Seasonal Disaster Review

Monsoon related disasters in Nepal

20 June to 12 October 2019

Government of Nepal

Ministry of Home Affairs

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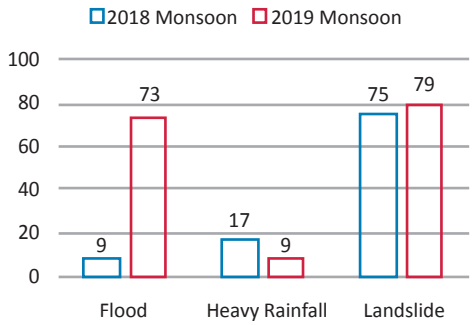
No. of Deaths



Loss

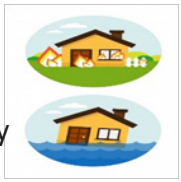
- 161 people lost their lives
- 121 people injured
- 690 incidences recorded
- 6,953 livestock loss
- Flood claimed lives and property the most

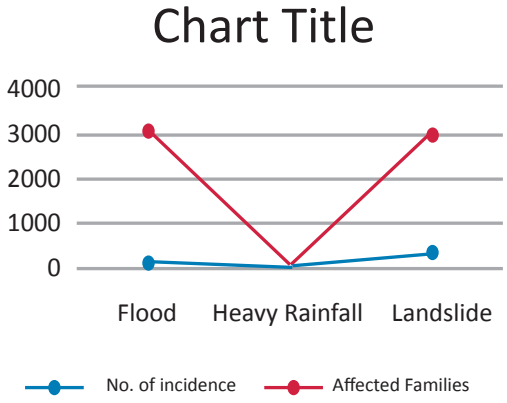
Damage

NPR 1,455,246,900 estimated loss

1,618

Houses completely damaged





GOVERNMENT OF NEPAL

MINISTRY OF HOME AFFAIRS

Singh Durbar
Kathmandu, Nepal.

Ref No.: 076/77

Date: 01 December 2019

Foreword

Nepal is exposed to the risk of multiple hazards and the annual human casualties and economic losses due to disaster is significantly high. In general, there is seasonality trend in disaster occurrence, frequency and loss & damage volume as observed in Nepal.

It is my pleasure that Ministry of Home Affairs is publishing the Seasonal Disaster Review 2019, the second volume of its type, starting the first review published in 2018. This review includes the loss and damage data, the initiations undertaken and lessons while managing the disaster during the monsoon period of 2019.

I would like to appreciate the contributions of stakeholders involved. Similarly, the efforts of the colleagues of Disaster and Conflict Management Division/NEOC is highly commendable. I am confident that this review will provide additional insights for effective planning and implementing risk reduction programs and emergency management in Nepal in the days ahead.

Prem Kumar Rai
Secretary

Monsoon Brief

This year, monsoon started on 20 June and remained active for 115 days till 12 October 2019 (As per the Department of Hydrology and Meteorology). During the monsoon cloudbursts, landslides and floods were the leading disasters in terms of death toll, injuries, displacements and loss of property.

The observed monsoon rainfall was above average in the eastern part of the Province 2 and southern part of Province 1, with an average in most of the places of Province 3 and the western part of Province 2. Rainfall was below average in most of the places of Gandaki Province, Province 5, Sudurpaschim Province and the northern part of Province 1.

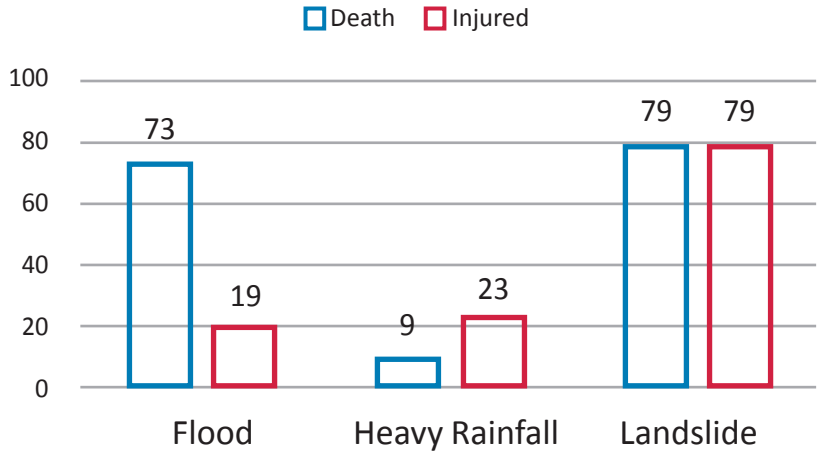
The first heavy rainfall event was observed from 11th July to 13th July with persistent monsoon rain that triggered flooding, inundation and landslides in several parts of Nepal, especially the south-eastern districts of Provinces 1, 2 and 3. Heavy rainfall in Makawanpur, Sindhuli, Siraha and Rautahat districts caused floods and flash floods with loss of life and property affecting major highways, and bridges as well.

Casualties and losses

The reported incidence of flood, heavy rain and landslides was 690 and death toll reached to 161 during the monsoon period (see Figure 1). The incidences affected 6,168 families directly. More than 5,100 houses were destroyed or partially damaged displacing people temporarily or rendering many homeless.

The number of recorded landslide incidents counted to 397. The most affected districts were Gulmi, Rautahat, Rukum West, Rolpa, Siraha and Lalitpur in terms of death toll count. Flood and inundation affected the Terai plain where Morang, Sunsari, Jhapa and Bardiya had the highest number of affected populations.

Figure 1: Death and casualties during the monsoon 2019



Source: MoHA, 2018

Heavy rain claimed lives of 9 people and 110 families were affected directly.

Property worth NPR 1,455,246,900 was damaged by disasters occurred during the period. Loss on livestock, productive land, assets, and damage to critical infrastructure severely affected livelihoods.

Reponses and relief

The Government of Nepal mobilized its response and relief mechanism for immediate response to disasters during this monsoon too. Coordination and engagement of the provincial governments and local level and security forces was critical enabling factors for speedy response and relief support to the affected people. Search and rescue equipment and teams of the security forces were deployed immediately that helped to

save lives of many people. Mobilization of volunteers provided important support in response and relief works.

Immediate relief support was provided to the affected families. Tarpaulin sheet, clothes, sanitation and hygiene kits, medicines and related food items were distributed locally as per the immediate need in coordination with the supporting agencies and individuals.

Preparedness

National level water-related disasters are mostly seasonal in nature in Nepal too. Monsoon preparedness initiatives including pre-monsoon workshops were carried out throughout the vulnerable areas and districts. Pre-monsoon preparedness activities were included in the Disaster Preparedness and Response Plan of the respective district as per the National Monsoon Emergency Work Plan, 2076. Some of the local levels have prepared disaster response plan whereas others have included the periodic disaster risk reduction and response related activities in their plan. Clusters updated their contingency plans. Simulation exercises increased level of risk perception and sensitized vulnerable groups on safety measures and response mechanism. Monitoring, forecasting and early warning system was focus on mass awareness and readiness to respond quickly.

The stockpile of emergency item was utilized for the immediate rescue and response. The inventory of heavy equipment at district level accelerated the response work. DAO and local levels coordinated the emergency response with the support of stakeholders. The quick and effective responses to disaster helped to reduce the impact of disaster in terms of saving lives and property.

Below are a few representative cases of disaster and preparedness initiatives that worked well in reducing impacts of the disasters.

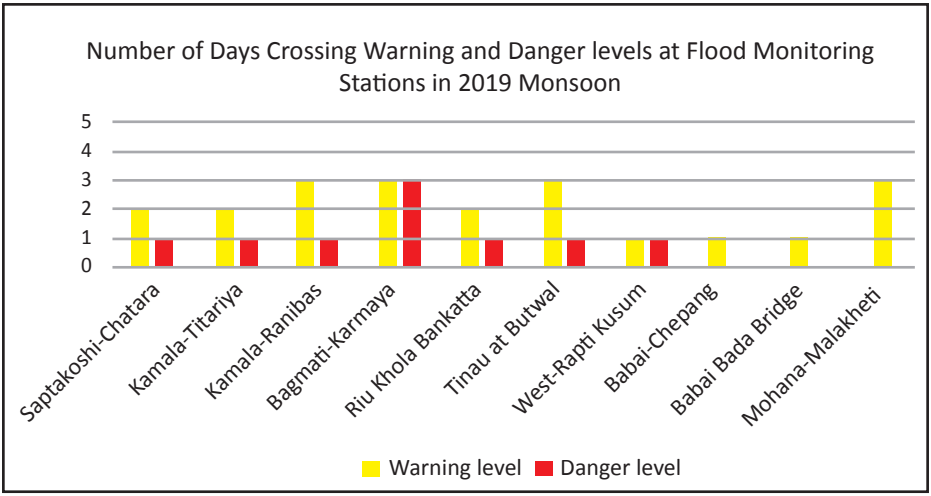
Case I: Predicting before the onset

Flood forecasting models have been developed for the major river basins - Koshi, Bagmati, Narayani, West Rapti, Babai and Karnali. The models were operated throughout the monsoon to generate the flood forecast information 3 days in advance for big and medium river basin. In river basins without any automatic station networks and such flood forecasting models, outputs from global forecasting models were useful for predicting flood in big rivers while the national Flash Flood Guidance System (FFGS) were very important supportive tool for issuing early warning in small flashy rivers.

All these products and heavy rainfall forecast were disseminated to the disaster management authority (MoHA) via daily (7:00 am) flood forecast bulletin, website, email, Facebook, twitter and other media. Special bulletins were issued by the department for the 11-13 July event on 9th of July. While floods are forecasted up to 3 days in advance using the above-mentioned models, the actual issuance of early warnings could be up to 2-6 hours in advance after verification of the forecast.

The mass SMS system operated in coordination with NTC and NCELL has been the most effective means of information dissemination directly to people living in vulnerable communities. The spatial coverage of such area has been increased from 44 to 246 regions this year and 25 million such messages were sent to alert local people in this monsoon. Alerts were sent out whenever flow exceeded the actual warning and danger levels at upstream flood monitoring stations. The bar diagram shows the actual number of days when warning and danger levels were exceeded in different rivers.

Flood forecasting has come a long way since its establishment with the number of casualties reduced significantly over the last decade. However, much needs to be done to minimize the loss



of lives and property. 73 casualties have been reported due to flood in the 2019 monsoon. Existing warning systems should be enhanced, and new systems have to be extended in small river basins in the Terai and Churia region as well as within major urban areas.

Case II: Sharing knowledge on disaster risk reduction

At just 56 meters above sea level, the village of Mukhiyapatti Musharniya in Dhanusha District is the lowest lying spot in the entire country. This low altitude also means that the village, situated close to the southern border with India, is extremely prone to flooding from the Jamuni River.

Ramnagar in neighbouring Saptari District is similarly at frequent risk of inundation, owing in most part to the volatility of the Bihul River. The river tends to overflow following heavy monsoon rains, much to the distress of families living in the vicinity.

Given their shared problems, it is not surprising, then, that places like Mukhiyapatti and Ramnagar would be pursuing similar solutions in dealing with the risks and effects of disasters. This is done mainly through their respective Local Disaster Management Committees (LDMCs).

As a reflection of their increased understanding and confidence following these trainings, both LDMCs have since taken a number of bold steps, particularly in the area of securing funds for DRR interventions.

Government guidelines currently mandate villages to allocate at least five per cent of their budget to disaster risk management. Based on this knowledge, the Ramnagar LDMC, for example, liaised with the Department of Water-Induced Disaster Management to get funding for the construction of an embankment along the Bihul. The request was granted; Rs. 750,00 was allocated to the project. In total, the LDMC was able to persuade the local government to provide 10 per cent of the annual budget to managing disasters.

Similarly, Mukhiyapatti Musharniya too had advocated with the government line agencies to get ward officials to commit the minimum five per cent from the local level funds. With the budget, the LDMC is in the process of putting up a small-scale river embankment to prevent floodwaters from entering the village and farms.

What's more, the LDMC is also now cooperating with the committee in Pushwalpur, a nearby village that also sits along the Jamuni. Because Pushwalpur lies farther upstream, the two villages have agreed upon an early warning protocol, where the Pushwalpur LDMC alerts the Mukhiyapatti Musharniya LDMC if the river water rises to a dangerous level. These messages are passed via mobile phones and allows the downstream committee enough time to evacuate people should the need arise.

This sort of sharing of knowledge and skills, and strengthened partnership within the local level, certainly bodes well for the future and sustainability of disaster management in the country.

Case III: Early warning to early actions

In 2018, Mr. Satish Singh, Chairperson of the Tilathi Koiladi Rural Municipality (TKRM), Saptari observed disaster risk reduction tools and approaches, including the Community Based Flood Early Warning System (CBFEWS) implemented in the transboundary Ratu river that has been saving lives and livelihoods in Nepal and India.

In 2019, the TKRM, implemented the CBFEWS to empower local communities to utilize local resources and capacities to prepare and respond, and enhance their resilience to flooding risk. This system is implemented in vulnerable communities along the river tributaries that have high flood risks. The upstream community gathers the flood information using a simple flood

monitoring instrument and disseminates the warning to the downstream communities, providing them with sufficient lead time for preparedness.

During the monsoon of 2019, disaster risk management officers and Mr. Singh observed water level information in realtime and prepared responses accordingly. The CBFEWS in Khando provides early warnings to over 2,600 households in the four most vulnerable villages of TKRM.

A revolving fund is established for ensuring the sustainability of the system so that it continues to provide critical and timely information for the vulnerable communities. This is the first time such a partnership has been created to sustain CBFEWS.

Case IV: Assessing needs with mobile app

Initial Rapid Assessment (IRA) is the tool of Nepal Government which provides initial information of the disaster affected areas. A mobile app for the IRA tool is developed and being piloted to collect and generate data.

In recent years number of exercises have been carried out on the use of the mobile app. Use of new technology by non- technical persons is itself challenging. Efforts were made to overcome the challenge through the use of IRA mobile app in courses of National Disaster Response Team (NDRT) and District Disaster Response Team (DDRT). Various simulations and orientation/ trainings were also conducted at local level.

Use of mobile application for IRA

In July 2019, incessant rainfall triggered floods and landslides throughout the country. Morang was also among the affected district and it experienced the impact of flood due to rise in water level in nearby rivers and limited outlet of water in some areas.

DDRT and NDRT were deployed immediately for assessment and relief management in Morang. Morang District Administrative Office (DAO) took a lead to conduct IRA through use of mobile app.

If IRA is conducted with the use of technologies such as mobile app, the data can be reported quickly, given the associated services such as internet and associated communication facilities remain intact aftermath of disaster. Further, auto analysis of collected data and generation of certain statistics provides quick information for understanding the situations.

Case V: Robust emergency communication accelerated efficient response

Torrential rain on 23 July 2019 triggered landslides in Satyawati Rural Municipality of Gulmi district with the death toll reaching to 14. Families of more than 80 houses of Ward number 3 and 4 were temporarily relocated aftermath of the disaster.

Immediately following the incidence, the local authorities informed the authorities at district and National Emergency Operation Center (NEOC). The immediate loss and need were informed accordingly.

As per the immediate need, tarpaulin sheets and tents stored at Humanitarian Staging Area at Tribhuvan International Airport (TIA), Kathmandu and Nepalese Army Operation site at TIA were flown for the rescue and response along with the visit of a minister and high authorities of Ministry of Home Affairs.

Food items stored at Nepal Food Corporation Office at Pokhara was transported by the same helicopter which rescued two

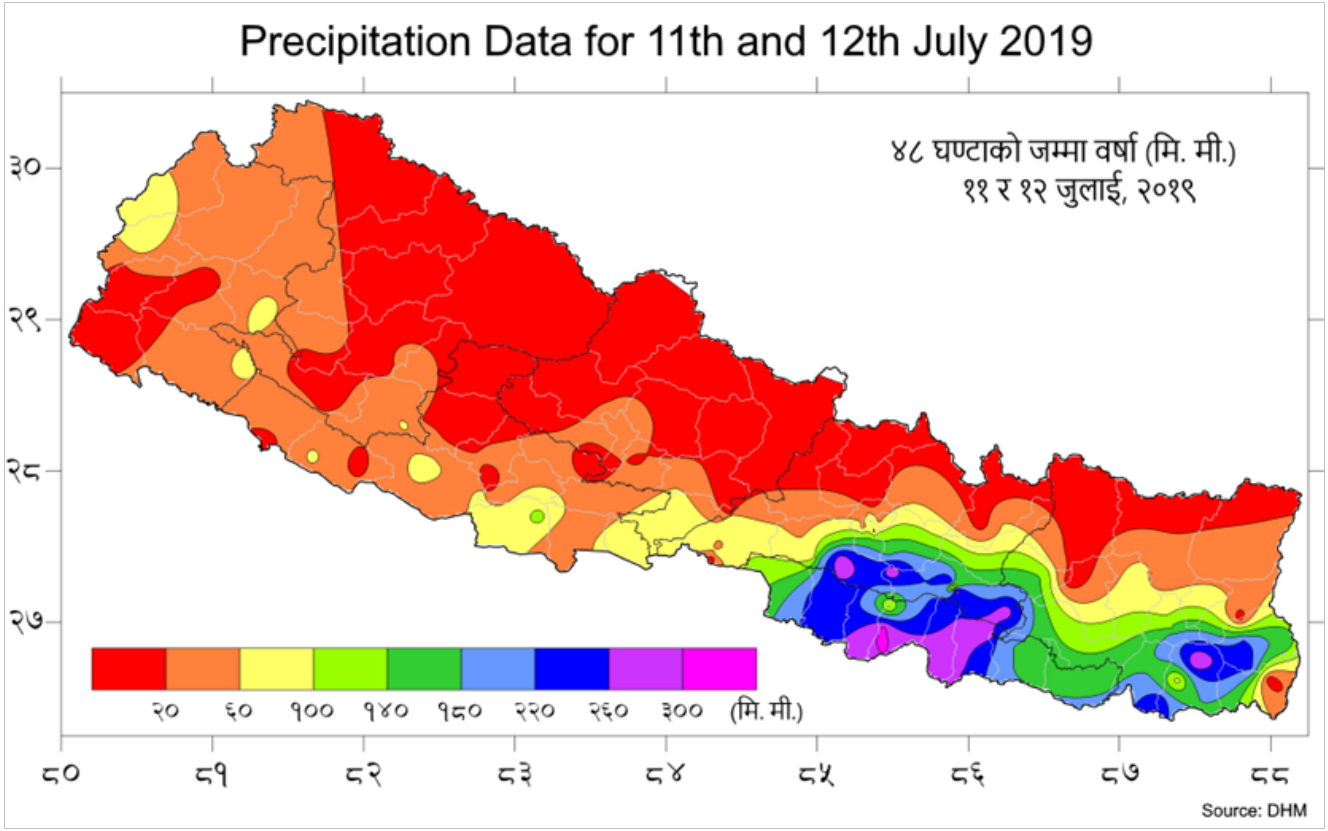
injured persons and taken to Teaching Hospital, Kathmandu for further treatments. All these rescue and response operation was conducted within same day of the disaster. The quick and well-coordinated emergency communications and information management was highly appreciated by the people and related stakeholders.

Sound coordination among the local level and district authorities, securities agencies, NEOC and related stakeholders provided an effective and efficient much needed rescue and response services in the disaster. The response not only coordinated for effective response in emergency but also carter the much-needed solidarity with the engagement of political leadership during the response phase.

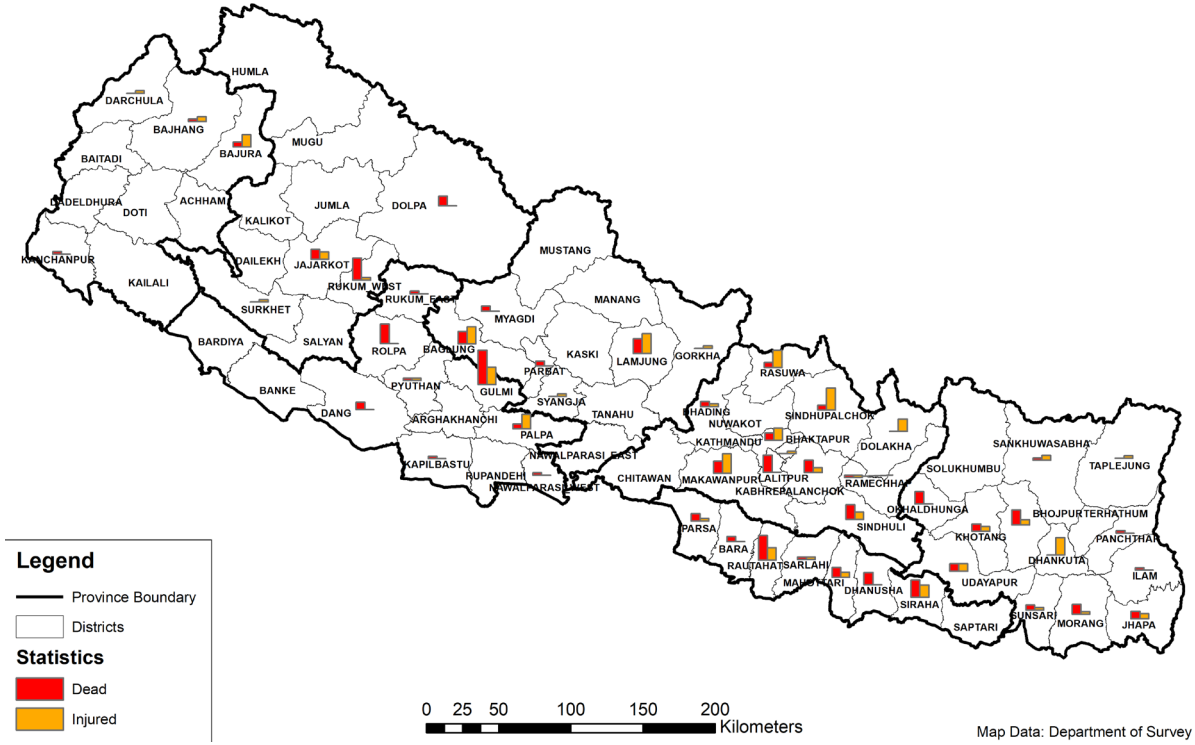
Further, building on the information and emergency communication for effective and efficient response and preparedness, common and integrated disaster management information platform is being localized in Nepal. The use of the portal has been crucial for accelerating sound coordination for emergency response and disaster management in Nepal.

Annex 1: Monsoon related disasters summary (Districts where highest number of death occurred)

S.No.	District	No. of incidents	Dead			Affected Family	Houses Destroyed		Estimated Losses (NPR)
			Male	Female	Total		Partial	Complete	
1	Bajhang	4	0	1	1	11	0	1	0
2	Ilam	17	1	0	1	16	3	6	7630000
3	Kanchanpur	1	1	0	1	1	0	0	0
4	Kapilbastu	3	1	0	1	3	0	1	200000
5	Nawalparasi West	3	1	0	1	3	1	1	150000
6	Panchthar	9	1	0	1	9	0	4	400000
7	Pyuthan	7	1	0	1	4	0	1	173000
8	Ramechhap	9	0	1	1	157	55	100	4850000
9	Rukum East	2	0	1	1	2	0	0	0
10	Sarlahi	5	1	0	1	5	1	3	750000
11	Shankhuwasabha	30	0	1	1	40	2	6	9891000
12	Bajura	4	0	2	2	115	1	1	19500000
13	Bara	3	2	0	2	3	0	1	0
14	Dhading	13	1	1	2	17	8	3	1000000000
15	Myagdi	8	0	2	2	6	2	2	1150000
16	Palpa	11	2	0	2	11	0	1	740000
17	Parbat	9	2	0	2	6	0	2	1000000
18	Rasuwa	10	2	0	2	18	0	1	0
19	Sindhupalchowk	12	2	0	2	35	3	4	14268000
20	Sunsari	17	2	0	2	209	8	7	1047000
21	Dang	14	3	0	3	13	2	6	5150000
22	Jhapa	16	2	1	3	181	6	0	0
23	Kathmandu	11	1	2	3	12	3	3	5000


Precipitation Data for 11th and 12th July 2019
४८ घण्टाको जम्मा वर्षा (मि. मी.)
११ र १२ जुलाई, २०१९
३०
२९
२८
२७
२० ६० १०० १४० १८० २२० २६० ३०० (मि. मी.)
८० ८१ ८२ ८३ ८४ ८५ ८६ ८७ ८८
Source: DHM

Monsoon Related Disasters
Asar 5 to Asoj 25, 2076 (June 20 to October 12, 2019)



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