local government and across the sectors, need to focus on institutionalizing integrated development and risk reduction approaches.

Key Priority Issues for the Next Few Years

The NDR 2017 identifies a number of priority action areas that could be considered for the next few years or so. They are:

1. Creating an effective institutional set up as provisioned under the new Disaster Risk Reduction and Management Act, 2017.
2. Capacity building at all levels of the government for disaster risk reduction, preparedness, and response and recovery..
3. Instituting a practice of risk-informed development and mainstreaming DRR and CCA into sectoral development planning.
4. Ensuring allocation of adequate funding for DRR and CCA at all levels.

5. Empowering province and local governments for effective leadership role in disaster risk reduction and management.
6. Setting up an effective Disaster Information Management System (DIMS) at the central and province levels as a one-stop information hub.
7. Ensuring Gender Responsive Disaster Risk Reduction and Management.
8. Strengthening national capacity of SAR to the level of INSARAG standards

कार्यकारी सारांश

नेपाल विपद् प्रतिवेदन २०१७: उद्देश्य र प्रकृया

नेपाल विभिन्न प्रकारका प्राकृतिक तथा मानव सिर्जित प्रकोपहरुबाट ग्रसित छ । नेपालको कुल जनसंख्याको ८० प्रतिशत भन्दा बढी जनसंख्या बाढी, पहिरो, हावाहुरी, असिना, आगलागी, भूकम्प तथा हिमताल विष्फोटन (GOLFs) जस्ता प्रकोपहरुको जोखिममा छ । नेपाल विश्वमा २०औं विपद् संकटासन्न राष्ट्रमा पर्दछ । त्यसका अतिरीक्त नेपाल भौगर्भिक रुपले उच्च जोखिममा रहेको कारण जुनसुकै बेला जान सक्ने प्रलयकारी भूकम्पको उच्च जोखीममा रहेको छ । विश्वब्यापी रुपमा भूकम्पीय जोखिमका दृष्टिले नेपाल एघारौं तथा जलवायु परिवर्तनका जोखिमको दृष्टिले चौथो स्थानमा सुचिकृत छ (Maple croft 2011, BCPR 2004 cited in MoHA 2015)। त्यसैगरी विश्वका भौगर्भिक प्रकोपका दृष्टिकोंणले जोखिमपुर्ण २१ शहरहरुमध्ये मानव प्रभावका दृष्टिले काठमाडौ उच्च जोखिममा रहेको शहर हो ।

नेपाल सरकार, गृह मन्त्रालयले संयुक्त राष्ट्रसंघीय विकास कार्यक्रम **(यु.एन.डी.पी),** विपद् पूर्वतयारी सन्जाल(डी.पी.नेट), नेपाल रेडक्रस सोसाइटी, लगायतका विभिन्न विकासका साझेदार तथा सरोकारवालाहरुको सहयोग र समन्वयमा सन् २००९ देखि नेपाल विपद् प्रतिवेदन (Nepal Disaster Report – NDR) तयार गर्दै आएको छ । प्रकाशित भएका नेपाल विपद् प्रतिवेदनहरु २००९, २०११, २०१३ तथा २०१५ रहेका छन् । यसकै निरन्तरता स्वरुप यस नेपाल विपद् प्रतिवेदन २०१७, गृह मन्त्रालयको नेतृत्वमा यु.एन.डी.पी तथा डी.पी.नेटको सहयोगमा निर्माण गरिएको हो ।

नेपाल विपद् प्रतिवेदन २०१७ का प्रमुख उद्देश्यहरुमा विगत दुई वर्षका (२०१६ र २०१७) विपद् जोखिम ब्यवस्थापनको अनुभवको जानकारी गराउनु, प्रमुख सिकाईहरु र विपद् जोखिम ब्यवस्थापनका क्षेत्रका प्रमुख सिकाईहरु तथा विद्यमान चुनौतिहरुको अभिलेखिकरण गर्नुका साथै प्रभावकारी विपद् प्रतिकार्य, जोखिम न्युनिकरण र पुर्नलाभका लागि आगामी दिनका लागि प्राथमिकताका कार्यहरु पहिचान गर्नु रहेका छन् ।

यस प्रतिवेदन तयारीका क्रममा आवश्यक तथ्यांक संकलन र विश्लेषण गर्न गुणात्मक र परिमाणात्मक विधिको प्रयोग गरिएको छ । यस प्रतिवेदनको सन्दर्भ श्रोतको लागि विपद् जोखिम न्युनिकरण तथा जलवायु परिवर्तन अनुकुलन सम्बन्धी मुख्य अभिलेखहरु (प्रकाशित र अप्रकाशित) विपद् जोखिम ब्यवस्थापनका सवालमा कार्यरत सम्बन्धित मन्त्रालय र विभागहरु, विकासका साझेदार संस्थाहरु तथा शैक्षिक संस्थाहरुबाट प्राप्त सामाग्रीहरु प्रयोग गरीएको छ` । यसका साथसाथै खुल्ला रुपमा उपलब्ध अनलाइन अभिलेखहरु, खासगरी विश्वब्यापी रुपमा भईरहेका विपद् जोखिम ब्यवस्थापन सम्बन्धि अभियानकर्ताहरु विचको अन्तरक्रियाहरुलाई समेत् श्रोत सामग्रीको रुपमा उपयोग गरिएको छ । नेपाल विपद् प्रतिवेदनले यसै अवधिमा नेपालमा घटेका विपद्का विभिन्न घटनाहरुमा परि जनधनको क्षति, बिग्रेभत्केका घर संरचनाहरु तथा घाइते र बेपत्ता जस्ता तथ्यांकहरुलाई समीक्षा गरी अभिलेख गरको छ ।

प्रमुख प्रकोपहरु, मानवीय तथा सामाजिक आर्थिक क्षतिहरु: गृह मन्त्रालयले आफ्नो विपद् तथ्यांक अभिलेखमा नेपालमा सक्रीय १६ प्रकारका प्रकोपबाट हुने विपद्को क्षति सम्बन्धि विवरण राख्दछ । उक्त

अभिलेख अनुसार क्रमशः असिनापानी, हिमपहिरो, डुंगा दुर्घटना, शीतलहर, जमिन भासिने, भूकम्प, माहामारी, आगलागी, बाढी, भारी बर्षा, लेक लाग्ने, पहिरो, चट्याङ, हिमआँधी, हावाहुरी तथा अन्य गरी श्रेणीबद्ध रुपमा राखिएको छ । यसले नेपालको बहुप्रकोप संकटासन्नतालाई समेत स्पष्ट पार्दछ ।

गृह मन्त्रालयको तथ्यांक अनुसार विगत दुई वर्षमा १३ प्रकारका प्रकोपहरु अन्तर्गत जम्मा २,९४० विपद्का घटनाहरु घटेको दखिन्छ । विपद्का कुल घटनाहरुमध्ये सबैभन्दा बढी आगलागीका १,८५६ वटा, चट्याङका २९९ वटा, पहिरो २९० वटा, बाढी २४४ वटा र अतिबृष्टि ११८ वटा घटनाहरु अभिलेख गरेको देखिन्छ । मृत्यु, बेपत्ता र घाइतेको तथ्यांक हेर्दा भुकम्प बढी क्षति पुर्याउने विपद्को घटनाको रुपमा लिन सकिन्छे । उदाहरणको लागि सन् २०१५ र २०१६ मा विपद्का विभिन्न घटनामा परी ९,७०८ जना मानिसहरुको मृत्यु भएकोमा २०१५ मा गएको विनाशकारी भूकम्पका कारण मात्र ८,९७० जना अर्थात ९२.५ प्रतिशत मानिसहरुको मृत्यु भएको उल्लेख गरको छ (**गृह मन्त्रालयः २०१६**) । पहिरो, चट्याङ, आगलागी तथा बाढीका कारण उल्लेखित दुई वर्षमा जम्मा ६६६ जना मानिसहरुको मृत्यु भएको देखिन्छ ।

भत्किएका घरधुरीको सन्दर्भमा गृह मन्त्रालयले ब्यवस्थापन गरेको तथ्यांक अनुसार उक्त अवधिमा कुल १०८५७९७ घरहरु भत्किएकोमा ९८.७ प्रतिशत घरहरु भूकम्पको कारणबाट मात्र भत्किएको देखिन्छ । कुल क्षतिमध्ये अन्य सहायक विपदहरुले, जस्तैः आगलागी र पहिरोका कारण ०.३ प्रतिशत क्षति गरको तथा बाढी, अतिबृष्टि र हावाहुरीका कारण ०.२ प्रतिशत घरहरु क्षति गरका तथ्यांक छ ।

यस अवधिमा ७०९ अर्ब रुपैया बराबरको आर्थिक क्षति भएकोमा ९९.५ प्रतिशत क्षति भूकम्पबाट मात्र भएको पाइएको छ । आलागीका कारण दोश्रो ठुलो आर्थिक क्षति भएको छ, जुन भूकम्पको तुलनामा निकै कम ०.३ प्रतिशत भएको देखिन्छ ।

वातावरण र श्रोतहरुमा परेको प्रभावको सम्बन्धमा भूकम्पको कारण कमसेकम पनि २,७९० वटा पहिरागएको तथा ३१ जिल्लाका कतिपय ठांउमौ जमिन चर्किएको, अधिकांश बस्तीहरु, पुर्वाधारहरु, कृषीयोग्य जमिन, वनजंगल र पानीका श्रोतहरुमा उलेख्य क्षति पुगेको थियो । भूउपग्रह संयन्त्रद्धारा प्राप्त तथ्यांक विश्लेषण गर्दा भूकम्पपश्चातपहिरोको आबृत्ति त्ेब्बर भएको तथ्य उजागर भयो । पदयात्रा गन्तब्यका लागि प्रशिद्धलाङटाङ उपत्यकामा भूकम्पको कारण गएको बिशाल हिमपहिरोको कारण लाङटाङ उपत्यकामा ब्यापक धनजनको क्षति हुनुका साथै त्यस आसपासमा रहेको वनजंगलमा पुर्णरुपमा सखाप भएको थियो ।

यसैगरी PDNA को एक भागको रुपमा राष्ट्रिय योजना आयोगद्धारा गरिएको समष्टिगत आर्थिक प्रभाव लेखाजोखा प्रतिबेदनका अनुसार भुकम्पको कारण पाँच अर्बभन्दा बढी विद्यमान सञ्चित धन नोक्शान भएको उल्लेख गरेको छ । अनुमानित २०० अर्ब भन्दा बढी आर्थिक क्षति भएको र यसले एक तिहाई भन्दा बढी कुल ग्राहस्थ उत्पादनमा ह्रास आएको देखिएको छ । भूकम्पले गर्दा देशले छोटो अवधिमा आर्थिक विकास गर्ने लक्ष्यमा अवरोध पैदा भयो जसको कारण सन् २०२२ सम्ममा देश विकासोन्मुख राष्ट्रबाट अल्पविकसित अवस्थामा पुग्ने लक्ष्यमा गम्भिर ब्यवधान उत्पन्न भयो ।

राहत कार्य सन्चालनबाट प्राप्तअनुभवहरु

राहत कार्य सन्चालन भुकम्पकोपश्चात शुरुवात भएर मे १९, २०१५ मा सम्पन्न भएको थियो । नेपाल सरकारले प्रारम्भिक चरणमा द्रुत गतिमा सन्चालन गरेको खोज, उद्धार तथा राहतका कार्यहरु सराहनीय थियो । भूकम्प लगत्तै दुई घण्टा भित्र केन्दीय आपत्कालीन कार्यसन्चालन केन्द्रमा केन्दीय दैवी प्रकोप उद्धार समितिको पहिलो बैठक र घटनाको चार घण्टा भित्र मन्त्रीपरिषदको आपत्कालीन बैठक बसेको थियो । यी बैठकहरुले (क). केन्दीय दैवीप्रकोप उद्धार समितिबाट पाँच करोढ रुपिया तत्काल निकासा गर्ने (ख).अन्तराष्ट्रिय मानवीय सहायताको लागि आवहान गर्ने । (ग) ११ वटा उच्च संकटग्रस्त जिल्लामा आपत्काल घोषणा गर्ने निर्णयहरु गऱ्यो। यसैगरी निश्चित संस्थागत तथा नीतिगत कार्यसंरचनाहरुलाई यथास्थानमा राखी तत्कालको प्रारम्भिक प्रतिकार्यलाई द्रुत गतिमा अगाडि बढायो । समयसीमा भित्र कार्य सम्पन्न गर्नका लागि केन्दीय आपत्कालीन कार्यसन्चालन केन्द्र र अन्य संस्थाहरुको पुर्वपरिभाषित भुमिका र जिम्मेवारीलाई मुर्तरुप दिदै राष्ट्रिय विपद् प्रतिकार्य कार्यसंरचना, २०१३ ले विपद् ब्यवस्थापन तथा उद्धारमा महत्वपूर्ण सहयोग गऱ्यो ।

आकस्मिक र अनपेक्षित रुपमा सूचना तथा सन्चार सञ्जाल तोडिएको र समयमा त्यसको पुर्नस्थापना हुन नसकेको कारण द्रुत गतिमा हुनुपर्ने उद्धार कार्य प्रभावित भयो । भूकम्प गएको पाँचौ दिनमा, सरकारले राहतको विषयमा केही महत्वपूर्ण निर्णयहरु लियो । जसअनुसार त्यस्तो परिवार जसले परिवारको सदश्य तत्काल गुमाएको वा जसको घर पूर्ण रुपमा भत्किएको वा पुर्णरुपमा चर्किएर बस्न नहुने अवस्थामा छ, त्यस्ता परिवारहरुले नगदमा राहत पाउने । यद्यपि राहत सामग्रीको वास्तविक आवश्यकता पहिचान, आपूर्ति ब्यवस्थापन र आवस्यक सेवामा समस्या थियो । यसैगरी कार्यक्षेत्रको आवश्यकता अनुरुपको राहत सामग्री र दाता सहयोगबाट प्राप्त राहत सामग्रीको परिमाण विचको असन्तुलनलाई सम्बोधन गर्न ३० अप्रील २०१५ मा बसेको केन्दीय दैवी प्रकोप उद्धार समितिले सरकारी सचिवालयहरुलाई वास्तविक आवश्यकतामा आधारित राहत वितरण सामग्रीको सुचि निर्माण गरी केन्दीय दैवी प्रकोप उद्धार समितिबाट प्रमाणित गराउन निर्देशन दियो ।

राहत तथा उद्धारको पछिल्लो चरणमा, केन्दीय दैवीप्रकोप उद्धार समितिले प्रभावकारी समन्वय र अनुगमनको कमीका कारण राहत सन्चालन प्रभावकारी हुन नसकेको पत्ता लगायो । राहतमा कार्यरतविभिन्न निकायहरु प्रत्यक्ष मार्गबाट राहत र उद्धारका लागि गएका थिए यद्यपि समन्वय र अनुगमन का लागि दुई समान प्रणालीहरु थिए जहाँ एउटा सरकार मार्फत र अर्को सरकारी समन्वय बाहिर रहेर प्रदान गरिने अवस्थाले ठूलो द्विविधा सृजना गरेको थियो ।

नियमित पुर्नलाभ तथा पुननिर्माणबाट भएको अनुभवहरु

१९ मे २०१५ बाट, नेपाल सरकारले राहत वितरणको चरणदेखि पुर्नलाभसम्मको समयलाई संक्रमणकालीन चरणको रुपमा लिने निर्णय गऱ्यो र २० डीसेम्बर २०१५मा सरकारले नेपाल पुर्ननिर्माण प्राधिकरण ऐन ल्यायो र २५ डीसेम्बर २०१५ बाट भूकम्प प्रभावित जिल्लाहरुमा पुर्ननिर्माण र पुनर्लाभका कार्यमा समन्वय र ब्यवस्थापन कार्य गर्ने जिम्मेवारी सहित राष्ट्रिय पुर्ननिर्माण प्राधिकरणको स्थापना भयो । मे २०१६ मा, राष्ट्रिय पुननिर्माण प्राधिकरणले एकीकृत दृष्टिकांण बाट पुर्ननिर्माण र पुनर्लाभका क्रियाकलापहरु सन्चालन

गर्न विषयगत प्राथमिकताको पहिचान गर्ने र उपलब्ध श्रोतविच सन्तुलन कायम गरी रणनैतिक निर्देशन उपलब्ध गराउन विपद् पश्चातको पुर्नलाभ कार्यसंरचना (PDRF) ल्यायो । यस कार्ययोजनाको प्रमुख लक्ष्य वास्तविक रुपमा पूर्ननिर्माण र पुर्ननिर्माणका कार्यलाई नियमित र निर्देशित गर्नु थियो ।

राष्ट्रिय पुर्ननिर्माण प्राधिकरणले निजी घरहरुको पुर्ननिर्माणलाई उच्च प्राथमिकतामा राखिसकेको थियो, विनाशकारी भूकम्प गएको दुई वर्षमा पूर्णरुपमा भत्किएका ७६५,००० घरहरुमध्ये निजी घरहरुको पुर्ननिर्माण अझै पुरा हुन सकेको छैन । अगष्ट २०१७ सम्म कुल ६३२,०४७ लाभग्राहीहरुले सहयोग सम्झौतामा हस्ताक्षर गरेका र ६०३०७२ लाभग्राहीहरुले पहिलो किस्ता मात्र लिएका छन् भने ५६,६८७ जना लाभग्राहीले मात्र दोश्रो किस्ता लिएका छन् । यसबाट हालसम्म कति घरहरु पुर्णरुपमा सम्पन्न भए भन्ने स्पष्टता नै छैन ।

२०१५ को भूकम्प पछि संकटासन्न बस्ती पहिचानका लागि राष्ट्रिय पुर्ननिर्माण प्राधिकरणले एक अध्ययन गरी ११२ वटा समुदायहरुका कुल २,७५१ परिवारहरुलाई सुरक्षित स्थानहरुमा स्थानान्तरण गनुपर्ने सुझाव पेश गऱ्यो **(राष्ट्रिय पुर्ननिर्माण प्राधिकरण,२०१७ बि)** । नेपाल पुर्ननिर्माण प्राधिकरणले प्रकोपको जोखिमपुर्ण बस्तीका परिवारहरुको सुरक्षित स्थानान्तरणका लागि नयाँ प्रकृयाको सुरुवात गर्यो । भूकम्पबाट प्रभावितहरुको पुर्नस्थापना प्रकृयाका लागि जमिन खरिद गरी प्रभावितहरुलाई स्थानान्तरण गर्नुपर्ने आवश्यकता औंल्यायो र एकीकृत बस्ती स्थापनाका लागि नीति र प्रकृयाहरु तय गऱ्यो ।

नेपालमा २०७२ को भूकम्प पश्चात विपद् जोखिम ब्यवस्थापनमा नियामक ढांचा

पहिलो पटक, नेपालको सम्बिधानको धारा ५१ र अनुसूचि ५ देखि ९ मा विपद् जोखिम ब्यवस्थापनको बारेमा स्पष्ट उल्लेख गरीएको छ भने स्पष्ट रुपमा सरकारको संघ, प्रदेश र स्थानीय तह गरी तीनै तहले निर्वाह गर्ने जिम्मेवारीको ब्यवस्था गरेको छ । त्यसमा पनि स्थानीय सरकारले विपद् जोखिम ब्यवस्थापनमा निर्वाह गर्ने जिम्मेवारी को निर्धारण गरेको छ । दफा ५१ ले विपद् जोखिम ब्यवस्थापनका सन्दर्भमा राज्यले नीतिहरुको निर्माण गर्ने उल्लेख छ । उदाहरणको लागि उपदफा (छ), संरक्षण, सहयोग, र प्राकृतिक श्रोतहरुको उपयोग गर्ने नीतिसँग सम्बन्धित छ । यसमा नदी ब्यवस्थापन र जलउत्पन्न विपद्को रोकथामका लागि आत्मनिर्भर र दिगो सिचाइको विकास सम्बन्धी नीतिहरुको निर्माण राज्यले गनुपर्छ भन्ने कुरा उल्लेखित छ ।

यसै समयमा भएका उल्लेख्य कार्यमध्य २४ सेप्टेम्बर २०१७ मा, ब्यवस्थापिका संसदले नयाँ विपद् जोखिम न्युनिकरण तथा ब्यवस्थापन ऐन २०७४ पारित गरेको कुरालाई प्रमुख उपलब्धीको रुपमा लिन सकिन्छ । विभिन्न दृष्टिकोणले यो ऐन विद्यमान दैवी प्रकोप (उद्धार) ऐन २०३९ भन्दा निकै प्रगतिशील रहेको छ । यसले विपद् जोखिम ब्यवस्थापन बढी भन्दा बढी बृहत्तर छ भन्ने दृष्टिकोँण राख्दछ र जोखिम न्युनिकरणलाई जोखिम ब्यवस्थापनको महत्वपुर्ण र अत्यावश्यक अंगको रुपमा पहिचान गरेको छ । ऐनले स्पष्ट रुपमा विपद् जोखिम न्युनिकरण तथा ब्यवस्थापनमा केन्द्र, प्रदेश, जिल्ला र स्थानिय गरी बहु तहगत संस्थागत संरचनाको ब्यवस्था गरको छ । यसका साथै यस ऐनले विपद् ब्यवस्थापनका लागि जोखिम सुचितविकासको सिद्धान्त र बृहत्तर समाजशाश्त्रीय दृष्टिकोंण राखेको छ ।

नितीगत ब्यवस्थाको सम्बन्धमानेपाल सरकारलेविपद् जोखिम न्युनिकरणका लागि सेन्डाई कार्यढांचा

(SFDRR) सँगसम्बन्धित रहेर विपद् जोखिम न्युनिकरण नीति र रणनीतिक कार्ययोजना निर्माण गरिरहेको छ । यसको निर्माण सँगै विपद् जोखिम ब्यवस्थापन राष्ट्रिय रणनीति २००९को प्रतिस्थापन हुनेछ । यस राष्ट्रिय विपद् जोखिम न्युनिकरण नीति तथा रणनीतिक कार्ययोजनाले २०३० सम्मको लागि विपद् जोखिम ब्यवस्थापनका लागि भावी मार्गनिर्देशकको कार्य गर्न सहयोगी हुनेछ । यी दुई वटा नीतिगत अभिलेखले नेपाललाई विपद् उत्थानशील राष्ट्रको रूपमा फर्कने विन्दुको काम गर्ने कुरामा आशाबादी हुन सकिन्छ ।

विपद् जोखिम न्युनिकरण सेन्डाई कार्यसंरचना र अबको बाटो

२०१० देखि २०१५ विचमा नेपालको विपद् ब्यवस्थापन कार्यहरू ह्यूगो कार्यसंरचनाद्वारा पहिचान गरिएका पाँचवटा प्राथमिकताका क्षेत्रहरू अन्तर्गत निर्देशित थिए जुन विस्तृत रुपमा विपद् ब्यवस्थापन राष्ट्रिय रणनीति २००९ मा ब्याख्या गरेको छ । ह्योगो कार्यसंरचनामा नेपालले जनाएको प्रतिबद्धताको प्रस्तुति र उपलब्धी हेर्दा मिश्रीत सफलता हासिल भएको छ (**गृह मन्त्रालय २०७२,यु.एन.डी.पी २०७२**) । बिगतमा हासिल प्रगति र उपलब्धी ह्योगो कार्यसंरचनाको प्राथमिकताका कार्यहरु संग खासै तारतम्य मिलेको थिएन भन्ने कुरा UNISDR लागि प्रस्तुत गरेको अन्तिम राष्ट्रिय प्रगति प्रतिवेदन मा उल्लेख छ त्यसै गरी विकास योजनामा एकिकृत बिपद् जोखिम ब्यवस्थापनको स्वतन्त्र लेखाजोखाले **(यु.एन.डी.पी.नेपाल,२०७२)** पनि भविष्यमा सुधारका संकेतहरू देखाएको छ ।

ह्योगो कार्यसंरचनाको समयसम्म विपद् जोखिम ब्यवस्थापनका लागि सुदृढ नीति र संस्थागत कार्यसंरचनाको विषय अन्योलमै थियो । धेरै समयको पर्खाईमा रहेको विपद् जोखिम न्युनिकरण तथा ब्यवस्थापन ऐन यस बेला सम्म निर्माण हुन सकेको थिएन । स्थानीय समुदायको सशक्तिकरणका लागि विपद् जोखिम ब्यवस्थापन र संस्थागत विकास गरी स्थानीय तहमा उत्थानशीलता बृद्धि गर्न नेपाल जोखिम न्युनिकरण कार्यमञ्चको सहयोगमा संघीय मामिला तथा स्थानीय विकास मन्त्रालयले निस्चीत मापदण्डमा आधारित सामुदायिक उत्थानशील पद्धतिको प्रादुर्भाव गर्‍यो जुन स्थानीय समुदायहरुको क्षमता विकासको प्रकृयाद्धारा निर्देशित छ । यो दृष्टिकोंणको प्रयोग गरी ६३४ वटा भन्दा बढी गाउँ विकास समिति तथा नगरपालिकाहरुले जोखिम उत्थानशीलता निर्माण गरेका थिए । नगरपालिका तहमा ५८ नगरपालिकाहरुले आगलागी विपद् उद्धारका लागि क्षमता विकास गर्दै र अग्नी नियन्त्रक उपकरण को तयारी गरेका थिए ।

विपद् पुर्वतयारी तथा प्रतिकार्यका लागि राष्ट्रिय क्षमता बृद्धि गर्न यु.एन.डी.पी.को सहयोगमा गृहमन्त्रालयले काठमाडौमा केन्द्रिय आपत्कालीन कार्यसञ्चालन केन्द्र (NEOC) को स्थापना गर्नुका साथै ५ विकाश क्षेत्र, ४९ जिल्ला र १ वटा नगरपालिकामा आपत्कालीन कार्यसञ्चालन केन्द्रको सन्जाल विस्तार गर्‍यो । यो अवधीमा सबै आपत्कालीन कार्यसञ्चालन केन्द्रहरु आपत्कालीन सञ्चार उपकरणबाट सुसज्जित भए र SAHANA प्रणालीमा आधारित विपद् ब्यवस्थापन सुचना प्रणाली संचलन गर्न सफल भए । जसले गर्दो विपदबाट भएको क्षति, भत्किएका संरचना र विपद् पुर्वतयारी तथा आपतकालीन उद्धारको समयमा तथ्यांक संकलन गर्न सन्जालगत ढा'चा निर्माण भयो ।

अर्कोतर्फ विपद् जोखिम न्युनिकरणको लागि सेन्डाई कार्यढांचाको कुरा गर्दा यसको उद्देश्य ब्यक्ति, समुदाय र राष्ट्रमा बृहत रुपमा विपद् जोखिम न्युनिकरण गर्नुका साथै मानवीय क्षति, जीविकोपार्जन र स्वास्थ्य तथा आर्थिक, भौतिक, सामाजिक, सांस्कृतिक तथा वातावरण तथा जनधन, ब्यवसाय आदिमा हुने क्षतिलाई सन्

२०३० सम्ममा उल्लेख्य रुपमा न्युनिकरण गर्नु रहेको छ । कार्यसंरचनाले सातवटा लक्ष्यहरू र सुचकहरुको किटान गरेको छ । यी लक्ष्य अनुरुपको प्रगति मापन गर्न धेरै सूचकहरुको ब्यवस्था गरेको छ । ती विभिन्न ७ वटा लक्ष्यहरू निम्न कुराहरुको न्युनिकरणमा योगदान दिने उद्देश्य रहेको छ । (क)मृत्युदर (ख) प्रभावित मानिसहरुको संख्या (ग) आर्थिक क्षति (घ).भत्किएका पुर्वाधारहरू (ङ).राष्ट्रिय र स्थानीय विपद् जोखिम न्युनिकरण रणनीतिहरुको संख्या (च) अन्तर्राष्ट्रिय सहयोगको स्तर (छ) विपद् जोखिम सुचना र बहुप्रकोप पुर्वसुचना प्रणालीको उपलब्धता र पहुँच रहेका छन् ।

अन्तिम तयारीमा रहेको राष्ट्रिय विपद् जोखिम ब्यवस्थापन नीति र रणनीतिक कार्ययोजना (सन् २०१७–२०३०) विपद् जोखिम न्युनिकरणका लागि सेन्डाई कार्यढांचा (SFDRR) का लागि नेपालले गरेको प्रतिबद्धता पुरा गर्ने प्रमुख र महत्वपुर्ण चरण हो । प्रस्तावीत राष्ट्रिय विपद् जोखिम ब्यवस्थापन नीतिले विपद् जोखिम न्युनिकरणप्रति नेपाल सरकारको दीर्घकालीन प्रतिबद्धताको सुनिश्चित गरेको छ भने कार्ययोजनाले विपद जोखिम न्युनिकरण सेन्डाई कार्यढांचाको प्राथमिकता र लक्ष्यहरुलाई नेपालको राष्ट्रिय सन्दर्भमा एउटा सुरक्षित र उत्थानशील देशको रुपमा ब्याख्या गर्दछ ।

नेपालको संविधानमले संघीय र प्रादेशिक सरकारको सहयोगमा स्थानीय सरकारले विपद् जोखिम ब्यवस्थापनमा प्रमुख जिम्मेवारी बहन गर्ने ब्यवस्था गरेको छ । तथापि यस किसिमको जिम्मेवारी लिन सक्षम हुनका लागि नवनिर्वाचित स्थानीय सरकारलाई तालिम प्राप्त मानव श्रोत, पर्याप्त आर्थिक श्रोत तथा संस्थागत क्षमता विस्तार गर्नु आवश्यक छ ।

विपद ब्यवस्थापनमा भएका खर्च सम्बन्धि कुरा गर्दा सरकारले, केन्द्रीय दैवी विपद जोखिम ब्यवस्थापन कोष अन्तर्गत सन् २०१५ देखि२०१७ सम्ममा रु २१,९९०,१९२,९५८ विपद् उद्धार तथा राहत कार्यका लागि निकासा गरेको देखिएको छ । यसका साथै दुवै वर्षहरुमा सरकारी निकायको रु ८५,८४९,०००,००० खर्च भएको देखिएको छ, जसमध्ये अधिकतम खर्च राष्ट्रिय पुर्ननिर्माण प्राधिकरण एक्लैले गरेको छ । त्यस्तै गैरसरकारी क्षेत्रहरु संयुक्त राष्ट्रसंघीय निकायहरुबाट लगभग एक सय एक्काईस मिलियन यूएस डलर, अन्तराष्ट्रीय गौससहरु बाट लगभग रु १,२८१,०००,००० तथा नेपाल रेडक्रस सोसाइटीले रु २,४६८,०००,००० खर्च गरेका थियो ।

विपद् जोखिम न्युनिकरणका लागि सेण्डाई कार्यढांचा (SFDRR) सँगै नेपालले सेन्डाई विकासका लक्ष्यहरु, जलवायु परिवर्तमा पेरिस सम्झौता र जोखिम सम्बेदनशील विकासकोलागि बनेका क्षेत्रीय तथा विश्वब्यापी कार्यसंरचनाहरुको कार्यान्वयनमा नेपालले सशक्त प्रतिबद्धता जनाएको छ । यी प्रतिबद्धताहरुलाई वास्तविक कार्यमा उतार्न, नेपालको योजना र वित्तीय ब्यवस्था, संघीयदेखि स्थानीय सरकार र क्षेत्रगत रुपमा अगाडि बढाउन विपद् जोखिम न्युनिकरणको दृष्टिकोण र एकीकृत विकासको लागि संस्थागत पक्षलाई जोड दिनु आवश्यक छ ।

आगामी वर्षहरुका लागि प्रमुख प्राथमिकताका सवालहरु

नेपाल विपद् प्रतिवेदन २०७४ ले आगामी केही वर्षका लागि प्राथमिकताका कार्यक्षेत्रहरुको पहिचान गरेको छ जुन निम्नअनुसार छन् ।

१. नवनिर्मित विपद् जोखिम न्युनिकरण तथा ब्यवस्थापन ऐन २०७४ को मातहतमा प्रभावकारी संस्थागत संयन्त्र सृजना गर्ने ।

२. विपद् जोखिम न्युनिकरण, पुर्वतयारी, उद्धार र पुर्नलाभका लागि सरकारका सबै तहहरुको क्षमता विकास गर्ने ।

३. विषयगत विकास योजनामा जलवायु परिवर्तन अनुकुलन र विपद् जोखिम न्युनिकरणको प्रभावकारी एकीकरणका लागि जोखिमसुचित विकासलाई संस्थागत गर्ने

४. सबै तहमा विपद् जोखिम न्युनिकरण र जलवायु परिवर्तन अनुकुलनका लागि पर्याप्त बजेट विनियोजनको सुनिश्चितताका गर्ने

५. विपद् जोखिम न्युनिकरण र ब्यवस्थापनमा प्रभावकारी नेतृत्वका लागि प्रदेश तथा स्थानीय सरकारलाई सशक्तिकरण गर्ने ।

६. संघीय तथा प्रदेश तहमा तथ्यांकमा आधारित सम्पर्क केन्द्रका लागि प्रभावकारी विपद् सुचना ब्यवस्थापन प्रणालीको स्थापना र ब्यवस्थापन गर्ने ।

७. लैङ्गिक उत्तरदायी विपद् जोखिम न्युनिकरण तथा ब्यवस्थापन सुनिश्चित गर्ने ।

८. अन्तराष्ट्रिय खोज तथा उद्धार सल्लाहकार समुह (INSARAG) को मापपदण्ड अनुरुपको खोज तथा उद्दारका लागि राष्ट्रिय क्षमता सुदृढीकरण गर्ने ।

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CHAPTER 1
INTRODUCTION

Background

Globally, Nepal ranks 4th and 11th in terms of its relative vulnerability to climate change and earthquakes, respectively (Maplecroft 2011, BCPR 2004 cited in MoHA 2015). In part, this is because Nepal is in a seismically active zone with a high probability for a massive earthquake. The country is among the 20 most disaster-prone countries in the world, both natural and man induced. Out of 21 cities around the world that lie in similar seismic hazard zones, Kathmandu city is at the highest risk in terms of impact on people. More than 80 percent of the total population of Nepal is at risk of natural hazards such as floods, landslides, windstorms, hailstorms, fires, earthquakes and Glacial Lake Outburst Floods (GLOFs).

Nepal, as one of the countries most vulnerable to climate change, is invariably exposed to water-induced disasters and hydro-meteorological extreme events such as droughts, storms, floods, inundation, landslides, debris flow, soil erosion and avalanches. The MoSTE identifies that current climate variability and extreme events have led to major impacts and economic costs in Nepal, emanating not only from floods and landslides but also from rainfall variability on agriculture (rain-fed agriculture, soil erosion, droughts) and Glacial Lake Outburst Floods (GLOFs) (MoSTE 2014).

The Ministry of Home Affairs (MoHA) together with the Ministry of Federal Affairs and Local Development (MoFALD) and the Ministry of Urban Development (MOUD) has been playing a key role in disaster preparedness and response and reducing disaster risks in coordination with different development partners. The MoHA has been producing biennial disaster reports (Nepal Disaster Report - NDR) since 2009 with support from development partners such as UNDP, DPNet-Nepal, NRCS and others. The published series of NDRs includes NDR 2009, NDR 2011, NDR 2013 and NDR 2015. The publication of NDR 2017 has been a joint endeavor of MoHA, UNDP and DPNet-Nepal with support from other development partners.

NDR 2017: Purpose and Process

The main purpose of NDR 2017 is to highlight Nepal's past experiences in DRM, documenting key learning and challenges in the course of managing disaster risk and identifying future priority actions for effective disaster response, risk reduction and recovery. This would in turn, inform the different stakeholders, policy makers, researchers and citizens of the country about the gravity of the problem and the need for a disaster aware paradigm of development.

The process of preparing the NDR 2017 includes:

- Reviewing the past NDRs (NDR 2009, NDR 2011, NDR 2013 and NDR 2015) to explore areas for improvement in terms of its quality and contents;
- Documenting the major disaster events that occurred during last two years (2015 and 2016) and the current disaster context of Nepal;
- Presenting given policy, legal and institutional set ups for managing disaster risks including the new DRM Act and the draft National DRR Policy and Strategic Action Plan;
- Consolidating experiences, challenges and lesson learned in managing disaster risks, and institutional efforts on recovery and reconstruction; and
- Understanding loss and damage caused by disasters.

With the technical support of UNDP, preparation of NDR 2017 followed a participatory process under the overall guidance of MoHA through its Disaster Management Division (DMD). UNDP, through its Comprehensive Disaster Risk Management Programme (CDRMP), further supported data collection, field verifications and analysis. An editorial board led by the MoHA with representatives from UNDP and DPNet-Nepal provided guidance on overall content and structure of the report. A two-person expert team hired by UNDP was tasked for collecting and validating data from various sources and for writing the report. DPNet-Nepal provided coordination and secretarial support to the expert team in organizing meetings and data analysis.

The draft NDR 2017 was widely circulated among the stakeholders in September 2017 and feedbacks were incorporated into the final report, which was shared with all the stakeholders in a national workshop in December 2017 organized by MoHA.

Methodology

Both quantitative and qualitative approaches based on social-science research methodology were used for data collection. Key documents and reports (published and unpublished) on DRR and CCA were obtained from relevant ministries and departments, key development partners and academic institutions. This was complemented by open access online documents retrieved mostly from the worldwide web.

Desk review. The initial segment of work involved desk review of the available documents and reports that included legal and policy frameworks, guidelines, SOPs, progress reports, and documents on HFA, SFDRR, and other global instruments. The past NDRs and lessons learnt from 2015 earthquake and sectoral plans were also reviewed.

Key Informant Interview (KII). In order to identify the key challenges and future priorities related to DRR, a few key informants were specifically interviewed. Select officials of MoHA, UNDP Nepal, DPNet-Nepal, and Association of International NGOs in Nepal (AIN) were also interviewed to know about the progress made during HFA, areas for future improvement and challenges in achieving SFDRR targets.

Field Visit. The expert team accompanied by the officials of MoHA and the Editorial Board visited Kaski district to enquire about the on-going DRM initiatives and learn about mobilization of volunteers in the immediate aftermath of 2015 earthquake for response and early recovery.

Key Messages from the Earlier NDRs

Since the first Nepal Disaster Report (NDR), published in 2009, the MoHA, in close partnership with the development partners, has been publishing NDRs every two years. The NDRs serve as an important tool of communication for the general public on various aspects of disaster risk management and to update information on lives lost, houses damaged, people missing and injured by different disasters. Main points of the last four NDRs are summarized below:

Nepal Disaster Report 2009: The Hazards and Vulnerability. Being the first national disaster report of Nepal, the NDR 2009 tried to highlight Nepal's exposure to multi-hazards and vulnerabilities faced by its population. The main purpose of the report was to raise awareness among policy makers, practitioners, researchers, students and others towards understanding disasters and taking timely actions to reduce disaster risks.

Nepal Disaster Report 2011: Policies, Practices and Lessons. The NDR 2011 made an attempt to compile the data on occurrences of disaster events and disaster risk management efforts of the government and non-government partners including the communities. In addition, the NDR 2011 looked into how the country was exposed to multi-hazard risks, the cost of not responding to them and inter-related challenges in implementation.

Nepal Disaster Report 2013: Participation and Inclusion. The focus of the NDR 2013 was on the issue of 'participation' and 'inclusion' in disaster risk management. In addition to periodic updates on past disasters and likely future disaster risks, it drew examples of inclusive and participatory DRM practices backed by policy, legal and regulatory provisions and captured successful examples of Early Warning System, community based DRM, warehouse and stockpiling facilities, mainstreaming DRR into development, volunteerism and application of indigenous knowledge into DRM.

Nepal Disaster Report 2015. The NDR 2015 mostly covered the 2015 Earthquake and compiled findings of study reports on mass casualty management, trends of Nepal's disaster management policy, impact of Hudhud Cyclone in Himalayan region of Nepal and Seti flash flood. As in the earlier reports, it also presented updated disaster statistics and trends of disaster events during the reporting period.

The NDR 2017 differs from the earlier NDRs in several aspects. It not only captures disaster statistics and trends, but more importantly it reviews the achievements made by Nepal during the period of HFA implementation (2005-2015), analyzes recent policy and regulatory environment and effectiveness of disaster risk management and preparedness in view of current and future risks, and recommends steps for achieving SFDRR targets (2016-2030).

Learning from HFA and the Thrust of the SFDRR

Nepal's HFA report for 2013 to 2015 (Table 1.1) places the aggregated average achievement percent in all five priority actions areas at 57 percent of the target. This clearly indicates that Nepal has accomplished foundational work in the field of DRR, but there is still a long journey ahead to make Nepal a disaster resilient country. Both the 2013-2015 HFA bi-annual progress report and the ten-year HFA evaluation report (2005-2015) clearly indicate major challenges in successfully achieving the HFA priority action. The most common challenges identified are: lack of pragmatic DRM Act, relief and response centric DRM activities, a lack of dedicated high level DRM institutions, weak implementation of activities, poor monitoring and evaluation mechanisms, inadequate trained human resources at all levels, ineffective information management system, etc., among others. Despite several efforts made in the past to strengthen gender mainstreaming into DRM and make

DRM approaches inclusive[1] to all, actual success on the ground was limited until recently.

Table 1.1: Assessing Nepal's progress on HFA

Priority for Action	Level of Progress (scale: 1-5)
Ensure that DRR is a national and local priority with a strong institutional basis for implementation	3.00
Identify, assess and monitor disaster risk and enhance early warning	2.50
Use knowledge, innovation and education to build a culture of safety and resilience at all levels	3.00
Reducing the underlying risk factors	2.50
Strengthen disaster preparedness for effective response at all levels	3.25
Aggregated average level of progress	2.85

Source: HFA Progress Report (MoHA 2015)

With an understanding of the main challenges that the country faced during the HFA period (2005-2015), a successful implementation of SFDRR (2015-2030) is admittedly not an easy task. These two reports and many other documents had consistently identified the need for a new and comprehensive DRRM Act and a dedicated DRM institution important for transforming the relief and response centric disaster management approach towards risk reduction approach by mainstream DRR into development.

At present, with new comprehensive DRM law in place and a designated DRR institution under making, one can say that Nepal has built necessary foundations to work towards SFDRR[2] priorities. However, effective implementation of the new DRRM Act in the context of federalization and state restructuring and existing capacity gaps in priority setting and implementation of provincial and local governments, are seen as major challenges.

1 The National Women's Conference on Gender Responsive Disaster Management held in Kathmandu (March 2016) called upon the Government to adopt gender, age, disability and culture in all policies and practices and promote women and youth leadership, and new provisions to strengthen the role of women and girls for community's disaster resilience, gender equality and women's empowerment (Women Group Working on Common Charter of Demand on Humanitarian Response (2016) in accordance with the "Sendai Framework,". It calls for NRA to draft and implement necessary policy and plans to ensure gender proportionate and inclusive participation (50:50) for gender responsive disaster management in the context of post-earthquake reconstruction. It further calls for developing "humanitarian assistance national standard" by the government in order to implement disaster response programme by fully guaranteeing people of all age, gender, class, ethnicity, indigenous nationalities, religion the basic and special rights of women of all kinds of physical, mental and marital status, in order to address the existing gender inequality.

2 The four priority areas of SFDRR are: a) understanding disaster risk, b) strengthening disaster risk governance to manage risk, c) invest in disaster risk reduction, and d) enhance disaster preparedness for effective response and build back better.

Budget constraints to prioritize DRR actions over mainstream development activities is yet another hurdle in realizing SFDRR priorities. Sectoral allocation for DRM is still very marginal compared to the actual needs. Aabout five percent of the total capital expenditure of the government being currently spent in DRM (UNDP Nepal 2015) is insufficient given the scale of disasters in the country.

Summary

This chapter reviews the earlier National Disaster Reports (NDRs) produced by the MoHA biennially, and specifically the NDR 2017, which highlights Nepal's experiences in DRM over the last two years including the learning from post 2015 Earthquake response and challenges in the course of managing disaster risks during Hyogo period. The NDR 2017 further identifies future priorities for risk reduction and making disaster response and recovery effective and lays out the methodology for the same.

CHAPTER 2
PERIODIC REVIEW OF DISASTER STATISTICS

Disaster Information Management in Nepal

A comprehensive disaster information management system (DIMS) in Nepal is still under development. Various systems for collecting disaster data exist but they mostly operate in isolation and are not linked to any one common national system, which is still under making. Disaster data are mostly used during disasters to report on loss and damage and facilitate post disaster response. The government owned SAHANA System and DRR Portal are weak in making forecasts and generating early warnings.

The World Bank has supported geo-spatial data management system, which is a web-based application using GIS platform and deploys spatial data infrastructure. Disaster data are first recorded in Excel format, then geo-referenced using QGIS software before being uploaded into Geo Node system. Nepal Geo-portal (Figure 2.1) has been set up for this purpose, which displays Nepal's hazards and vulnerability. The system is robust enough to create customized maps as per the need and printing them. Technically the system is maintained by the WB and operates outside the government system.

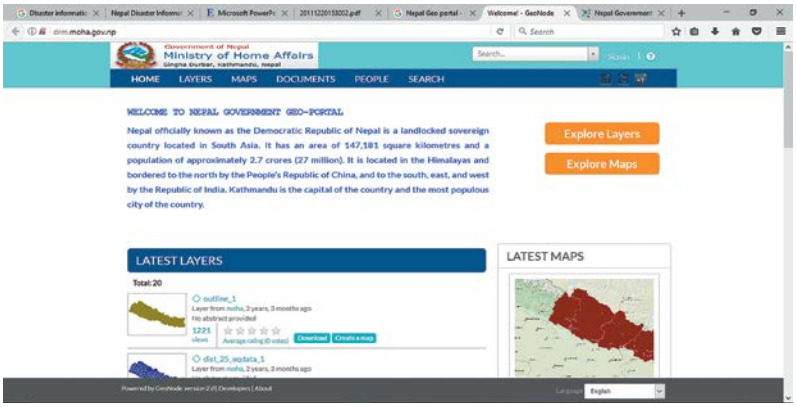

Figure 2.1: Screenshot view of Nepal government Geo-Portal

National Emergency Operation Centre (NEOC) under MoHA supported by UNDP manages Nepal Disaster Risk Reduction Portal (DRR Portal) and SAHANA System for disaster Information management (Figure 2.2). SAHANA is an open source web-based disaster information management platform, which allows customized data collection for disaster occurrence, loss and damage and emergency supplies. The first version of SAHANA was created in Sri Lanka to help coordinate the response to the 2004 Tsunami. Functional effectiveness of SAHANA System is constrained by poor flow of information from DEOCs to NEOC through this System. Due to lack of trained human capacity, reliable internet connectivity and back-up power supply at DEOCs, they mostly collect disaster data in spreadsheets and manually communicate to NEOC for feeding into DRR Portal.

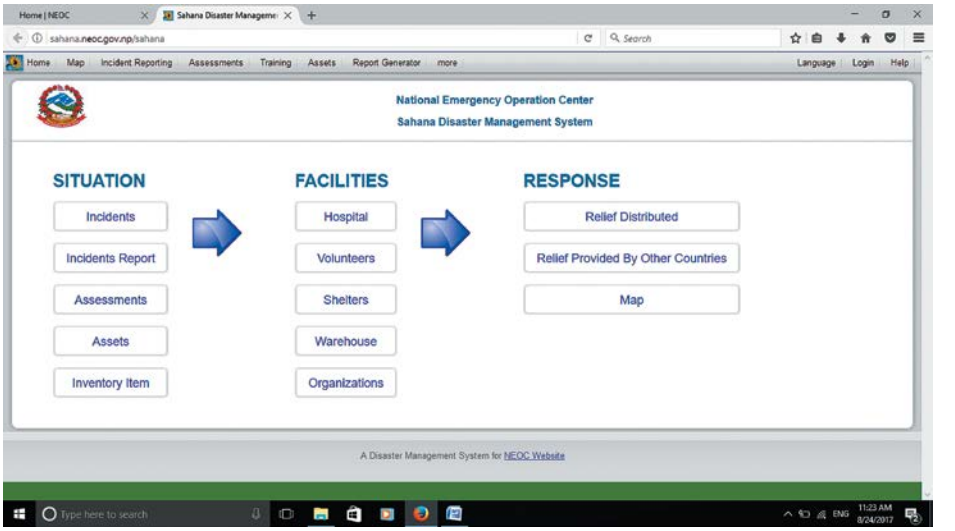

Figure 2.2 Screenshot view of Sahana software used by NEOC

The Nepal disaster data has been made publicly available at www.desinventar.net[1], where a systematic database of natural disasters that have occurred in Nepal for a period of 42 years (1971 January to December 2013) has been prepared and made available and which also allows analysis of the data and trends. Currently, the historical data is available up until 2013. The effort was focused mainly on collection, computer-entry, and analysis of natural disaster data. A standard data collection format was developed and used to capture the data from different sources and entered into the "DesInventar" System. The objective of establishing the **DesInventar** database was to institutionalize the Disaster Inventory/Information Management System in Nepal at a national level.

1 Raw data from 1971 onwards is also available directly from NSET offices.

The data collection and analysis were continued and updated in the database system on an annual basis till 2013. The database includes: event, region, district, village, Date, Cause, Description of Cause, Source, Magnitude, Deaths, Injured, Missing, Houses Destroyed, Houses Damaged, Victims, Affected, Relocated, Evacuated, Losses ($USD), Losses ($Local), Damages at crops in hectare, Lost Cattle and Damages of roads (Mts). The data is mostly collected from newspapers namely Gorakhapatra, demonstrated to be a reliable source - or other reputed newspapers, the Department of Water Induced Disaster Prevention (DWIDP), and special bulletins[2]. The DesInventar largely covers earthquake, floods, landslides, drought, and epidemics events, and at all scales of disaster impact. From 2010 MoHA started collecting and archiving similar data and information of disaster incidents occurring across the country into its website: drrportal.gov.np.

Institutions Involved in DIMS

A great potential exists for transforming Nepal DRR portal into an integrated and comprehensive DIMS to make reliable disaster forecasts, generate "end-to-end" and "people-centered" early warning[3] and support resilient development planning. A comprehensive DIMS requires linking hazard information and disaster data with hydro meteorological data juxtaposed with socio-economic, physiographic, population and poverty data obtained from satellite imagery, census data and land-use and topographic maps. A pre-requisite towards establishing a robust and functional DIMS, is for various line agencies of the government that are engaged in managing disaster information, as given below, to work together and share information through a common platform.

Department of Hydrology and Meteorology (DHM) is the principal government agency to collect and analyze meteorological and hydrology data and disseminate information on water discharge, weather forecasts and early warnings. Their information is very useful for sectoral ministries, particularly in the planning and management of water resources, agriculture, energy, mountaineering, civil aviation and disaster mitigation. It has established flood monitoring and early warning systems in major rivers in Nepal, which has been very effective in saving lives during monsoon floods.

2 Pilot projects have also been conducted in several districts, in which locally-collected data is directly input into the DesInventar system. However, it is recognized that significantly more resources are required to implement this modality of data collection, than national-level data collection.

3 Effective "end-to-end" and "people-centered" early warning systems may include four interrelated key elements: (a) disaster risk knowledge based on the systematic collection of data and disaster risk assessments; (b) detection, monitoring, analysis and forecasting of the hazards and possible consequences; (c) dissemination and communication, by an official source, of authoritative, timely, accurate and actionable warnings and associated information on likelihood and impact; and (d) preparedness at all levels to respond to the warnings received. These four interrelated components need to be coordinated within and across sectors and multiple levels for the system to work effectively and to include a feedback mechanism for continuous improvement. Failure in one component or a lack of coordination across them could lead to the failure of the whole system (UNISDR 2017).

Department of Water Induced Disaster Management (DWIDM) collects data on water induced disasters, mainly floods, at river basin level and prepares water-induced disaster management plans, hazard and risk maps, and applies environment-friendly mitigation measures in the downstream areas to help minimize human casualties and damage of infrastructure.

Department of Soil Conservation and Watershed Management (DSCWM) collects information on hazard, risks and vulnerability at watershed level mainly to control the damage caused by sediment landslides, debris flow and soil erosion, and maintain ecological balance of the watersheds to enhance soil productivity.

Department of Mines and Geology (DMG) operates the National Seismological Centre, which collects seismological data throughout the country through a network of 21 seismic stations and 7 accelerometers. It uses micro-seismic monitoring tool that allows seismic surveillance to support post-earthquake rescue operation.

Department of Health Services (DHS) manages and maintains Health Management Information System to support post disaster emergency response through control of epidemic outbreak. Under GIS based health facility mapping initiative, it operates Health Emergency Operation Centre (HEOC), equipped with necessary resources and information, to serve round-the-clock during health emergencies.

Department of Survey (DoS) is the primary government agency responsible for doing geodetic, gravity and other surveys throughout the country. It produces topographic base maps and carries out cadastral survey, maintains multi-resolution geo database and produces information on land-use pattern and land-use maps.

Central Bureau of Statistics (CBS) is the central agency under National Planning Commission of Nepal responsible for collection, consolidation, processing, analysis, publication and dissemination of socio-economic statistics and other information of the entire country based on census data and surveys. It compiles and archives data on population, agriculture, forest, environment, poverty, labor, and others on regular intervals, which are useful for comparison and analysis to help understand the trends and changes over time.

International Centre for Integrated Mountain Development (ICIMOD), a regional inter-governmental agency serving eight member countries of the Hindu Kush Himalayas including Nepal, has supported the development of forest fire detection and monitoring system based on Moderate Resolution Imaging Spectro-radiometer (MODIS) data. The system carries out automated data acquisition, processing, and reporting on fire location at 1x1 km resolution.

Key Hazards

The MoHA disaster data archives maintain loss and damage data for a total of 16 kinds of active disasters in Nepal. These disasters in alphabetic order are, *asinapani* (heavy rainfall with hailstones), avalanche, boat capsize, cold wave, drowning, earthquake, epidemic, fire, flood, heavy rainfall, high altitude, landslide, lightning, snow storm, wind storm, excluding the "other" category. This illustrates Nepal's exposure to multiple hazard risks (Annex 1 for loss and damage data due to multi-hazards between 1971 and 2016). Thirteen different types of disaster have been recorded during the past two years.

The 2010 Nepal Hazard Risk Assessment (ADPC, NGI and CECI 2010) identifies 13 of Nepal's 75 districts exposed to 4 types of hazards at a time, while other 3 districts are exposed to as many as 5 types of hazards. The remaining 59 districts are categorized as those exposed to three types of hazards at a time.

An assessment of three categories of national level disaster data on loss in 2015-16 (human, casualties, financial loss and the number of families affected) reveals that earthquake, fire, flood, landslide and lightning are the top five deadly disasters in Nepal in the order of intensity and impact (Box 2.1).

Box 2.1: Key hazards of the years

Overall (1971-2016)	Review years (2015 and 2016)
Earthquake	Earthquake
Epidemic	Fire
Fire	Flood
Flood	Landslide
Landslide	Lightening

As Table 2.1 displays, a total of 2,940 events of disaster have been recorded in the review period, of which incidents of fire (N=1,856) outnumber the others. Incidents of fire are followed by lightning (N=299), landslide (N=290), flood (N=244) and heavy rainfall (N=118). Other disasters also took place but they were less in frequency (by two digits or even less).

Table 2.1: Aggregate disaster data (2015 and 2016) by human loss and injuries

Types of disaster	Number of events	Human loss		
		Death	Missing	Injured
Boat capsize	4	7	1	8
Earthquake (local magnitude 4>)	35*	8,970**	195	22,302
Epidemic	5	20	0	35
Fire	1,856	104	0	278
Flood	244	101	39	23
Landslide	290	276	42	226
Heavy rainfall	118	9	0	24
Wind storm	43	2	0	9
Lightning	299	185	0	369
Asinapani	16	0	0	0
Drowning	5	5	3	0
High altitude	10	13	0	0
Other	15	6	1	43
Total	2,940	9,698***	281	23,317

Source: MoHA 2017

Note:
* Source: National Seismological Centre, as reconfirmed by NEOC on 20 September 2017.
**Source: MoHA 2016, p. 58.
*** There is discrepancy in the available data. The actual total number of death during 2015 and 2016 is reported to be 9,708 elsewhere.

Human Casualties. Of these killer hazards, earthquake stands out from the rest in all respects – death, disappearance and injuries, a fact reiterated by the 2015 Earthquake. Of the total 9,708 disaster-related human deaths during those two years the 2015 earthquake alone claimed the lives of 8,970 persons (92.5 percent). Landslide, lightning, fire and flood claimed the second highest number of lives (in a range between 276 and 101 each) during 2015 and 2016.

Earthquake also appears to top the list of disasters leading to the largest number of missing persons. Of the total number of missing persons (N=281) in those two years, 195 (69.4 percent) went missing due to earthquake alone. People also went missing during floods and landslides, but were far less in number. A total of 22,302 persons sustained injuries in 2015 due to earthquake alone. This is 95.6 percent of the total persons injured (N=23,317) during the review period. Injuries caused by other hazards are far less.

An increasing number of deaths and injuries seem to also be resulting from lightning: during the review period, lightning injured a total of 369 persons. Fire and landslide follow lightning in the extent of injuries sustained (Table 2.1).

Socio-Economic Losses. When one looks at the economic and financial losses as a result of disasters, earthquake clearly leads this list too. This includes houses damaged, economic loss and number of families affected (Table 2.2). All disasters recorded in MoHA database reveal that a total of one million, eighty-five thousand, seven hundred and ninety-seven houses were damaged during the review period, of which 98.7 percent of the houses damaged was due to the earthquake. This is followed by a host of other disasters attributable to fire and landslide (0.3 percent each) and to flood, heavy rainfall and windstorm (0.2 percent each) (Table 2.2).

Of the total economic loss that occurred during the review period, worth more than seven hundred nine billion rupees, about 99.5 percent was due to earthquake alone. Another category of disaster that caused economic loss was fire. But its effect was far less (0.3 percent) when compared to the effect of the earthquake.

Unfortunately, the data related to the loss of old heritage sites in the country is very blurred. Even in the case of 2015 earthquake, the impact to the old temples, monasteries and other historical infrastructures particularly in the rural areas of the country are almost unavailable. Due to the lack of proper and regular maintenance of such historical infrastructures in many urban and rural areas, such heritage sites have been either damaged or have ultimately collapsed.

Several communities have been displaced due to regular exposure to disasters. Such displaced people have either shifted to other parts of the same districts or to the flat plain of the Tarai in southern Nepal. Due to displacement to new locations many community groups have lost their traditional institutions and also the indigenous knowledge and practices, the monetary value of which is hard to ascertain.

Table 2.2: Aggregate disaster data on economic and financial loss (2015 and 2016)

Type of disaster	Number of events	Economic and financial loss		
		Houses damaged	Economic loss (in NRs.)*	Families affected
Boat capsize	4	0	0	8
Earthquake	70	1,072,093	706,461,000,000	1,072,093
Epidemic	5	0	0	20
Fire	1,856	2,997	2,420,480,490	3,898
Flood	244	2,628	47,296,501	7,141
Landslide	290	2,980	811,084,600	1,936
Heavy rainfall	118	2,486	18,969,500	683
Wind storm	43	2,547	24,186,000	191
Lightning	299	65	5,271,000	415

Drowning	5	0	0	7
High altitude	10	0	0	9
Others	15	1	0	19
Total	2,975	1,085,797	709,788,288,091	1,086,420

Source: MoHA 2017, NPC 2015b.

Note: * Economic loss from the 2015 Earthquake has been added in the table as published in PDNA report (NPC 2015b).

A total of one million, eighty-six thousand, four hundred and twenty families were affected by one or more disasters during the review period of which one million, seventy-two thousand and ninety-three (98.7 percent) families were affected by the earthquake. This is followed by incidences of flood and fire, affecting 0.7 and 0.4 percent of the total affected families. To conclude, earthquake, flood and fire are the three disasters that affected a large number of families in Nepal during 2015 and 2016 (Box 2.2).

People left stranded after floods in Rapti River swept a bridge away in Duduwa, Banke.
(Photo credit: Thakur Singh Tharu, The Kathmandu Post, 16 August 2017)

Box 2.2: The 2017 Monsoon flood

Beginning 11 August 2017 Nepal experienced its worst rains in 15 years, resulting in large scale impact on life, livelihood and infrastructure across 35 districts. The districts hit hard by the 2017 flood are Panchthar, Illam, Jhapa, Morang, Sunsari, Saptari, Siraha, Dhanusa, Mahottari, Sarlahi, Rautahat, Bara, Parsa, Chitwan, Makwanpur, Lalitpur, Sindhuli, Nawalparsi, Palpa, Kapilvastu, Dang, Banke, Bardiya, Kailali, Surkhet, Salyan and Kalikot. The Department of Hydrology and Meteorology (DHM) recorded the highest ever mean rainfall of 1,800 mm, substantially exceeding the average of 1,200 mm in the recent past. This triggered flash floods the across all Tarai districts.

This emergency came at a time when Nepal was already struggling to recover from the 2015 earthquake, with much reconstruction and recovery work still to be done. Five of the current flood affected districts were also the earthquake affected districts, while four of the current flood affected districts were hit by large scale floods in 2014 also, and were yet to fully recover (UN ORC 2017).

The death toll from floods and landslides across the country during the monsoon reached 134 (NPC 2017c, Table 1). At least 29 people went missing and 22 were injured. According to MoHA, 43,400 houses were destroyed, 191,700 houses were partially damaged and further 20,900 families were temporarily displaced. According to NPC, as many as 1,688,474 persons were affected by this flood (NPC 2017c). Around 80 percent of the land, in flood-affected Tarai districts, was inundated.

The Government deployed over 26,000 human resources, including security personnel, for search and rescue operations. Seven choppers of the Nepal Army and six helicopters of private companies along with rubber boats and motor boats were mobilized in the flood-hit areas. The government distributed NRs. 200,000 each to the next of kin of those deceased by the flood and NRs. 10,000 to each to families whose house had been destroyed. On 23 October 2017, the Cabinet decided to form a Flood Reconstruction and Rehabilitation Project and placed it under the NRA.

Expenditure on Disaster Risk Management by Select Agencies

Recognizing that budgetary allocations plays a critical role for successful DRM efforts, effort has been made for the first time to compile DRM related budgetary allocations and expenditures by the sectors including from the non-government organizations. As the Government does not yet have a separate budget code on DRM, it remained a daunting task to ascertain actual expenditure made by the government. In the absence of a coherent reporting mechanism from non-government and semi-government organizations to a national system, getting data on DRM budget allocation and expenditures from the INGOs, the academic institutions and private sector was equally challenging. Although complete information on budget released and expenditure made in DRM in Nepal for the period under review could not be obtained, an attempt was made to compile the available information.

Over a period of two years (2015 -2016), the official records of the Government show that, little more than NRs. twenty-one billion, nine hundred ninety million (NRs. 21,990,192,958) was released on disaster relief and response activities from the Central Natural Disaster Relief Fund (CNDRF). While 56.6 percent of this was released in 2015, the rest was released in 2016, which is attributable to the incident of 2015 mega earthquake. It is interesting, however, to note that about 91 percent (little more than nineteen billion, nine hundred ninety-five million rupees) of the total amount released in those two years was channeled to DDRCs, followed by line ministries and security forces (getting 8.3 percent of the total amount released). Share of the cost released for the use of helicopters for rescue and relief operations remained less than one percent (little more than one hundred fifty-nine million rupees) (Annex 2).

It is evident that the total amount released from the CNDRF during those two years was mainly on relief and response. It is to be noted that Government fund for disaster preparedness and mitigation is channeled mostly through government line agencies, such as Water and Energy Commission, Ministry of Federal Affairs and Local Development, Ministry of Irrigation, Ministry of Education, Ministry of Forests and Soil Conservation, Ministry of Environment, Ministry of Science and Technology and Environment, Ministry of Health and Population, Ministry of Industries, Ministry of Agriculture Development, Ministry of Water Resources, Ministry of Urban Development and other institutions.

Attempt was also made to get the DRM expenditure of the select ministries and departments. The NEOC sent requests to seven Ministries and Departments, of which, only four Departments and one Division responded. Annex 3 records the DRM expenditure of four agencies (Departments of Mines and Geology, Hydrology and Meteorology, and Water-Induced Disaster Management, and Epidemiology and Diseases Control Division) and the National Reconstruction Authority for the review period.

The total expenditure of the Government agencies, which reported their budget in both years, crossed little over NRs. eighty-five billion, eight hundred forty-nine million. While in 2015 the total expenditure was over NRs. twenty-eight billion, four hundred fifty-three million (or 33.1 percent), it was over NRs. fifty-seven billion, three hundred ninety-five million (or 66.9 percent) in 2016.

It is to be noted that of the total expenditure through government line agencies, about 84.6 percent was spent by NRA alone (that crosses NRs. seventy-two billion, one hundred sixty-seven million). This is followed by Department of Water-Induced Disaster Management with second largest expenditure with NRs. thirteen billion, six hundred twenty-eight million, and the Department of Mines and Geology having smallest budget of little more than NRs. thirty-three million.

An attempt was also made to get data on DRM expenditure from different UN agencies during the review period. Information from seven UN agencies (namely UNDP, WHO, UNICEF, FAO, IOM, UNFPA and WFP) was received, with respect to their fund mobilization for the year 2015 and 2016. As Annex 4 reveals, a total of little more than one hundred twenty one million USD was mobilized during the review period by the seven UN agencies for DRM. The amount mobilized in both years is 66 percent in 2015 and 34 percent in 2016 respectively. WFP appears to be the largest contributor, mobilizing over seventy one million, followed by UNDP, which mobilized over eighteen million and similarly WHO mobilized over seven million. FAO, IOM and UNFPA each contributed between five to six million. Although it is difficult to say so definitively, UN agencies' area of DRM support seems more towards preparedness for response and risk reduction than response. In a way this compensates Government's relatively heavier investment in response.

Additionally, with the support of DPNet-Nepal, attempts were made to compile information from INGOs receiving direct funding from the donors for implementing DRR activities. Only five INGOs (ActionAid Nepal, ADRA Nepal, CBM International, World Vision International Nepal and Christian Aid) shared their expenditure information, which show that together they spent little more than NRs. one billion, two hundred eighty-one million during the period of two years.

Of the five participating INGOs, ActionAid Nepal is the largest one in terms of size of budget invested in DRM. It has invested over six hundred seventy-six million rupees in DRM activities in four districts including the Kathmandu Valley. ADRA Nepal ranks second in terms of budget and works in eight districts out of Kathmandu Valley with a budget nearly over four hundred forty-three million rupees. CBM International mobilized a little more than NRs. seventy-eight million, followed by World Vision International Nepal investing little more than NRs. sixty million. The Christian Aid, which works in four districts of Nepal, invested nearly NRs. twenty-two million rupees in those two years (Annex 5).

DRM expenditure made by Nepal Red Cross Society (NRCS) has been estimated to be over NRs. two billion, four hundred sixty-eight million during the reporting period, which is nearly 66 percent of the total in INGO category.

The expenditures made by INGOs included support during both pre-disaster and post-disaster period for addressing specific needs of the most vulnerable and excluded group of people (such as dignity kits to women and girls, school safety kits to school children, etc.) and promoting income generation and livelihoods in the areas where government support was lacking.

Assessing Environmental Impacts of Disasters

The *Guidelines for Rapid Environmental Impact in Disasters* (Benfield Hazard Research Centre, University College London and CARE International 2005) and Field Environment Assessment Tool (FEAT) developed by UN agencies provide a comprehensive description of the rapid environmental assessment process together with background information on key tasks needed to complete the assessment. It attempts looking into factors influencing environmental impacts, environmental threats of disasters, unmet basic needs, and negative environmental consequences. The Post Disaster Needs Assessment published by National Planning Commission observed that:

Large landslides, mudflows and other large-scale dislocation of hillsides inflicted damage in forest areas. There was sustained damage to nature tourism infrastructure such as nature trails, trekking routes and sites in protected areas (PAs). Damage to Renewable Energy Technology (RET) solutions such as improved cook stoves (ICS) and biogas are paramount as these lead to improvements in the lives of rural communities and also lead to significant positive environmental outcomes (e.g. reduced deforestation; reductions in GHG emissions) (NPC 2015b, p. 53).

Immediately after the 2015 Earthquake, Ministry of Science, Technology and Environment commissioned a rapid environmental assessment (MoSTE 2015), which reported that the earthquake had triggered at least 2,780 landslides and many ground cracks in 31 districts, significantly damaging settlements, infrastructure, agricultural land, forests and water resources. Based on satellite imagery analysis, it further identified that the frequency of landslides was three times greater than that before the earthquake. A large avalanche in Langtang valley destroyed the popular trekking destination of Langtang village and flattened the nearby forest.

The assessment reported that the moraine dams of three glacial lakes had destabilized and changed the water sources in some areas, with reduced or no flows in some, and new sources starting to flow in others. Freshwater ecosystems in the Koshi and Gandaki basins, as the assessment identified, were affected by increased amounts of sediment, and landslides temporarily blocked a few rivers. Risk of downstream flooding was reported to have increased due to deposition of large amounts of sediment.

The PDNA estimated that 2.2 percent of forest cover in the affected areas was lost, mainly pine forest and sub-temperate forest (NPC, 2015b). It will take many years for many sites to stabilize and for vegetation to be re-established.

The PDNA further revealed that seven protected areas and their management were severely affected due to the earthquake. Community and government forest governance was disrupted,

Landslides and soil erosion after the 2015 earthquake (Source: MoSTE 2014)

which increased the risk of illegal extraction. Some wild animals are known to have been killed directly by the earthquake (MoSTE 2015). The forest areas in the quake-affected districts are likely to face human pressure and subsequent deforestation in post-earthquake times, as timber and other forests resources will be in high demand to rebuild houses.

Loss of water resources due to landslides triggered by the earthquake may have created a critical problem in some villages adding to the woes of already drying water sources because of climate change. This problem can be the cause of internal migration in many places. Water shortage has become more severe as earthquake-affected districts also saw very scanty rainfall in following monsoon season.

Waste management is yet another dimension of environmental impacts of disasters. A huge amount of debris was generated from damaged buildings after the 2015 earthquake. Hazardous waste released into the environment included medical waste that was haphazardly disposed of. Some toxic chemicals could end up in ground water or rivers; some of which are persistent pollutants.

The MoSTE report also notes that waste generated in emergency camps was not well managed, and plastic generated during the relief phase was either burned (causing air pollution), or dumped (that will remain undecomposed). Dead bodies and livestock carcasses also contaminated the environment. The assessment came up with a set of 11 principles for recovery and reconstruction (Box 2.3).

Box 2.3: Principles of making recovery and reconstruction environment sensitive

- Ensure land use planning incorporates hazards and disaster risk reduction
- Promote the use of safe and green building materials and reuse of disaster debris
- Develop environmentally responsible solid and hazardous waste management plans
- Ensure strategic road planning and reconstruction
- Promote alternative energy and energy efficiency methods
- Improve water and sanitation and promote integrated watershed management
- Support alternative livelihoods and environmentally responsible agriculture
- Promote reforestation and sustainably sourced timber for reconstruction
- Promote sound environmental practices through schools and other academic institutions
- Promote equity in the recovery and reconstruction process with particular attention to women and vulnerable or marginalized groups
- Incorporate climate change into recovery and reconstruction

(Source: MoSTE 2015, pp. xii-xiv)

Why is Safeguarding Development Gains So Important?

Natural disasters can hit the economy and can rollback development gains or exacerbate inequality. The PDNA (NPC 2015b) reports that the destruction caused by 2015 earthquake was widespread, impacting 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. A macroeconomic impact assessment done under PDNA, reveals that "total damage to existing stock of assets has been estimated at over NRs. 500 billion, with economic losses that flow from destruction, estimated at nearly NRs. 200 billion – taken together both figures represent an economic force equivalent to about one third of Nepal's GDP" (NPC 2015b, p. 76).

According to the World Bank estimates, the earthquake is likely to push an additional 2.5 to 3.5 percent of the population into poverty in the fiscal year 2015-16 (NPC 2015b, p. xviii). That means, at least, 700,000 additional people are likely to fall under the poverty line as a direct effect of the earthquake.

In addition to the economic costs of damage and losses, there is also the cost of reconstruction. Revising the PDNA estimation of NRs. 669,505 million financial requirement for managing

reconstruction works of various sectors, the NRA later estimated it to be NRs. 837,742 million. Hence, it is very clear that one single disaster can pull the economy down tremendously.

A report published by the Ministry of Science, Technology and Environment (MoSTE) about the economic impacts of climate change variability, assessed historical information on floods and landslides. This report shows that the direct economic cost of impacts of water-induced disaster ranged from US$270 to 360m per year during a 30 year period (1980-2010) which was 1.5 to 2 percent of the GDP at 2013 value (Figure 2.3). It could reach as high as five percent in extreme years; the indirect cost was as high as 100 percent of the direct impact (MoSTE 2014). There are also indirect impacts, which arise as a consequence – e.g. business disruption, lost wages and macro-economic costs – of the effects of major disasters on consumption, inflation and the shift of resources to relief and reconstruction. As a broad indication, these issues would increase the costs reported above by 25–100 percent (MoSTE 2014, p. 6).

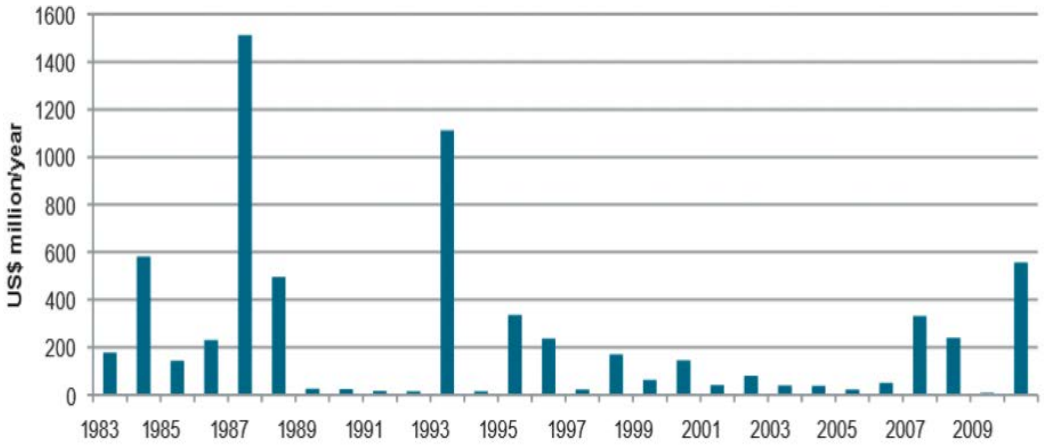

Figure 2.3: Longitudinal pattern of economic costs of water-induced disasters in Nepal, 1983-2010

(Source: MoSTE 2014, Figure 3)

The PDNA report concludes that "the earthquake upsets the nation's high aspirations for swifter economic progress in the short run" shaking the national hope for graduation of the country from its current status as a Least Developed Country (LDC) to developing country, possibly by 2022 (p. 76).

Summary

This chapter reviews the DIMS in Nepal and reveals inconsistency in collection of disaster data and inadequacies in using them to generate information for broader use by development sectors. It also notes that the death toll, loss of public and private property, assets and livelihoods are increasing over the years due to disasters. The chapter reinforces the need for setting up a robust and comprehensive DIMS capable of generating information to guide national and sectoral planning to make development resilient to risks and be able to make effective response to disasters. The Chapter further highlights how the country faces multiple risks posed by multi-hazards and recurrent disasters due to faulty development plans, weak monitoring mechanisms, climate change, and poor environmental management. It further reviews loss and damage by disasters during the report period and extends information on budgetary allocations and expenditures made by the government and non-government sectors.

CHAPTER 3
THE 2015 EARTHQUAKE AND THE LESSONS LEARNED

The 2015 Gorkha Earthquake

Nepal suffered a massive loss of lives and property on Saturday, 25 April 2015, when a devastating earthquake of 7.6 magnitude struck the country. Subsequent aftershocks,[1] including one of magnitude 7.3 near the Chinese border on 12 May, resulted in additional losses of life and property. The earthquakes shook almost the whole country, and the destruction was extensive, lasting and widespread, in terms of human casualties, social suffering as well as environmental, infrastructural and heritage related damages. The earthquake triggered avalanches in the Mount Everest region and in the Langtang Valley. Villages were flattened and people were made homeless within less than a minute. Considering the severe level of humanitarian crises, Government of Nepal declared 14 out of 31 badly affected districts as "crisis-hit."

The *Post Disaster Recovery Framework* (NRA 2016) prepared by the National Reconstruction Authority and the *Post Disaster Needs Assessment* (NPC 2015b) prepared by the National Planning Commission took stock of the damages and losses and estimated recovery costs together with an outline of the reconstruction strategy.

As a result of the earthquake, 8,970 people died and more than twenty three thousand people were injured (MoHA 2016). The PDNA showed that at least 498,852 private houses and 2,656 government buildings were destroyed. Another 256,697 private houses and 3,622 government buildings were partially damaged. In addition, 19,000 classrooms were destroyed and 11,000 damaged (NPC 2015b).

The earthquake affected manufacturing, production and trade in agriculture as well as tourism and other areas of the service sector. On the whole, it weakened the national economy with wider

1 According to National Seismological Centre the major two earthquakes were followed by 486 aftershocks with local magnitude 4 and over until 24 August 2017.

ramifications. It posed a challenge to Nepal's aspiration of upgrading herself to a developing country category by 2022, and to its national commitment of poverty reduction (NPC 2016).

According to initial estimates NRs. US$ 6,695 million would be required to reconstruct damaged properties and infrastructure and to support recovery in affected sectors of the economy (NPC 2015c, Table 3). A revised estimate drawn as part of developing the Post Disaster Recovery Framework, however, identified US$ 8,377 million needed for reconstruction (NRA 2016, Table 4).

Experiences from the Relief Operation

Relief operations started from the second hour of the earthquake and lasted till 19 May 2015; for a little less than a month. Key highlights of relief operation are drawn hereunder.

Quick and Swift Initial Response. This has been widely observed that Government of Nepal's response was quick and swift during the initial phase of search, rescue and relief response. The first meeting of the Central Natural Disaster Relief Committee (CNDRC) took place at NEOC within the first two hours of the tremor, and the first emergency meeting of the Cabinet took place within the first four hours. These meetings managed to (a) immediately release NRs. five hundred million through CNDRC, (b) call for international humanitarian support, and (c) declare emergency in 11 "crisis-hit" districts (MoHA, 2016)[2], apart from taking other decisions. Certain institutional and policy frameworks put in place earlier enabled the government to organise quick initial response. The role of NEOC and the National Disaster Response Framework (NDRF), 2013 assigning clear and time-bound roles and responsibilities was extremely helpful in managing initial response.

On the third day of the earthquake, the Government managed additional buses to support movement of outbound passengers who wished to leave the ravaged Kathmandu and to join their families in outside districts. In the week that followed, about one hundred thousand people left Kathmandu, easing the pressures on emergency response to a great extent.

Breakdown and Revival of Communication and Information Networks. For a coordinated and informed response, smooth functioning of the communication system is essential. Getting information on loss and damage and disseminating clear instructions are two key actions in this period. Nepal's communication infrastructure crumbled immediately owing to the earthquake both literally and figuratively (EIAS 2016). Mobile networks, landline telephones, means of mass communication (such as television) were all paralyzed. This had implications on mobilization and optimum utilization of international responders who entered the country without knowing where

2 Emergency was later imposed on additional three districts after getting detailed report.

their assistance was most needed. The Government established toll free call centers (with number 1234) as an alternative way to allow people to convey their messages to the Government, which received a total of 69,890 calls seeking support. The Government also tried to maintain alternative ways of information flow of relief and rescue through the Nepal DRR Portal (http://drrportal.gov.np/).

SMS and Twitter facilities were also put in place, which complemented flow of information to some extent. As means of communication (such as internet) were revived, it added much value. International communication companies, namely T-Mobile, Sprint, Verizon, Vodafone, Time Warner Cables and others, offered free calls from and to Nepal. Payment providers such as Apple, PayPal and Square Cash waived their fees to ease the donations process. Google and Facebook enabled useful tools to help search for missing and displaced persons (EIAS 2016). The lesson learned is that Nepal should invest much in making communication and information systems resilient.

Resource Mobilization during relief Operations. Chapter 2 has already detailed the budget release and investment made for post-earthquake response and recovery, showing that in a period of two years a little more than NRs. twenty-one billion, nine hundred ninety million (NRs. 21,990,192,958) was released towards disaster relief and response activities from the Central Natural Disaster Relief Fund (CNDRF). It also gives details about the investment by the non-government sector, including different UN agencies and other stakeholders such as I/NGOs. Over a period of two years (2015 -2016), the official records of the Government show that, little more than NRs. twenty-one billion, nine hundred ninety million (NRs. 21,990,192,958) was released on disaster relief and response activities from the Central Natural Disaster Relief Fund (CNDRF). While 56.6 percent of this was released in 2015, the rest was released in 2016, which is attributable to the 2015 mega earthquake. Data from different UN agencies show that a little more than one hundred twenty one million USD was mobilized during the review period, though this seems to be more towards preparedness for response and risk reduction than response. Data from INGOs shows that together they spent little more than NRs. one billion, two hundred eighty-one million during the period of two years. The expenditures made by INGOs included support during both pre-disaster and post-disaster period for addressing specific needs of the most vulnerable and excluded group of people and promoting income generation and livelihoods in the areas where government support was lacking.

However, this description of budget allocation and investment on DRM by different sector actors is not conclusive due to several constraints, and there is a need for a systematic effort and a culture of institutional accountability on the part of DRM actors in Nepal – both government and nongovernment.

Cash Compensation to the Affected Families. On the fifth day of the earthquake, the Government made a number of decisions on extending relief. Families who lost family members

would be compensated with NRs. one hundred thousand each. The bereaved family would also get NRs. 40,000 for funeral costs. Those whose houses were damaged would get NRs. 15,000 for repair work. Those whose house had collapsed would get NRs. 5,000 for managing immediate shelter (NRs. 3,000 for the ones whose house was only damaged). To manage food for immediate consumption, each affected family would get NRs. 2,000. When the reconstruction intervention was delayed due to bureaucratic and political inefficiencies, in view of upcoming winter, the Government also decided to give NRs. 25,000, as advance to every affected family for managing temporary shelter and NRs. 10,000 to manage "warm clothes" like rugs and blankets. While all this diverse range of relief was essential, there was debate whether cash transfer such as this was the best mode of immediate humanitarian support, or if there were better alternatives.

Troubles in Identification of Needs and Managing Supplies of Relief Materials and Services. In the post-disaster chaos, if institutional memories are not strong and if standard operating procedures are not put in place, proper identification of relief materials needed on ground becomes a challenge. In addition, the list of necessary relief items needs to be constantly updated with changing needs, as evidenced in the frustrating experience post the 2015 Earthquake. Senior Government officers deputed in Central Command Post at NEOC found it difficult (for lack of proper information or difficulty in compiling and prioritizing the needs) to decide what and where to dispatch the piles of relief materials. Later, the Government had to depute a team of senior government officers (from three different ministries led by MoHA) in the emergency warehouse at Tribhuvan International Airport itself. To address the problem of mismatch between the relief items needed on ground and the supply of donations of such items, the CNDRC on 30 April 2015 instructed secretaries of the MoHA, Ministry of Commerce and Supply, Ministry of Industry, Ministry of Agriculture Development, Ministry of Finance and the Ministry of Urban Development to sit together to identify and finalize the list of items needed and disseminate the information widely to national and international donors and volunteers.[3]

Distributing relief materials to rural areas remained a particularly challenging task given the perennial problems of rugged topography, remote and inaccessible countryside, poor road networks and transportation facilities. Although by and large, the situation remained calm, a few incidences of looting and capturing of dispatched materials on the way were reported (EIAS 2016). To ensure safe delivery of relief materials in designated points, Government later air lifted relief supplies or used overland transportation by Nepal Army and the Armed Police Force (MoHA 2016).

3 The Government also deputed a team in each Customs Offices other than TIA, comprising Local Development Officer, chiefs of district security forces, chief of the respective Customs Office, and led by Chief District Officer of the respective district, as the Relief Materials Screening Committee mandated with screening and approving relief materials imported that are duty-free and maintaining record of all the items received and informing CNDRC quickly (MoHA 2016, pp. 231-232).

Donors, international development partners and domestic volunteer groups had also begun to distribute relief materials on their own and that created problems of duplication and roadside bias. Thus, the Government decided to "route earthquake donations through the bank account of the Prime Minister's Disaster Relief Fund, trying to provide a one-window service to the affected people by consolidating amounts, avoiding duplication of effort and ensuring proportional and equitable access to relief by needy victims in all areas." International development partners, however, lacked trust in the government (EIAS 2016), and some of them circumvented the government decision and sent aid directly through NGOs for distribution (MoHA 2015).

Lessons Learnt

Command and Coordination Mechanism. As with all major disasters, the 2015 Earthquake became a test case for the Government's coordination mechanism at various levels. Although CNDRC remained active and functional throughout, its effectiveness fell short of the urgency of the circumstance. On the one hand, there was a multi-tier mechanism of command, control and coordination, on the other, there was a parallel entity created for overview and monitoring, which primarily comprised of political representation.

The Central Command Post was established at MoHA under the leadership of MoHA Secretary, drawing secretaries of other nine relevant ministries (MoHA 2015, p. 7). It was the apex operational unit. At the District level, DDRCs were active as per the mandate. To support their working, one Joint Secretary was deputed in each affected district supervised directly by a designated Secretary from Kathmandu.

In addition, in each electoral area of the earthquake affected districts, one Search and Rescue (SAR) Command Post was set up, under the leadership of MoHA Joint Secretary sent from Kathmandu, comprising of a team of senior officials from the Nepal Army, the Nepal Police and the Armed Police Force to look after issues of debris management, corpse management, and distribution of relief materials and to take preventive measures to control outbreak of epidemic. This mechanism is yet to be assessed in terms of its effectiveness, overlaps of responsibility and conflict of interest with DDRCs. About 66,069 army personnel, 41,776 police personnel, and 24,775 APF personnel were mobilized under the SAR Command Post. As mentioned earlier, a team of senior government officers (from three different ministries led by MoHA) was deputed in the emergency warehouse at Tribhuvan International Airport for on-the-spot coordination in supply, distribution and delivery of relief materials.

Experiences from the Ongoing Recovery and Reconstruction

Since 19 May 2015, the Government decided to end the relief operations and transition towards recovery phase. Some of the salient issues of recovery phase have been drawn hereunder.

Establishment of National Reconstruction Authority. The National Reconstruction Authority (NRA), a coordinating and facilitating body formed by the Government of Nepal to manage, oversee and coordinate the reconstruction work was constituted on 25 December 2015, following the enactment of the NRA Act on 20 December. By law, its functions included assessing the damages caused by earthquakes, fixing the priorities of reconstruction, preparing policies, plans and programs, and facilitating implementation. It can carry out reconstruction, or ensure that it is done through different agencies, obtain land for reconstruction, and prepare plans for developing integrated settlements and for ensuring that reconstruction is carried out in keeping with safety standards.

The objectives of the NRA as articulated in the National Reconstruction and Rehabilitation Policy, among others, are to coordinate the work of, and collaborate with, non-governmental organizations, private sector or communities in order to reconstruct, retrofit and restore partially and completely damaged residential, community and government buildings and heritage sites; to make them disaster resistant using local technologies as needed; and to reconstruct (restore) damaged cities and ancient villages to their original form, while improving the resilience of the structures.

It is also empowered to raise financial resources for reconstruction and to make arrangements for its effective use. The Authority is responsible for carrying out technical reviews of damaged or unsafe physical structures and order safe demolition, where required. For all practical purposes, it is the one-stop institution to oversee, coordinate, and facilitate Nepal's efforts to build back better, promote national interest and provide social justice by facilitating resettlement and translocation of the persons and families displaced by the earthquake (adapted from the NRA Act) – that underpins the reconstruction policy.

Formulation of Post Disaster Recovery Frameworks. In May 2016, the NRA brought a new *Post Disaster Recovery Framework* (PDRF) (NRA 2016). The PDRF lays out strategic recovery objectives and summarizes institutional arrangements and financing strategies, as well as implementation and monitoring systems, to help plan and manage recovery and reconstruction. It also sets out sector priorities that will contribute to the achievement of the strategic recovery objectives. With the vision of "establishment of well-planned, resilient settlements and a prosperous society," the PDRF sets out the following strategic recovery objectives:

- Restore and improve disaster resilient housing, government buildings and cultural heritage, in rural areas and cities.
- Strengthen the capacity of people and communities to reduce their risk and vulnerability and to enhance social cohesion.
- Restore and improve access to services and improve environmental resilience.
- Develop and restore economic opportunities and livelihoods and re-establish productive sectors.
- Strengthen capacity and effectiveness of the state to respond to the people's needs and to effectively recover from future disasters.

Before this, the Government had endorsed the *National Reconstruction and Rehabilitation Policy* (NRRP), 2016. The NRRP provides policy instrument for steering reconstruction and rehabilitation and outlines organizational structure of the NRA and the implementation modality and approaches. These policies and guidelines clarify the roles and responsibilities of different institutions working on reconstruction and rehabilitation. The Advisory Council, Steering Committee and the Executive Committee of the NRA are now in place. The Council of Ministers has approved guidelines for the following interventions:

- Housing grant distribution
- Environmental impact assessment
- Land acquisition and land registration
- Public procurement
- Reconstruction regulation
- Land registration, and
- Working with non-governmental organizations.

The key elements of the NRRP are: (a) Reconstruction of housing and cultural heritage sites following a standard approach of owner-driven housing reconstruction. (b) Relocation and land use, although there is emphasis that most reconstruction will take place in-situ. Relocation of villages is discouraged. The policy addresses pooling and developing land, discouraging scattered settlements and promoting larger and integrated settlements. (c) Engaging the community (including affected vulnerable social groups, women, children, people with disabilities and senior citizens), private sector, volunteers and Diasporas in reconstruction. (d) Integrating principles of disaster risk reduction and build back better, for which use of local building materials is encouraged and safer designs and stronger infrastructure specifications have been put in place. (e) Linking financial assistance for housing recovery to the progress of construction.

Private House Reconstruction. Private house reconstruction is one of NRA's top priority areas. In two years after the devastating earthquake that destroyed over 765,000 houses, reconstruction of private houses has gathered little momentum. As of August 2017, 632,047 beneficiaries had signed the grant agreement and 603,072 of them had collected the first tranche whereas only 56,687 beneficiaries had received the second (Figure 3.1).

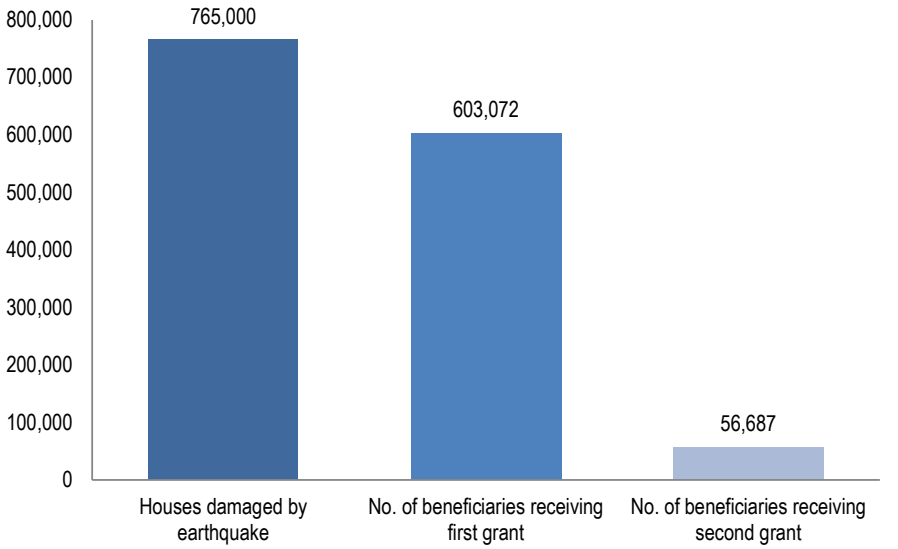

Figure 3.1: Ratio of beneficiaries receiving house reconstruction grants in 14 crisis-hit districts

(Source: NRA 2017, as of September 2017)

The current fiscal year 2017/18 is seen as the year of reconstruction. The target is to complete the reconstruction of private households and public infrastructures within the specified timeframe. To speed up the grant distribution procedures, the NRA has disbursed second and third installments in advance at the local level. In order to expedite the reconstruction of private houses the NRA has adopted the following principles:

- Devolution and allocation of reconstruction work among the newly elected local representatives in respective districts.
- To speed up the grant distribution process, necessary technical assistance to be disbursed in affected districts.
- Required technical and economic support to be provided to shift the vulnerable settlements to safer locations.
- Several programs on livelihoods to be continued, including agriculture, animal husbandry, irrigation, etc.

- NRs. 50,000 additional grant or technical support (or both) be made available to single women, Dalits, elderly and differently able-person to enable them to build earthquake resilient houses in compliance with the prescribed standards.

(A house under reconstruction in Tipling village, Dhading (Photo credit: Baliyo Ghar/NSET)

Relocation of Hazard-Prone Settlements. NRA has enforced a new procedure to make necessary arrangements for the beneficiaries and families of the hazard-prone settlements that have been affected by the earthquakes. The "Procedures for the Relocation and Rehabilitation of Hazard-prone Settlements, 2073 (2017)" has been enforced from 7 April 2017 as per the authority provided by Clause 31 of the "Reconstruction and Rehabilitation of Structures Affected by the Earthquakes Act, 2072". As per the new procedure, "hazard-prone settlement" refers to "… settlements or families residing in [areas] … identified as hazard-prone" by NRA based on official geological reports (NRA 2017a). A study conducted by NRA to identify vulnerable settlements after the 2015 earthquake recommended that a total of 2,751 families of 112 communities have to be relocated to safer places (NRA 2017b).

In such a case, the beneficiaries will be encouraged to create users' groups involving at least 10 families in each settlement so that the committee can select a safe location for the development of an integrated settlement. Then, the beneficiaries will be required to submit the land purchase certificate to NRA. The lands shall be integrated and the relocation and rehabilitation plan prepared, after which separate programs shall be implemented to gradually develop structures (NRA 2017a). The procedure also mentions gradual establishment of basic-needs structures like roads, drinking water supply, electricity, health centers and educational institutions for the integrated settlement.

Youth Volunteerism and Building Temporary Class Rooms in Kaski

Spontaneous and self-motivated volunteerism proliferated across the earthquake-hit districts immediately after the 2015 earthquake, initiated by young people on their own. As one of the best examples, voluntary mobilization of young people in Kaski district for school restoration work was exemplary in bringing people's life back to normalcy immediately after the earthquake. With this, the youths in Kaski proved that if responsibilities are given to them, they could perform any emergency activities in a very coordinated manner without any political, personal or financial interests and without asking the donors for any funds. (Box 3.1)

Box 3.1: Volunteerism

On 26 April 2015 (next day of the earthquake), both government officials (Regional Administrator, Chief District Officer, Chief Regional Police Office) and representatives of civil society, media representative and youth and women volunteers met together in Pokhara and decided to support government relief and rescue operation in a coordinated manner. One of the major decisions was to form "Citizen Support Committee for Disaster Management" (CSCDM) under the leadership of Mr. Bishnu Bahadur Bhattarai. To coordinate properly, the CSCDM formed four sub-committees: impact assessment, volunteer coordination, relief management, and monitoring and evaluation. The sub-committees held wider consultations with local political leaders, business houses, students, community level organizations, etc. and developed their plan for immediate restoration of normal life. Youth Volunteers Coordination Sub-Committee (YVCsc) was formed and entrusted with the task of mobilizing and coordinating local youths. In a week, the YVCsc organized a meeting with all like-minded volunteer clubs and local organizations in the district. The Chief District Officer, Local Development Officer, District Education Officer, head teachers of affected schools were also invited. The meeting decided to immediately start constructing temporary class rooms in all schools that were damaged by the earthquake.

Based on the assessment report provided by the Impact Assessment Sub-Committee, the YVCsc, immediately deployed a four member team to assess the damages in class rooms in various schools, and explored possibility of using locally available materials for the construction of temporary class rooms. Taking suggestions from District Education Office, District Development Committee and other related organizations, they developed and shared their plans to rebuild temporary class rooms, their locations, and design layouts with government and non-government stakeholders. They also developed a consensus on applying locally available materials, such as bamboo, bamboo net and tarpaulin, as per the need.

Within two weeks of the April 2015 earthquake, the YVCsc commenced construction of class rooms with support from local school teachers, parents and students. By the first week of Jestha, 2072, 50 percent of the targeted rebuilding of temporary class rooms was achieved and schools were able to resume classes. A total of 106 temporary class rooms in 32 schools were completed and classes resumed. A total of 750 volunteers from 45 organizations were mobilized under this initiative. Later, all these temporary class rooms were replaced by new and permanent class rooms. The YVCs were able to achieve this with funds generated locally and in many cases managed by the volunteers themselves. They did not request for funds from any of the donors.

Key Lessons Learned

Lessons Learned during the Relief Phase. Despite quick and swift initial response on the part of the Government, as time progressed, coordination and command issues became increasingly challenging. A huge influx of international humanitarian teams and the government coordination mechanism posed a conflict. Some of the lessons learned could be summed up as follows.

- Establishment of NEOC and EOCs network proved to be quite effective, particularly in the event of breakdown of communications system. It also served as the backbone of the main line of command and control.
- The NDRF developed in 2013 was implemented for the first time in 2015 Earthquake. This proved to be quite instrumental, along with the realization that it needs to be revised based on the lessons learned.
- The coordination mechanism envisaged by Natural Calamity Relief Act, 1982 proved to be insufficient. The Government of Nepal, driven by circumstances, took one decision after another on matters of effective coordination and oversight. This has to be reviewed and an appropriate and robust coordination framework has to be worked out.
- A robust, well tested and resilient information and communication system has to be maintained, and use of information and communication technology, social media and apps needs to be promoted that can be of use during and after emergency.
- A legally-binding and effective "one window framework" should be put in place beforehand in a way that does not undermine the sense of voluntarism and spontaneous humanitarian support initiatives. Trust, transparency and recognition of contribution have to be ensured. Since the 'one window framework' has been understood differently, the Government should endorse a guideline for the same.
- An integrated but separate national body of INSARAG-standard SAR needs to be immediately instituted drawing resources from the Nepal Army, the Armed Police Force and the Nepal Police.
- Arrival of international humanitarian response team should be need-based and smaller in size so that they do not create extra pressure on coordination, and the domestic SAR capacities are not undermined.
- Due to varied level of understanding of the local DRR entities, such as the DDRCs, there was also variation in effectiveness of institutional capacity to respond.

Lesson Learned from Recovery Phase. Despite good intentions, recovery and reconstruction have been very slow. Though unacceptable, the reconstruction process has been an endeavor of trial and error and is stuck in political and legislative delays and conflict of interests (NRA 2017b, p. 2).

- Despite a number of policy frameworks already in place before the 2015 Earthquake, and additional policy documents developed for and by NRA (Box 3.2), there is still a need to put in place a set of standard guidelines, operating procedures and systems, including strict implementation of building codes.

Box 3.2: Reconstruction related policy and legal frameworks

- Reconstruction and Rehabilitation Guidelines, 2072
- Private Housing Grant Distribution Procedure, 2072
- Environmental Impact Assessment Related Procedure, 2072
- Land Acquisition Related Procedures, 2072
- Land Registration Related Procedures, 2072
- Public Procurement Related Procedures, 2072
- Mobilization of NGO Sectors Related Procedures, 2072
- Post Disaster Recovery Framework, 2073
- Grievances Hearing Procedure, 2073
- Reconstruction Fund Mobilization Related Procedure, 2073
- Community Rebuilding Committee Related Procedure, 2073
- Private Housing Reconstruction Technical Inspection, 2073
- Training Procedure, 2073
- Training Strategies, 2073
- Reconstruction of Schools Procedure, 2073

(Source: NRA 2017b, p. 7)

- Management and mobilization of competent human resources is a major stumbling block that needs to be addressed.
- Coordination, collaboration and cooperation among governmental, non-governmental, private sectors, and the affected community remained a challenge. Observations show that in DDRCs, mechanisms that are better experienced at local level coordination and facilitation, are grossly bypassed in the reconstruction process.
- The PDRF identified the need for USD 9.3 billion for reconstruction. So far the pledged amount from international development partners stands at USD 4.3 billion. There is an evident resource gap (46.2 percent) to accomplish the task of complete reconstruction.

- In addition to resource gap, there is also a capacity gap of NRA in implementation. An overview of NRA's expenditure portfolio shows that a considerable size of capital fund has remained unspent over the last two consecutive financial years.
- Local NGOs and NRCS district chapters proved to be better district lead support agencies than INGOs since they are better versed with coordination, joint discussion and facilitation.
- Nepal's post-earthquake reconstruction did not succeed in maintaining the pace in building private houses also because there was a dearth of trained engineers willing to work in earthquake-hit districts. Those who were deployed by NRA to earthquake hit areas, were mostly engaged in certifying eligibility to get next installment of payment instead of facilitating the re-construction process.

Summary

This Chapter takes a relook at the 2015 Gorkha Earthquake and reviews follow up response and recovery activities. It also draws on learning from relief operations conducted immediately after the Earthquake, and on-going recovery and reconstruction work. It throws light on the inability of the prevailing coordination mechanism to keep up with the requirements of the relief operation and the main hurdles impeding momentum of response work. This was most evident in case of distribution of relief materials through the "one window policy" of the government, which underlines the necessity for developing legally binding guidelines and making it public beforehand in case of future disasters. The chapter also shares the lessons learnt both during the relief phase and the recovery phase.

CHAPTER 4
THE POST-2015 DRM REGULATORY FRAMEWORK IN NEPAL

The Constitution of Nepal, 2015

Nepal's current Constitution mentions disaster risk management in the country for the first time and it has clearly assigned DRM as a concurrent responsibility of different tiers of governments, particularly the local governments. Article 51 stipulates the policies to be pursued by the state. The sub-article G that relates to "policies relating to protection, promotion and use of natural resources," mentions that the state shall formulate policies on development of sustainable and reliable irrigation by controlling water-induced disasters and expediting river management.

Article 51(G) (9) of the Constitution states that the State shall pursue policies relating to, among several other issues, protection, promotion and use of natural resources. Sub-article 51(G)9 also allows Government to make policies related to "advance warning, preparedness, rescue, relief and rehabilitation in order to mitigate risks from natural disasters." Further, Article 267 of the Constitution gives the Government rights to mobilize the Nepal Army in DRM. The Constitution says, "The Government of Nepal may also mobilize the Nepal Army in, among other things, the disaster management works, as provided for in the Federal law."

Article 273 of the Constitution gives the President several emergency powers. Article 273 (2) says, "if there arises a grave emergency in a State because of a natural calamity or epidemic, the concerned state government may request the Government of Nepal to declare a state of emergency in respect of the whole of the State or of any specified part thereof."

The Constitution of Nepal has clearly stipulated that DRM is a shared responsibility of all levels of governments (Table 4.1). The Constitution states that natural and man-made disaster preparedness, rescue, relief and rehabilitation responsibility falls under the concurrent power/jurisdiction of federal and provincial government. Of the 22 tasks assigned to local level, DRM is one of them (Schedule 8). In the list of concurrent powers of federal, provincial and local level, DRM is put as one of the subjects (Schedule 9) – implying that DRM is a shared responsibility of every layer of governance system, but more so at the lower level.

Table 4.1: Constitutional provisions on DRM responsibility

Schedule	Subject of schedule	Provision related to DRM
Solo power		
5	Federal Powers/Jurisdiction	• Land use policy, housing development policy, tourism policy, environment adaptation (#29)
6	Provincial Powers/Jurisdiction	• Land management (#16) • Forest, water and environment mgmt. (#19)
8	Local Level Powers/Jurisdiction	• Disaster management (#20)
Concurrent power		
7	Federal and Provincial Powers/ Jurisdiction	• Natural and man-made disaster preparedness, rescue, relief and rehabilitation (#17)
9	Federation, Provincial and Local Level Powers/Jurisdiction	• Disaster management (#9)

Source: Constitution of Nepal, 2015.

The new Disaster Risk Reduction and Management Act, 2017

On 24 September 2017, the legislative-parliament unanimously passed a new "Disaster Risk Reduction and Management Act, 2017." In many respects, the Act is considered far progressive than the existing Natural Calamity Relief Act, 1982. First, its approach to disaster is more comprehensive and it recognizes both risk reduction and management as integral parts of the task. Second, instead of committee-based coordination mechanism, the Act has proposed a clear multi-tier institutional structure of DRM (at the national, provincial, district, local/municipal, and the community-based). Third, there is also a clear provision of Disaster Management Fund at the federal, provincial and local levels. Fourth, the law has given the security forces the responsibility of search and rescue under civilian command. Fifth, the Government of Nepal has the ultimate responsibility of declaring disaster emergency if circumstances so emerge.

The Act has developed two kinds of DRM structures: One with policy and administrative decision-making and supervisory roles (consisting mainly of Disaster Risk Reduction and Management National Council and Executive Committee), and the other with more implementation roles (consisting mainly of National Disaster Risk Reduction and Management Authority, and the provincial, district and local DMCs).

In tune with the federal structure of the country, the DRRM Act has envisaged a multi-tier DRRM structure, comprising of the NRA on top, followed by Provincial DM Committees, District DM Committees, and finally the Local DM Committees as the lowest units. There is also a provision for forming community-based Disaster Preparedness and Response Committees.

The DRRM Act, 2017 Act has replaced the earlier Natural Calamities (Relief) Act of 1982, which remained the blueprint for DRM in Nepal for about 35 years, with the aim of smooth implementation of relief and rescue initiatives under the leadership of MoHA, and. The 1982 Act had provisions of institutional coordination mechanisms required for DRM. However, despite two consecutive amendments in the Act, it still missed the provision of proactive risk reduction measures, such as mitigation, preparedness, and mainstreaming DRR in development.[1]

Other DRM Regulatory Frameworks

Apart from the provisions of the Natural Calamity (Relief) Act, 1982 disaster response planning and implementation has been steered by several Operational Guidelines and Action Plans such as National Action Plan on Disaster Management in Nepal (1996) and the Guidelines for distribution of relief materials to disaster affected people. The Tenth Five year Plan (2002 - 2007) and the subsequent Three Year Plans (2007-2010 and 2011-2013) had given due focus to mainstreaming DRM in sectoral plans of agriculture, water resources, health, housing, mines and geology, etc. directed by respective sectoral policies.

Existing legal framework comprises of the following:

Local Government Operation Act, 2017. The legislative-parliament recently passed the Local Government Operation Act, 2017 that outlines the roles and responsibilities of rural municipalities, municipalities, district councils/district coordination committees, and provincial coordination councils. This Act entrusts the local level units with the responsibilities of formulating their own laws, by-laws, regulations; levying taxes; and raising funds, in addition to the judiciary responsibilities.

The Local Government Operation Act, 2017 defines the following disaster management responsibilities under the jurisdiction of urban and rural municipalities:

- DRM related local policy, law, guideline and implementation, oversight and monitoring of plan.
- Local level disaster preparedness and response plan, early warning, SAR and prepositioning and distribution of relief materials and coordination.
- Local river embankment, landslide control, and management and control of rivers.
- Mapping of disaster risk area and identification of settlements at risk and relocation.
- Support, coordination and cooperation between and among federal, provincial and local communities and institutions and private sector.

1 It is after the declaration of the International Decade for Natural Disaster Reduction (1990-1999) that both the government and non-government agencies started to emphasize preparedness and mitigation activities in Nepal.

- Establishment of Disaster Management Fund, operation and resource mobilization.
- Formulation, implementation, monitoring and oversight of local level projects on DRM.
- Local level DIMS, research and assessments.
- Emergency operation system at local level.
- Operation of community-based DRM programs.
- Other functions related to disaster management.

This new Act replaces the Local Self Governance Act, 1999 that helped institutionalize the concept of local-self-governance under decentralization framework and empowered the local bodies for managing environment-friendly resilient development.

National DRR Policy and Action Plan, 2017-2030. The Ministry of Home Affairs has led the process of formulating National DRR Policy and Strategic Action Plan, which will replace the National Strategy on Disaster Risk Management, 2009 (NSDRM). Whereas the NSDRM was developed in tune with Hyogo Framework for Action (HFA), the NDRR Policy, 2017-2030 follows the SFDRR priorities with a vision to make Nepal a safer and resilient nation by 2030. Aligned with the global SFDRR targets, it aims to substantially reduce death rates and size of the population affected by disasters and enhance resilience of important infrastructures and basic services including livelihoods, agriculture, industry, road, communication, water and sanitation, health and education, in order to reduce their loss and damage by disasters.

National Disaster Response Framework, 2013. The Government of Nepal endorsed the National Disaster Response Framework (NDRF) in 2013 with a view "to guide more effective and coordinated national response in case of a large scale disaster." Its scope of work includes: a) the response preparedness and emergency response at national, regional, district and local levels, and b) actions to be taken immediately before, during and after the disaster directly to save lives and property, maintain law and order, take care of sick, injured and vulnerable people, and to provide essential services and to protect public property.

The NDRF, 2013 clearly lays down the role of the government after a major disaster strikes and the attributes of an effective coordination to be maintained through humanitarian clusters and with international teams, donors. It also explains the special arrangements to be made for national response during emergencies and the roles that various organizations would perform from hour zero of the incident till a month after. The government has planned to revise the NDRF, 2013 to make it more pragmatic based on the 2015 earthquake response experiences.

Existing DRM Institutions and Mandates:

There are a number of institutions that have roles to play in disaster risk reduction and management in Nepal. A summary of their profiles is given below:

Office of the Prime Minister and Council of Ministers. The Office of the Prime Minister and the Council of Ministers provides policy directions and overview to implementation of response activities during major disasters including declaration of emergencies. It further ensures transfer of necessary resources from government's relief fund and mobilization of other sources of funds required for making rescue and relief operations effective. Post-earthquake, it has played a key role in supervising NRA and providing overview to recovery and reconstruction work.

Ministry of Home Affairs (MoHA) is the focal ministry for disaster risk management in Nepal and has played a lead role in post disaster response, particularly managing rescue and relief operations, through mobilization of security forces and other humanitarian actors, coordinated by Disaster Relief Committees at central, regional, district and local levels. The new DRRM Act, 2017 has envisioned a National DRRM Authority to be established within MoHA.

Ministry of Federal Affairs and Local Development (MoFALD) plays a critical role in enhancing technical and functional capacities of the local bodies for mainstreaming disaster risk reduction into periodic development plans and control of fire. It developed several Guidelines and Manuals to support the local bodies to prepare harmonized DRM plan in consistence with the 14-step Planning Guidelines. It has also played a key role in post-disaster response and recovery as a member of District Disaster Relief Committee.

National Planning Commission (NPC) plays a lead role in mainstreaming CCA and DRR into national policies and plans (periodic and annual plans) and ensures conformity of DRR policies with other national and sectoral policies. It also guides the sectoral ministries in preparing risk-resilient development plans and has recently drafted a mainstreaming guideline for them. Post-earthquake, it was instrumental in finalizing post disaster need assessment, developing policies for resilient recovery and reconstruction, mobilizing resources and setting up the National Reconstruction Authority (NRA).

Water and Energy Commission (WECS) plays an important role in conducting empirical studies on rivers and streams and developing policies and plans for sustainable management of water resources in the long run at river-basin and sub-basin levels. While developing such plans, attention is given to identify current and future risks from water induced disasters, and measures to minimize the risks during implementation.

Central Natural Disaster Relief Committee (CNDRC), comprising of 27 members chaired by the Minister for Home Affairs, is the highest operational body mandated for effective and efficient relief and ensuring coordination between government and non-government agencies as stipulated in the Natural Calamities (Relief) Act, 1982. The Committee holds at least two meetings annually, or as necessary, to manage challenges posed by any disaster at any time. The existence of CNDRC will soon be over with the enactment of the new DRRM Act, 2017.

Ministry of Irrigation through Department of Water Induced Disaster Management is mandated for formulating and implementing policy on water induced disaster management, flood management and river training. Likewise, the Ministry also works on minimizing future disaster risk during construction of new irrigation schemes or maintenance of existing ones.

Ministry of Education (MoE) is mandated for developing education curricula and raising technical capacity on DRM within MoE. In addition, in coordination with Department of Urban Development and Building Construction (DUDBC) under Ministry of Urban Development (MoUD) it has prepared earthquake resistant building construction Guidelines for schools and raised awareness programs on earthquake safety and resilient building construction for the teachers, students and school management committees.

Ministry of Urban Development is mandated with making settlements more resilient to natural and human-made disaster risks. MoUD has been putting considerable efforts into implementation of integrated policies and plans towards inclusion, resource efficiency, mitigation and resilience to disasters while planning settlements and cities. The ministry's key priorities are the implementation of risk sensitive land use planning and enforcement of building code for resilient construction in Nepal in the context of diverse ecological setting, which is prone to disasters of various kinds. Ministry coordinates and provides necessary guidance to the DUDBC for its effective and efficient technical support to implement risk informed policy & plan.

Other ministries working on DRM include:

- Ministry of Forests and Soil Conservation (MoFSC)
- Ministry of Environment (MoEn)
- Ministry of Science and Technology and Environment (MoSTE)
- Ministry of Health and Population (MoHP)
- Ministry of Industries (MoI)
- Ministry of Agriculture Development (MoAD)
- Ministry of Water Resources (MoWRs)

DRM Priorities under Current 14th Development Plan

The current 14th five-year development plan (2016-2020) accords priority to minimize impacts from water-induced disasters (NPC 2016, pp. 84-87) on human lives, properties and physical infrastructure. It prioritizes river embankment programmes for control of floods and landslides, and minimizes the impacts of inundation. The Plan also prioritizes disaster risk management due to environment degradation and climate change (pp. 252-261).

Summary

This chapter mainly draws on existing institutional and policy framework with regard to DRM in Nepal, namely the 2015 Constitution of Nepal, the Local Government Operation Act, 2017 the Disaster Risk Reduction and Management Act, 2017 and the draft DRR Policy and Strategic Action Plan. Since the time of the 10th Plan (2002-2007) Nepal's periodic development plans have consistently mentioned DRM priorities. However, without a clear understanding about how DRM is linked to development, the respective sectoral plans could not be specific to DRR priorities. The new DRM Act, the draft National DRR Policy and Strategic Action Plan and the draft Mainstreaming Guideline provide systematic guidance on making effective disaster response, risk reduction, mitigation and recovery.

CHAPTER 5
FROM HFA TO SFDRR: CARVING THE ROAD AHEAD

Nepal's Response to Yokohama Strategy

During the International Decade for Natural Disaster Reduction, 1990-2000, the World Conference on Natural Disaster Reduction was organized in Yokohama, Japan on 23-27 May 1994. The Conference adopted the Yokohama Strategy and the related Plan of Action for a Safer World for the rest of the decade and beyond. The Yokohama Plan of Action promised to promote and strengthen international cooperation to prevent, reduce and mitigate natural and other disasters with particular emphasis on (a) human and institutional capacity building and strengthening, (b) technology sharing, the collection, the dissemination and the utilization of information, and (c) mobilization of resources (UN Department of Humanitarian Affairs 1994).

In response to the Yokohama Plan of Action, Nepal constituted the IDNDR National Committee, which prepared the National Action Plan on Disaster Management in Nepal, adopted by the Government in 1996 (MoHA 1996). Primarily in the form of a matrix, this Plan of Action gave an outline of preparedness, response, reconstruction and rehabilitation, and mitigation with stipulated priority activities, time of completion and roles assigned to implementing agencies. The Action Plan also constituted an M&E committee in order to monitor the implementation, which, however, remained weak.

HFA (2005-2015) Achievements

The World Conference on Disaster Reduction was held from 18 to 22 January 2005 in Kobe, Hyogo, Japan, which adopted the HFA, 2005-2015. The Conference provided an opportunity to promote a strategic and systematic approach to reducing vulnerabilities and risks. It underscored the need for building the resilience of nations and communities to disasters (UNISDR 2005).

The scope of HFA, according to UN Office for Disaster Risk Reduction, encompassed disasters caused by hazards of natural origin and related environmental and technological hazards and risks

(UNISDR 2005). It thus lent a holistic and multi-hazard approach to DRM and the way in which it can have a significant impact on social, economic, cultural and environmental systems, as stressed in the Yokohama Strategy.

HFA Priorities for action were to (a) ensure that disaster risk reduction is a national and a local priority with a strong institutional basis for implementation, (b) identify, assess and monitor disaster risks and enhance early warning, (c) use knowledge, innovation and education to build a culture of safety and resilience, (d) reduce the underlying risk factors, and (e) strengthen disaster preparedness for effective response at all levels (UNISDR 2005).

Nepal's performance in translating HFA's commitments into reality achieved mixed success (MoHA 2015, UNDP Nepal 2015). The progress and achievements also remained uneven in Nepal – as evidenced in the national progress reports submitted to the UN on the implementation of the HFA (2009-2011, 2011-2013, and 2013-2015).

The final report submitted to the UN, entitled "National Progress Report on the Implementation of the Hyogo Framework for Action" (MoHA 2015) and an independent assessment of DRM integration into development plans (UNDP Nepal 2015) show that though there are a few achievements, there is tremendous scope for improvement. The Government of Nepal directed the local authorities to allocate 5 percent of local budget for DRM. A consolidated guideline and plan for mainstreaming DRR into development is under making. Nepal utilized the National Adaptation Programme of Action (NAPA) and the Local Adaptation Plan of Action (LAPA) to mitigate some key climate risks and mainstream climate change adaptation into development planning at the national, regional and local levels.

Strengthening policy and institutional framework remained largely unachieved. The most awaited Disaster Management Act could not be endorsed during the review period. The NRRC Flagship Programmes (now phased out) contributed to ensure risk reduction efforts aligned with NSDRM.

Box 5.1: Nepal's key policy response to HFA

- Adoption of the cluster approach (2008 onward)
- National Strategy for Disaster Risk Reduction (NSDRM), 2009
- District Disaster Preparedness Response Plan, 2011
- Local DRM Plan Guideline, 2012
- National Disaster Response Framework (NDRF), 2013
- Post-Disaster Recovery Framework (PDRF), 2016.

During HFA period, in the absence of a high level dedicated national DRR institution, disaster preparedness activities were mainly executed by MoHA while actions on DRR mainstreaming, recovery planning, seismic resilience building and disaster mitigation were carried out by other agencies in coordination of MoHA.

A high level Climate Change Council, formed under the chairmanship of the Prime Minister to support inter-sectoral coordination on climate change actions, could not be very effective. Now that a new DRRM Act has been endorsed, a new DRR institution at national level linked to provincial, district and local level set ups, is soon expected to be set up.

MoFALD in collaboration with IFRC developed a set of criteria to define 'community resilience' and used this as a standardized tool to gauge resilience level of the community. Information obtained through this was further used to identify capacity gaps of the community and design interventions to mitigate those gaps. Using this approach over 635 VDCs and municipalities (a quarter of the population) were reached. In addition, MoFALD supported 58 municipalities in equipping them with fire brigade services and was instrumental in founding crops and livestock insurance system. During this period, national and district level land use mapping was completed, including that of 254 VDCs and Early Warning System (EWS) was set up in seven major river basins. However, the approval of 'Early Warning Strategic Action Plan' to guide installation, operation and maintenance of EWS throughout the country remained pending and local capacities for multi-hazard risk assessment could not be built.

National capacities for emergency preparedness and response were enhanced during the review period through the establishment of NEOC in Kathmandu and expansion of a network of EOC throughout the country that included 5 in regions, 49 in districts and 1 in municipality. The EOCs are now equipped with 24/7 communication system and Standard operation procedure (SOP) to work under emergency and have played a key role in conducting simulation exercises in many districts. A tailor made SAHANA System for managing disaster information was introduced within MoHA which is yet to be fully institutionalized and made operational.

During the review period, 12 warehouses were established in strategic locations with the support of Nepal Red Cross Society, with a capacity to support a maximum of 36,000 families. This was far lower than the agreed goal of establishing a network of warehouses across the country with adequate food supply. Further, the Government identified and secured 83 safe open spaces for emergency response within Kathmandu Valley to serve as hubs for response efforts during a large-scale disaster.

A nationally owned humanitarian cluster system approach has been very effective as a primary response mechanism for making immediate response and providing early recovery support. A total of 11 humanitarian clusters, each representing members from government, non-government, donors and UN Agencies, has been set up for providing humanitarian assistance in the aftermath of a disaster. Each of the clusters are further engaged in developing early recovery plans which are integrated with cluster specific response plans. The *National Disaster Response Framework*

(NDRF) served as a key tool for coordination of 2015 earthquake response and facilitated timely decision making and flow of information from Kathmandu to the districts.

To respond to the recovery and reconstruction needs of post 2015 Earthquake, the National Reconstruction Authority (NRA) was established on 25 December 2015 (2072) for five years, to lead and manage the recovery and reconstruction of damaged houses and infrastructure. Under the guidance of Post-Disaster Recovery Framework (PDRF) (2016-2020) the NRA aims to complete the entire reconstruction work within five years' time based on the principles of Build Back Better in coordination with development partners.

Sendai Framework for Disaster Risk Reduction

The Sendai Framework aims at achieving "substantial reduction of disaster risk and losses in lives, livelihoods and health and in the economic, physical, social, cultural and environmental assets of persons, businesses, communities and countries" by 2030. This expected outcome would be monitored through indicators against seven targets. The seven targets aim to contribute to reducing (a) mortality, (b) number of affected people, (c) economic losses, and (d) damage to critical infrastructure; and in increasing (e) the number of national and local DRR strategies, (f) level of international cooperation, and (g) availability of and access to multi-hazard early warning systems and disaster risk information.

The four Priorities Areas of SFDRR are explained below in a given context:

Understanding disaster risk. The primary focus of understanding disaster risk is to conduct periodic disaster risk assessments and disseminate risk information to the policy makers and other actors working on disaster risk reduction planning. For this, a comprehensive and robust disaster information management system capable of generating updated information on disaster loss and damage and anticipated disaster risks is a must. This should be followed by a mechanism of regular information dissemination about nature and characteristics of hazards, exposure and vulnerability to help risk-informed development.

Nepal's current status. Nepal has a system of collecting data on past disaster occurrences and loss and damage but the system has a lot of inadequacies. Disaster data are collected, compiled and maintained by MoHA in an online DRR Portal outside the SAHANA System, which was introduced as the main element of a functional DIMS. Due to limited institutional capacity to relate disaster information with development planning, setting up of a DIMS did not ever get priority over the core business of MoHA and existing SAHANA System was not utilized to its full potential. Loss and damage data are not linked to hazard and socio-economic data or connected to geospatial

and physiographic data. A system of conducting periodic risk assessment does not exist. Limited capability for analysis of available data, leads to poor understanding of current and future trends of disasters and its potential impacts on development, and undermines the opportunity of timely informing the policy makers about the risks. National capacity gaps in understanding disasters are further widened by lack of a committed DRR training institute.

Strengthening disaster risk governance to manage disaster risk. Progress on disaster risk reduction depends upon how disaster risk management priorities are integrated into existing governance system of a country at national and sub-national or even local levels with respect to planning, implementation and monitoring of development results. A separate system for delivering results on disaster risk reduction - reducing loss and damage caused by disasters and avoidance of creating new risks - outside the prevailing governance mechanism, can neither be effective nor long lasting. Only through a risk-informed governance system, integration of disaster risk reduction priorities into national and sectoral plans and budgets can be ensured.

Nepal's current status. Despite Nepal having observed notable success in formulating disaster management law and regulations in the past as compared to many other countries, it remains far behind in bringing up needed timely reforms, which heavily push Nepal's risk management approach backward and make it primarily response-centric. The NSDRM (2009) made an effort to transform Nepal's response-focused disaster management approach to a more comprehensive and proactive risk reduction approach, but it could not succeed much due to lack of a progressive DRM law and a dedicated national DRM institution. Despite the NSDRM having made clear mention of gender sensitivity and social inclusion issues in its directive principle the actual implementation could not prioritize inclusive DRRM. As a result, disaster risk reduction, response and recovery did not get adequate attention in national planning and the actions were predominantly influenced by ad-hoc way of responding to the needs.

Promulgation of NDRF (2013), the new DRM Law (2017) and finalization of long-term national DRR policy and strategic action plan aligned to SFDRR priorities, demonstrate strong commitment of the government for building resilience to disasters by establishing a system of risk-governance at all levels. A new institutional architecture being worked out by the Government as per the provisions of the new DRM Law is expected to institute risk-governance in each three tiers of the government set up under the new federal structure.

Disaster preparedness for effective response and 'build back better.' Being prepared for disasters and making effective response requires having knowledge and capacities to effectively anticipate, respond to, and recover from the impacts of disasters. Capacities are needed to manage all types of emergencies and for transitioning from response phase to recovery. Effective response

to disasters is based on sound preparedness guided by risk analysis and effective early warnings. Capabilities for contingency and evacuation planning, stockpiling of emergency equipment and supplies, conducting simulation exercises and coordination and communication system during emergency are most needed. This must be further supported by formal institutional, legal and budgetary capacities.

Nepal's current status. Nepal's capacities for responding to small scale disaster has developed fairly well over the past few years mainly for flood hazards. Guided by a number of policies, guidelines, manuals and regulatory provisions related to disaster response, past work on early warning, developing contingency plans, conducting relief operations and emergency management has been relatively successful despite some capacity gaps with respect to trained human resources and equipment on SAR within security forces (including Nepal Army, Armed Police Force, and Nepal Police) and abilities to make gender responsive disaster response.

National capacities required to respond to medium to large disasters across the country need to be augmented through a pool of dedicated Light and Medium SAR Teams and community-based first responders deployed at strategic locations and provisions of adequate equipment and infrastructure for SAR training and operations.

Nepal's capacities for recovery from disaster is largely constrained by overlapping institutional mandates and post-disaster recovery not given due attention. Before 2015, process of drafting a national recovery framework had advanced to the extent of clarifying roles and responsibilities of different institutions during recovery. However, the process could not be completed and only after the devastating Earthquake of 2015 the concept of resilient recovery and reconstruction gained momentum. To facilitate expedited recovery and reconstruction of damaged houses, infrastructure and livelihood by the earthquake, the Government promulgated a National Reconstruction Act (2015) that led to setting up of the National Reconstruction Authority and formulated Reconstruction and Rehabilitation Policy and Post Disaster Recovery Framework (PDRF) in 2016. Current post earthquake on-going recovery and reconstruction is guided by these policies. The new DRM Act (2017) has emphasized on recovery from disasters at par with disaster risk reduction and response.

Investing in disaster risk reduction for resilience. Disaster risk reduction approaches often face severe setbacks due to lack of sufficient budget allocations from regular funding sources. Public and private investments in DRR for implementing both structural and non-structural measures to enhance the economic, social, health and cultural resilience of people, community and the society are essential. Investments in applying such DRR measures not only support innovation, growth and job creation but also contribute to saving lives, preventing and reducing losses and ensuring effective recovery and rehabilitation.

Nepal's current status. Nepal's investment in DRM has been mostly unpredictable and lopsided in favor of post disaster relief guided by the decisions of CNDRC. Approaches of DRR mainstreaming into national and sectoral plans and budgets based on periodic risk assessments and provisions of risk sensitive land-use plans are not yet institutionalized, which hinders investing for risk reduction, mitigation and resilience building through regular channels. Bringing private investments for risk reduction is at an experimental stage in Nepal. However, the mandatory provisions of Nepal Rastra Bank which is applicable to banking and financing institutions for approval of construction loans only for code complaint building designs, has created positive incentives for encouraging seismic resilience. There is a growing opportunity to invest for risk transfer through a viable insurance mechanism that would finally trigger building safety nets and protecting loss and damage to individual assets and community infrastructure.

Other International Frameworks and Commitments

The Asian Ministerial Conference on Disaster Risk Reduction (AMCDRR). After the advent of the Sendai Framework, the first Asian Ministerial Conference for Disaster Risk Reduction (AMSDRR) was organized in India in November 2016. As a follow-up of the 6th Asian Ministerial Conference outcome (2014) and as a requirement of the Sendai Framework, the AMCDRR conference concluded with the adoption of the New Delhi Declaration; the Asia Regional Plan for Implementation of the Sendai Framework together with a ten point Voluntary Commitment Action Statements.

Box 5.2 : Key milestones of the AMCDRR roadmap by 2018

1. Technical guidance by UNISDR to national indicators is finalized with a link to SDG targets and indicators.
2. 50 percent of countries have prepared a design to establish a national mechanism to collect, analyze and disseminate information on disaster losses and risk aiming to achieve appropriate level of disaggregation for gender, age and disability.
3. 40 percent of countries have revised/ developed their national strategies and/ or plans for disaster risk reduction in line with the Sendai target (e).
4. 50 percent of countries have reviewed their initial progress in implementation of the Sendai Framework through the Sendai Monitor.
5. 40 percent of countries have established multi-sectoral and multi-stakeholder platforms at national and local levels to foster dialogue and cooperation between governments, science and technology community and other stakeholders for risk-sensitive development and innovative risk management.
6. 10 percent of countries have developed regulatory or policy frameworks to reinforce risk considerations and risk reduction measures into development initiatives, particularly in the infrastructure sector (Source: AMCDRR, 2016, p. 6).

AMCDRR provides, first, broad policy direction to guide the implementation of the Sendai Framework in the context of the 2030 sustainable development agendas in the region. Second, it also provides a long term road map, spanning the 15-year horizon of the Sendai Framework. This outlines a chronological pathway for implementation of priorities to achieve seven global targets. And finally, it provides a two-year action plan with specific activities that are prioritized based on the long term road map and in line with the policy direction (for milestone activities by 2018 Box 5.2).

The Paris Agreement. On 12 December 2015, the 1992 Parties to the UN Framework Convention on Climate Change (UNFCCC) adopted the Paris Agreement, and a new legally-binding framework for an internationally coordinated effort to tackle climate change (Climate Focus, 2015). The Paris Agreement's central aim is to strengthen the global response to the threat of climate change by keeping a global temperature rise for this century below 2 degrees Celsius and to pursue efforts to limit the temperature increase even further to 1.5 degrees Celsius.

Additionally, the agreement aims to strengthen the ability of countries to deal with the impacts of climate change. To reach these goals, appropriate financial flows, a new technology framework, and an enhanced capacity building framework are being put in place. This will support action by developing countries and the most vulnerable countries, in line with their own national objectives (Box 5.3).

The Paris Agreement defines a universal, legal framework to "strengthen the global response to the threat of climate change" (Art. 2). It establishes the obligation of all Parties to contribute to climate

Box 5.3: The pre-2020 action of the Paris Agreement

The decision calls for enhanced action prior to 2020. This can be summarized in the following categories:

Mitigation: Parties are urged to ratify and implement the second commitment period to the Kyoto Protocol up to 2020, to make and implement a mitigation pledge, and improve ensuring and reporting processes. Parties resolve to strengthen the existing technical examination process on mitigation, which means increased cooperation with non-country stakeholders, increased consultations and dissemination of results.

Adaptation: Parties have decided to launch a technical examination on adaptation, which will function in a similar manner to the technical examination on mitigation, focusing on lesson sharing and identifying opportunities for implementation and cooperative action.

Finance: The COP decision 'strongly urges' developed countries to scale up their levels of financial support with a concrete plan to reach the USD 100 billion target by 2020. The Decision singles out adaptation finance as an area, which needs a significant increase of finance from current levels.

(Source: Climate Focus 2015)

change mitigation and adaptation. It requires that all countries develop plans delineating ways to contribute to climate change mitigation, and commit their "nationally determined contributions" (NDCs). The Paris Agreement is unique compared to any other international agreements as it puts emphasis on nationally owned processes to define the mitigation goals and on setting up mechanisms to monitor and report on progress and establishes a framework for cooperative action on climate change beyond 2020. It further aims at enhancing "adaptive capacity, strengthening resilience and reducing vulnerability to climate change" through cooperation between the countries.

Nepal ratified the Paris Agreement on climate change on 4 October 2016 and since then it has been actively engaged in implementation processes led by UNFCCC. Nepal submitted its first NDC in 2015 and is currently developing National Adaptation Plan (NAP) that would help address medium and long-term adaptation needs and reduce climate vulnerabilities through a sectoral approach. Nepal has put climate change adaptation at the centre of its development plans and policies and has successfully piloted community adaptation programmes through implementation of Environment-Friendly Local Governance (EFLG) Framework and Local Adaptation Plan of Action (LAPA) in collaboration with the local government authorities.

The Sustainable Development Goals. The 17 Sustainable Development Goals (SDGs) adopted by the world leaders in September 2015 at the UN Global Summit officially came into force on 1 January 2016. Over the next fifteen years countries will mobilize efforts to end all forms of poverty, fight inequalities and tackle climate change (UN Sustainable Development Homepage, UN, 2017). The SDGs built on the success and challenges of the Millennium Development Goals (MDGs) aim to go further to end all forms of poverty (NPC, 2017a). Although, the SDGs are not legally binding, governments are expected to take ownership and establish national frameworks for the achievement of the 17 Goals. Six of the 17 Goals are directly related to disaster risk, climate change risk and resilience (Table 5.1). A reflection paper prepared by the UN Office for Disaster Risk Reduction identifies 25 SDG targets related to DRR (captured in 10 of the 17 SDGs), firmly establishing the role of DRR as a core development priority of the SDGs (UNISDR, 2015).

Table 5.1: Disaster risk, climate change risk and resilience issues embraced by SDGs

Goals	Targets
Goal 1. End poverty in all its forms everywhere	By 2030, build the resilience of the poor and those in vulnerable situations and reduce their exposure and vulnerability to climate-related extreme events and other shocks and disasters (1.5)
Goal 2. End hunger, achieve food security and improved nutrition and promote sustainable agriculture	By 2030, ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters and that progressively improve land and soil quality (2.4)
Goal 9. Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation	Develop quality, reliable, sustainable and resilient infrastructure, including regional and trans-border infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all (9.1)
	Facilitate sustainable and resilient infrastructure development in developing countries through enhanced financial, technological and technical support to African countries, least developed countries, landlocked developing countries and small island developing States (9.a)
Goal 11. Make cities and human settlements inclusive, safe, resilient and sustainable	By 2030, ensure access for all to adequate, safe and affordable housing and basic services and upgrade slums (11.1)
	By 2030, enhance inclusive and sustainable urbanization and capacity for participatory, integrated and sustainable human settlement planning and management in all countries (11.3)
	By 2030, significantly reduce the number of deaths and the number of people affected and substantially decrease the direct economic losses relative to global gross domestic product caused by disasters, including water-related disasters, with a focus on protecting the poor and people in vulnerable situations (11.5)
	By 2020, substantially increase the number of cities and human settlements adopting and implementing integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change, resilience to disasters, and develop and implement, in line with the Sendai Framework for DRR 2015-2030, holistic DRM at all levels (11.b)
	Support least developed countries, including through financial and technical assistance, in building sustainable and resilient buildings utilizing local materials (11.c)
Goal 12. Ensure sustainable consumption and production patterns	12.8 By 2030, ensure that people everywhere have the relevant information and awareness for sustainable development and lifestyles in harmony with nature (12.8)
Goal 13. Take urgent action to combat climate change and its impacts	Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries (13.1)

Source: UNSD (2017)

The Government of Nepal has shown strong commitment to implementation of SDGs by publishing a national SDG report (SDGs 2016-2030)[1] in 2015 and a Baseline Report in 2017 which includes national baseline, targets and indicators against the global ones as well as analysis of policy and institutional context and challenges in achievements of each of the SDGs. Starting from the 14th 5-year development plan, the Government is all set to use the national SDG result framework to prepare consecutive periodic development plans till 2030. The SDG targets and indicators are well harmonized with Sendai targets and indicators, and conforms to integration of climate change adaptation and DRR into development.

The Addis Ababa Action Agenda. The Addis Ababa Action Agenda (AAAA), adopted at the Third International Conference on Financing for Development (Addis Ababa, Ethiopia, July 2015) and endorsed by the General Assembly in its resolution 69/313 of 27 July 2015, is a new global framework for financing sustainable development that aligns all financing flows and policies with economic, social and environmental priorities and ensures that financing is stable and sustainable. The Action Agenda draws upon all sources of finance, technology and innovation, promotes trade and debt sustainability, harnesses data and addresses systemic issues. The Action Agenda provides a comprehensive set of policy actions by Member States, with a package of over 100 concrete measures to finance sustainable development, transform the global economy and achieve the Sustainable Development Goals.

Global Platform for Disaster Risk Reduction, Cancun, Mexico. The Global Platform for Disaster Risk Reduction (Global Platform), as recognized by the UN General Assembly, is the main forum at the global level for strategic advice, coordination, partnership development and review of progress in the implementation of international instruments on disaster risk reduction. The 2017 Global Platform for Disaster Risk Reduction was held in Cancun, Mexico from 22-26 May, 2017. Nepal presented a National Position Paper in the Global Platform meeting covering Nepal's disaster profile, experiences and lessons learned from the 2015 Earthquake, updates on recovery initiatives, future challenges in resilience building and a way forward.

Led by MoHA and coined with Global Platform, a National Platform for DRR has been in operation in Nepal for quite some time. The National Platform plays an important role in bringing government and non-government actors together to discuss DRR related policy and institutional issues and make recommendations to help decision making.

The New Urban Agenda 2016: Ministry of Urban Development (MoUD) formulated and endorsed

1 This made Nepal the first country in the world (UN, 2017) to publish its SDG country report and represents Nepal's commitment and readiness to execute the SDGs.

the National Urban Development Strategy (NUDS) 2017 for the next 15 years. This would adopt the new urban agenda 2016 on Housing and Sustainable Urban Development (Habitat III) declared in Quito, Ecuador, on 20 October 2016 by 167 participating countries including Nepal. NUDS aims to addresses critical issues related to urban development sectors such as system, infrastructure, environment and economy and also indicates the social, economic and cultural vision of urban areas reflecting the highest values of society. NUDS deals with mechanisms vital for realizing the desirable condition of the four development sectors, namely investment, finance, governance and land management. With a vision of balanced and prosperous national urban system, the strategy provides desirable conditions considering the changes in urban landscape and introduction of federal system in the country.

Summary

The chapter highlights Nepal's key achievements during HFA period and future challenges in working on SFDRR priority areas. It also analyzes other international instruments such as SDGs and Paris Agreement for their complementarity to SFDRR and how Nepal positions and prepares for benefiting from those instruments to augment resilience building at all levels. The Sendai Framework's primary focus is on risk reduction and resilience, which is a common element of the 2030 development agenda, the SDGs, and other instruments such as the Addis Ababa Action Agenda on Financing for Development and the Paris Agreement on Climate Change.

CHAPTER 6
KEY CHALLENGES AND PRIORITIES AHEAD

Enabling Environment

Nepal's long term vision to make Nepal a safer and resilient nation by 2030 is well reflected in the draft "National DRR Policy & Strategic Action Plan for Nepal" (2017-2030) which is aligned with four priority areas of SFDRR: a) understanding disaster risk, b) strengthening disaster risk governance to manage disaster risk, c) investing in disaster risk reduction for resilience and d) enhancing disaster preparedness for effective response and to "Build Back Better" in recovery, rehabilitation and reconstruction. The Action Plan further identifies baselines and targets under the above four priority areas for five key sectors, viz., productive, social, infrastructure, environment and natural resources, and gender and social inclusion.

The Constitution of Nepal has emphasized on building resilience from disasters as key function of the government and identified concurrent functions of the three-tier government whereas the local governments are made directly accountable for responding to disasters. The new DRM Act serves as a tool to translate Nepal's vision of 'resilience building' into reality as per the constitutional provisions.

Anticipated Challenges

Among others, **effective Implementation of the New DRRM Act, understanding risk from a development perspective and capacity gaps at local level** are considered as major challenges in achieving the SFDRR targets by end of 2030.

- Regulatory provisions needed to bring the new DRRM Act into full force are still to be developed along with the establishment of new institutional arrangements for DRR at both national and sub-national levels as envisioned by the Act.
- Isolated actions on resilience building and DRR cannot be sustained in the long run unless embedded with the prevailing governance system responsible for development planning,

implementation and monitoring. Moreover, work on DRR without predictable financing commitments from the government sets the realization of national imperatives back.

- Though the newly promulgated Local Government Operation Act and the new DRRM Act devolve powers to the local governments (7 provincial and 753 municipal) for reducing and managing disaster risks, they are not yet ready to take that responsibility as they experience huge capacity gaps under current conditions.
- Integration of climate adaptation and risk reduction approaches, from policy to practice, largely suffers from very weak coordination between the agencies primarily responsible for dealing with these issues. Working with the three tiers of government under new federal system on different frameworks such as SFDRR and SDGs without an agreed institutional convergence at each level is going to be further challenging.

Key Priority Actions Ahead

Creating an effective institutional set up as provisioned under the new Disaster Risk Reduction and Management Act, 2017. Though MoHA has been working as the nodal government agency for DRM in Nepal under the mandates of Natural Calamity Relief Act, 1982. Nevertheless, by virtue of its core functions and prime mandates, the ministry is primarily response-centric. Hence the need for a separate DRR institution was deemed necessary since 2000 when the HFA came into existence. Now, with the provisions of the new DRRM Act, doors for setting up a **new institutional structure** at three-tiers of the government are open. The government needs to act with urgency towards setting up these institutions as envisioned by the DRRM Act namely NDRRM Council, Executive Committee, NDRRM Authority, and Provincial, District and Local Disaster Management Committees.

Capacity building at all levels of the government for disaster risk reduction, preparedness, and response and recovery. Disaster statistics reveal that number of natural disaster occurrences in the recent past is on an increase. This trend may further continue for next several years due to climate change, unplanned development and poor enforcement of land-use policy. To cope with these challenges and be able to save lives, livelihood and infrastructure from disasters, government needs to substantially invest in enhancing technical and functional capacities of the DRR institutions. It is imperative therefore that a resourceful National DRM Training Institute and Resource Centre be established and charged with the responsibilities of building such capacities at all levels.

Instituting a practice of risk-informed development and mainstreaming DRR and CCA into sectoral development planning. For a disaster prone country like Nepal, mainstreaming risk reduction approaches into development is the most effective way of protecting development

gains and achieving the SDGs. Past and on-going efforts led by NPC to mainstream DRR into development planning since 2002, have led to drafting a comprehensive mainstreaming guideline. Such coordinated efforts need to further continue until mainstreaming work is completely absorbed by the sectors to be able to make risk-responsive plans and budgets.

Ensuring allocation of adequate funding for DRR and CCA at all levels. Provision of regular budget from government sources based on actual needs identified through risk assessments is a must to sustain the DRM actions in the long run. Several ministries, due to lack of capacity for assessment of actual funding gaps in DRR, prepare budget on ad-hoc basis based on past experiences, which is inadequate. A systemic approach for budget planning by the sectors based on objectively identified needs has to be devised.

Empowering province and local governments for effective leadership role in disaster risk reduction and management. Nepal's conventional centralized institutional set up for DRM needs a complete overhaul as per the new DRRM Act and in line with state restructuring and devolution of power from the federal to provincial and local governments as mandated by the constitution. The government and the development partners are required to work together to make them capable of taking their constitutional responsibilities.

Setting up an effective Disaster Information Management System (DIMS) at the central and province levels as a one-stop information hub. A comprehensive, one-stop functional DIMS is a pre-requisite for an effective DRM system. The existing DIMS, managed by MoHA through Nepal DRR Portal and SAHANA System, needs to be upgraded for data consistency and reliability, automatic updates, capability to generate early warning and forecasts and disseminate risk information on time. The DIMS needs to be further linked to hazard and hydro-metrological data, risk profiles and vulnerability information, together with socio-economic and physiographic data to support analysis of disaster trends and anticipate future risks.

Ensuring Gender Responsive and Disability Friendly Disaster Risk Reduction and Management. Enabling policies for mainstreaming gender and social inclusion into DRM has not been able to advance progress on gender-inclusive and disability friendly DRM because of prevailing structural barriers in the society, lapses in DRM data architecture and inherent methodological problems of DRR approaches. Except in training and awareness, role of women and disabled people in decision making and policy discourse has been minimal. The draft National DRR Policy and Strategic Action Plan (2017-2030) and the new DRRM Act have made mainstreaming GESI into DRM mandatory and underscored the need for disability friendly. Under the new federal system, women have got substantive representation in all three tiers of the government. This positive change has positioned the women to push for eliminating disparity between men and women and drive gender-responsive DRM at all levels and the opportunity created by this change need to be tapped.

Strengthening national capacity of SAR to the level of INSARAG standards. Nepal needs to invest on strengthening its SAR capacity upto INSARAG standard. Lessons from 2015 Earthquake reveal that existing capacity gaps with respect to skills, technologies, institution and resources of the national security forces to be able to protect the lives of the people trapped in built infrastructures is relatively low.

Summary

This chapter reiterates Nepal's long term vision to make Nepal a safer and resilient nation by 2030. Some of the key steps in that direction are laid in the draft "National DRR Policy & Strategic Action Plan for Nepal" (2017-2030), aligned to the SFDRR as well as the emphasis of the Constitution of Nepal on building resilience to disasters. It also takes a look at the challenges, ranging from the institutional to financial and regulatory to information system management and empowerment of new local government in realizing that vision. The new DRRM Act and the draft Policy and Action Plan build strong foundations to work on SFDRR priorities and achieving the SDGs. However, a huge institutional capacity gap exists at national, sub-national and local levels in implementing them.

References

ADPC, NGI and CECI. (2010). *Nepal Hazard Risk Assessment*, Kathmandu: Asian Disaster Preparedness Center (ADPC). Norwegian Geotechnical Institute (NGI) and Centre for International Studies and Cooperation (CECI), Table 3.10.

AMCDRR. (2016). *Asia Regional Plan for Implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030*, Final Document, 5 November 2016. Retrieved from https://www.amcdrrindia.net/wp-content/uploads/2016/11/FINAL-Asia-Regional-Plan-for-implementation-of-Sendai-Framework-05-November-2016.pdf on 2 September 2017.

Benfield Hazard Research Centre, University College London and CARE International. (2005). *Guidelines for Rapid Environmental Impact in Disasters*, version 4.4, retrieved from http://www.preventionweb.net/files/8267_bhrcgen30apr1.pdf, on 25 August 2017,.

Climate Focus. (2015). *The Paris Agreement Summary, Climate Focus Client Brief on the Paris Agreement III*. December 2015, retrieved from http://www.climatefocus.com/sites/default/files/20151228%20COP%2021%20briefing%20FIN.pdf, on 3 September 2017.

Government of Nepal. (2017). National Position Paper of the Government of Nepal. Prepared for the Global Platform on Disaster Risk Reduction, 22-26, May, 2017. Cancun, Mexico.

IDS-Nepal, PAC and GCAP. (2014). *Economic Impact Assessment of Climate Change in Key Sectors in Nepal*. Kathmandu: Ministry of Science, Technology and Environment (MoSTE), Government of Nepal, retrieved from http://www.asiapacificadapt.net/sites/default/files/resource/attach/EIA-summary_sharing_final-low-resolution.pdf, on 25 august 2017.

Lassa, Jonatan A. and Margareth Sembiring. (2017). *Towards Policy Integration of Disaster Risk, Climate Adaptation, and Development in ASEAN: A Baseline Assessment*. NTS Insight, Nanyang Technological University, Singapore.

MoHA. (1996). *National Action Plan on Disaster Management in Nepal.* Kathmandu: Ministry of Home Affairs, His Majesty's Government of Nepal.

MoHA. (2013). *National Disaster Response Framework (NDRF)*. Kathmandu: Ministry of Home Affairs (MoHA), Government of Nepal.

MoHA. (2015). *National Progress Report on the Implementation of the Hyogo Framework for Action (2013-2015)*. Kathmandu: Ministry of Home Affairs (MoHA), Government of Nepal.

MoHA. (2015). *Nepal Disaster Report 2015*. Kathmandu: Ministry of Home Affairs (MoHA), Government of Nepal.

MoHA. (2016). *Gorkha Earthquake 2072: Experiences and Learning*. Kathmandu: Ministry of Home Affairs (MoHA), Government of Nepal (text in Nepali).

MoHA. (2017). Disaster Scenario of Nepal, 2015-2016. Unpublished disaster datasets. Kathmandu: Ministry of Home Affairs (MoHA), Government of Nepal.

MoPE. (2016). *Intended Nationally Determined Contributions (INDC) Communicated to the UNFCCC Secretariat in February 2016*. Kathmandu: Ministry of Population and Environment (MoPE), Government of Nepal, retrieved from on 2 September 2017.

MoSTE. (2015). *Nepal Earthquake 2015: Rapid Environmental Assessment*. Kathmandu: Ministry of Science, Technology and Environment (MoSTE), Government of Nepal.

MoSTE. (2014). *Economic Impact Assessment of Climate Change in Key Sectors in Nepal*. Kathmandu: Ministry of Science, Technology and Environment (MoSTE), Government of Nepal, Nepal, retrieved from http://www.asiapacificadapt.net/sites/default/files/resource/attach/EIA-summary_sharing_final-low-resolution.pdf, on 25 August 2017.

Women Group Working on Common Charter of Demand on Humanitarian Response. (2016). National Women's Conference on Gender Responsive Disaster Management. Kathmandu Declaration (1-2 March 2016). Kathmandu.

NPC. (2015a). *Sustainable Development Goals 2016-2030, National (Preliminary) Report*. Kathmandu: National Planning Commission (NPC), Government of Nepal.

NPC. (2015b). *Nepal Earthquake 2015: Post Disaster Needs Assessment: Key Findings. Vol. A*. Kathmandu: National Planning Commission, Government of Nepal.

NPC. (2015c). *Nepal Earthquake 2015: Post Disaster Needs Assessment.* Executive Summary. Kathmandu: National Planning Commission, Government of Nepal.

NPC. (2016). *Fourteenth Plan (FY 2073/74 – 2075/76)*, Kathmandu: National Planning Commission, Government of Nepal.

NPC. (2017a). *National Review of Sustainable Development Goals*. Kathmandu: National Planning Commission (NPC), Government of Nepal.

NPC. (2017b). *Nepal's Sustainable Development Goals: Baseline Report*. Kathmandu*:* National Planning Commission (NPC), Government of Nepal.

NPC. (2017c). *Nepal Flood 2017: Post Flood Recovery Needs Assessment*, Kathmandu: National Planning Commission (NPC), Government of Nepal.

NRA. (2016). *Nepal Earthquake 2015: Post-Disaster Recovery Framework, 2016-2020*. Kathmandu: National Reconstruction Authority, Government of Nepal, retrieved from http://nra.gov.np/uploads/docs/wQxngUUy2r160512083450.pdf on 25 August 2017.

NRA. (2017a). Procedures for the Relocation and Rehabilitation of Hazard-prone Settlements, 2073 (2017), retrieved from http://nra.gov.np/news/details/AFRq5KxmWC0lgqvzPyyHl06tmBuXusZ83P6xVCM7mp0/, on 6 September 2017.

NRA. (2017b). Rebuilding Nepal. *NRA Newsletter*. Kathmandu: Nepal Reconstruction Authority, Government of Nepal, retrieved from http://nra.gov.np/uploads/docs/IkXnBgwRbX170812080426.pdf, on 7 August 2017.

Pokharel, Jagadish C. (2017). Nepal Post Disaster Reconstruction Experience: Current Status and Lessons Learned. A paper presented and discussed in SAWTEE Dialogue on Post Disaster Reconstruction. Kathmandu.

SAARC. (2011). *SAARC Agreement on Rapid Response to Natural Disasters*, retrieved from https://www.scidev.net/filemanager/root/site_assets/sa/SARRND.pdf, on 9 August 2017.

Swiss NGO DRR Platform. (2016). *Disaster Risk Reduction, Climate Change Adaptation and Resilience*. Briefing Note, retrieved from http://www.drrplatform.org/images/Swiss_NGO_DRR_Platform_DRR-CCA_Briefing_Note_March_2016.pdf, on 5 September 2017.

UN. (2017). "The Sustainable Development Agenda." UN Sustainable Development Homepage, retrieved from http://www.un.org/sustainabledevelopment/development-agenda/, on 4 September 2017.

UN Department of Humanitarian Affairs. (1994). Yokohama Strategy and Plan of Action for a Safer World. Geneva: International Decade for Natural Disaster Reduction, UN Department of Humanitarian Affairs.

UN ORC. (2017). *Nepal Flood 2017, Situation Report No. 9* (as of 20 September 2017), Kathmandu: Office of the Resident Coordinator, retrieved from https://reliefweb.int/sites/reliefweb.int/files/resources/Nepal%20Flood%20Sitrep%2022%20September%202017.pdf on 26 September 2017.

UNDESA. (2015a). *Addis Ababa Action Agenda of the Third International Conference on Financing for Development*. New York: United Nations Department of Economic and Social Affairs.

UNDESA. (2015b). *A DESA Briefing Note on the Addis Ababa Action Agenda*. New York: United Nations Department of Economic and Social Affairs, retrieved from http://www.un.org/esa/ffd/ffd3/wp-content/uploads/sites/2/2015/07/DESA-Briefing-Note-Addis-Action-Agenda.pdf on 2 September 2017.

UNDP Nepal. (2015). *An Overview of Ten Year's Progress of Implementation of Hyogo Framework for Action (HFA): 2005-2015 in Nepal*. Lalitpur: United Nations Development Programme (UNDP), Nepal Comprehensive Disaster Risk Management Programme.

UNFCCC. (2015). Paris Agreement. Retrieved from https://unfccc.int/files/essential_background/convention/application/pdf/english_paris_agreement.pdf, on 9 May 2017.

UNISDR. (2005). *Hyogo Framework for Action 2005-2015: Building the Resilience of Nations and Communities to Disasters*. World Conference on Disaster Reduction, 18-22 January 2005, Hyogo, Japan. Geneva: ISDR International Strategy for Disaster Reduction.

UNISDR. (2010). Strengthening Climate Change Adaptation through Disaster Risk Reduction. *Briefing Note 3*, Geneva: UNISDR.

UNISDR. (2015a). *Disaster Risk Reduction and Resilience in the 2030: Agenda for Sustainable Development*. A reflection paper prepared by the UN Office for Disaster Risk Reduction, Geneva: UN office for Disaster Risk Reduction.

UNISDR. (2015b). Sendai Framework for Disaster Risk Reduction, 2015-2030. Geneva: United Nations Office for Disaster Risk Reduction, retrieved from http://www.preventionweb.net/files/43291_sendaiframeworkfordrren.pdf, on 12 January 2016.

UNISDR. (2017). "Early warning system." Knowledge Base of PreventionWeb, retrieved from http://www.preventionweb.net/english/professional/terminology/v.php?id=478, on 9 September 2017.

UNSD. (2017). *SDG Indicators: Revised list of global Sustainable Development Goal indicators*. United Nations Statistics Division, rretrieved from https://unstats.un.org/sdgs/indicators/indicators-list/, on 3 September 2017.

Annex 1: Multi-hazard scenario of Nepal by its socio-economic loss, 1971-2016

Type of disaster	Number of incidents	Human loss				Houses damaged or destroyed*
		Death	Missing	Injured	No. of family affected	
Fire	8,721	1,605	-	1,619	259,935	86,261
Thunderbolt	1,711	1,620	129	2,684	7,140	963
Landslide	3,246	4,980	174	1,871	558,264	33,617
Wind storm	44	2	-	11	191	215
Flood	3,950	4,445	42	554	3,710,065	216,190
Epidemic	3,452	16,583	-	43,111	512,989	-
Avalanche	2	16	3	7	-	-
Snow storm	5	87	7	-	-	-
Hailstones	131	9	-	24	3,280	155
Earthquake	175	9,771	-	29,142	890,995	982,855
Cold wave	390	515	-	83	2,393	-
Structural collapse	389	404	-	596	2,016	1,793
Total	22,216	40,037	355	79,702	5,947,268	1,322,049
(Average)	(494)	(890)	(8)	(1,771)	(132,162)	(29,379)

Source: MoHA, 2017.

* This includes animal sheds also.

Annex 2: Disbursement of Amount from Central Natural Disaster Relief Fund, 2015 and 2016

Activity	Amount disbursed by year (in NRs.)		Total (NRs.)
	2015	2016	
Fund transferred to DDRCs	10,837,872,745	9,157,939,750	19,995,812,495
Fund transferred to ministries and security forces	1,559,353,091	261,677,542	1,821,030,633
Helicopter costs for rescue and relief operations	30,936,157	128,147,986	159,084,143
Bank commissions	5,366,510	5,537,920	10,904,430
Cash reimbursed for treatment of the injured persons	2,087,479	73,778	2,161,257
Grants to institutions for assigned activity	450,000	150,000	600,000
Salary and remuneration, etc.	2,82,800	3,17,200	600,000
Total	12,436,348,782 (56.6 percent)	9,553,844,176 (43.4 percent)	21,990,192,958 (100 percent)

Source: Central Natural Disaster Relief Fund /Disaster Management Division, MoHA, 2017.

Annex 3: Expenditure by Government Departments in DRM, 20015 and 2016

Department/Division	Expenditure (in NRs.)		
	2015	2016	Total (NRs.)
Epidemiology and Diseases Control Division	1,200,000	4,800,000	6,000,000
Department of Hydrology and Meteorology	6,800,000	7,100,000	13,900,000
Department of Mines and Geology	4,500,000	29,000,000	33,500,000
Department of Water-Induced Disaster Mgmt.	5,965,500,000	7,663,300,000	13,628,800,000
National Reconstruction Authority	22,475,671,027	49,691,730,792	72,167,401,819
Total	28,453,671,027	57,395,930,792	85,849,601,819

Source: Reporting Government Departments through National Emergency Operation Centre, 2017.

Annex 4: Contribution by UN agencies on DRM Activities, 2015 and 2016

Agency	Area of support	Amount of expenditure (in USD)		
		2015	2016	Total
UNDP	Disaster risk reduction and preparedness for response	2,615,762	2,726,277	18,778,017
	Disaster recovery and reconstruction	6,405,713	7,030,265	
WHO	Health sector response support	1,260,220	929,877	7,073,201
	Logistics support to 2015 Earthquake	2,141,115	2,741,989	
UNICEF	Disaster risk reduction, emergency preparedness and response at national and sub-national level	505,625	6,257,422	6,763,047
FAO	Building resilience for community-based rehabilitation and mitigation	--	269,000	6,269,000
	Emergency assistance for the restoration of earthquake affected agriculture system	3,000,000	3,000,000	
IOM	Preparedness and management of open spaces for effective humanitarian response	39,919	56,825	5,912,631
	Support of the earthquake affected population	4,519,470	1296417	
UNFPA	Disaster risk reduction, preparedness and response	125,963	157,405	5,310,511
	Disaster response and recovery	4,011,185	1,015,958	
WFP	Emergency preparedness, food & nutrition security	1,001,193	3,734,733	71,621,100
	Emergency food assistance and logistic, telecommunication & coordination support to earthquake response and Humanitarian air services	54,685,533	12199641	
	Total	80,311,698	41,415,809	121,727,507

Source: Respective UN agencies through CDRMP, 2017.

Annex 5: Contribution of INGOs in DRM, 2015 and 2016

Name of INGO	Expenditure (2015 and 2016 combined, in NRs.)
Nepal Red Cross Society	2,468,513,456
ActionAid Nepal	676,600,758
ADRA Nepal	443,196,631
CBM International	78,152,501
World Vision International Nepal	60,882,882
Christian Aid	22,315,000
Source: Reports from respective INGOs through DPNet-Nepal, 2017.	

Abbreviations and Acronyms

AAAA	The Addis Ababa Action Agenda
AIN	Association of International Non Governmental Organization
AMSDRR	Asian Ministerial Conference for Disaster Risk Reduction
APF	Armed Police Force
CBS	Central Bureau of Statistics
CCA	Climate Change Adaptation
CEO	Chief Executive Officer
CNDRC	Central Natural Disaster Relief Committee
CNDRC	Central Natural Disaster Relief Committee
CRM	Climate risk management
CSCDM	Citizen Support Committee for Disaster Management
DDC	District Development Committee
DDRC	District Disaster Relief Committee
DEOC	District Emergency Operation Centre
DHM	Department of Hydrology and Meteorology
DHS	Department of Health Services
DIMS	Disaster Information Management System
DLSA	district lead support agency
DMG	Department of Mines and Geology
DoS	Department of Survey
DPNet-Nepal	Disaster Preparedness Network Nepal
DRM	Disaster risk management
DRR	Disaster risk reduction
DRR Portal	Nepal Disaster Risk Reduction Portal
DSCWM	Department of Soil Conservation and Watershed Management
DWIDM	Department of Water Induced Disaster Management
EDCD	Epidemiology and Disease Control Division
EFLG	Environment-Friendly Local Governance
FEAT	Field Environment Assessment Tool
GDP	Gross domestic product
GLOF	Glacial Lake Outburst Floods
GoN	Government of Nepal
HEOC	Health Emergency Operation Centre
HFA	Hyogo Framework for Action

ICIMOD	International Centre for Integrated Mountain Development
INSARAG	International Search and Rescue Advisory Group
LAPA	Local Adaptation Plan of Action
LDC	Least Developed Country
MoAD	Ministry of Agriculture Development
MoE	Ministry of Education
MoFALD	Ministry of Federal Affairs and Local Development
MoHA	Ministry of Home Affairs
MoSTE	Ministry of Science, Technology and Environment
MOUD	Ministry of Urban Development
NA	Nepal Army
NAP	National Adaptation Plan
NAPA	National Adaptation Plan of Action
NASA	National Aeronautics and Space Administration
NDCs	Nationally Determined Contributions
NDR	Nepal Disaster Report
NDRRMC	National Disaster Risk Reduction and Management Council
NDRRMA	National Disaster Risk Reduction and Management Authority
NRRP	National Reconstruction and Rehabilitation Policy
NEOC	National Emergency Operation Centre
NGO	Non-governmental organization
NP	Nepal Police
NPC	National Planning Commission
NRA	National Reconstruction Authority
NRRC	National Risk Reduction Consortium
NSDRM	National Strategy on Disaster Risk Management, 2009
PDNA	Post Disaster Needs Assessment
PDRF	Post Disaster Response Framework
NRs.	Nepali rupees
SFDRR	Sendai Framework for Disaster Risk Reduction
SOP	Standard operation procedure
UNDP	United Nations Development Programme
UNFCCC	UN Framework Convention on Climate Change
VDC	Village Development Committee
WECS	Water and Energy Commission
YVCsc	Youth Volunteers Coordination Sub-Committee

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