

Nepal Earthquake 2015 and its impact



Rama Dahal, ACII

A natural disaster occurs when an extreme geological, meteorological, or hydrological event exceeds the ability of a community to cope with that event. Environmental disasters cause casualties, injuries, and property damage. The terms —disaster damage and —losses are frequently used interchangeably, and —disaster effects are understood as the combination of severe damage and enormous losses caused by an extreme natural catastrophe. (Paul, 2011).

However, human activities play a role in the frequency and severity of disasters. Disasters impact a number of social units, including individuals, households, and businesses, each of which experiences a disruption in its normal function for either the short or the long term, or, in some cases, both. The human factor raises the cost, in both property damage and loss of life.

Natural disasters fall into three broad groups:

1. **Those caused by Seismic movements of the Earth.** These occur with the minimum amount of warning and include earthquakes, volcanic eruptions and tsunamis. They are difficult to predict and impossible to stop. All that can be done is to take appropriate action to limit damage and loss of life after they occur.
2. **Weather related disasters.** These will include hurricanes, tornadoes, extreme heat and extreme cold weather. There will usually be some degree of advanced warning due to weather predictions, and the necessary measures

to be taken in advance to minimize the losses however nothing can be done to stop these disasters from developing once the weather system develops. Again, in areas prone to this sort of disaster, some provision can be made to limit damage and loss of life.

3. **Floods, mudslides, landslides and famine.** These are usually the consequence of extreme weather events, or are supplementary to other natural disasters. Often they are the result of extreme and unforeseen conditions. (The Earth Times encyclopedia)

Nepal Earthquake history

Earthquake events in Nepal has a long history of destructive earthquakes: at least 10 major earthquakes feature in historical records dating to the 13th century. The 1255 event that destroyed Nepal with surface ruptures in central and western Nepal was followed by the 1344 Kathmandu event, which ruptured the surface as far away as Kumaon (Mugnier et al., 2013). The biggest earthquakes occurred in the Kathmandu basin in 1934 (Mw 8.1) and 1833 (Mw 7.6). The 1934 earthquake induced strong shaking in eastern Nepal and even in Bihar State of India. It killed about 8519 of the population and damaged 80,963 of all the buildings and partially damaged about 1,26,285 houses. The 1833 event was preceded by two foreshocks that drove people outdoors in alarm, thus reducing the loss of life. The main 1833 earthquake was recorded throughout the region, from Tibet to the Ganga plain. It affected regions in Tibetan located north of Kathmandu very badly.

Table 1: Earthquake events in Nepal

S.No	year	Magnitude	Time	Epicenter	Human Loss		Damage to Building	
					Dead	Injured	Complete	Partial
1	Jan 15, 1934	8.4	2.24pm	Near Madhubani, India	8519	-	80,963	1,26,285
2	July 29, 1980	6.5	2.58 pm	Bajhang, Nepal	103	391	35,000	-
3	Aug 21, 1988	6.6	4.54 am	Udayapur, Nepal	668	6,081	21,976	42,198
4	Sept 18, 2011	6.9	6.25pm	Sikkim-Nepal Border	-	24	4,646	4,776
5	April 25, 2015	7.6	11.56am	Gorkha, Nepal	8,790	22,300	510,772	-

Source: Nepal (2015).

The morning of April 25, 2015 at 11.56 Nepal Standard time remains an unforgettable day for all of us who experienced the shake of magnitude - 7.8 for about two minutes (120 seconds) and survived. There were about 150 aftershocks with an average of 5 magnitudes for several weeks and another major jolt was felt on May 12, 2015 with a magnitude -7.3. The April earthquake shocks were felt in India, China, Tibet, Bangladesh. The major earthquake shocks in history of the country has repeated in 80 years which was last felt in 1934 AD. The April 25 quake occurred at an estimated depth of 10 kilometers (6.2 miles), “making this a shallow and therefore extremely destructive event,” according to Boston-based catastrophe modeling firm AIR Worldwide.

There have been extensive damages on all fronts i.e. loss of lives – humans and live stocks, physical infrastructure, heritage sites, agriculture leading to overall cultural, social and economic lives of Nepal.

Out of the 75 districts 31 districts were affected by this devastation with 14 of them located in the Central and Western mountains and hills including Kathmandu Valley and categorized by the Government of Nepal as the most affected. An estimated 5.4 million people live in these 14 districts.

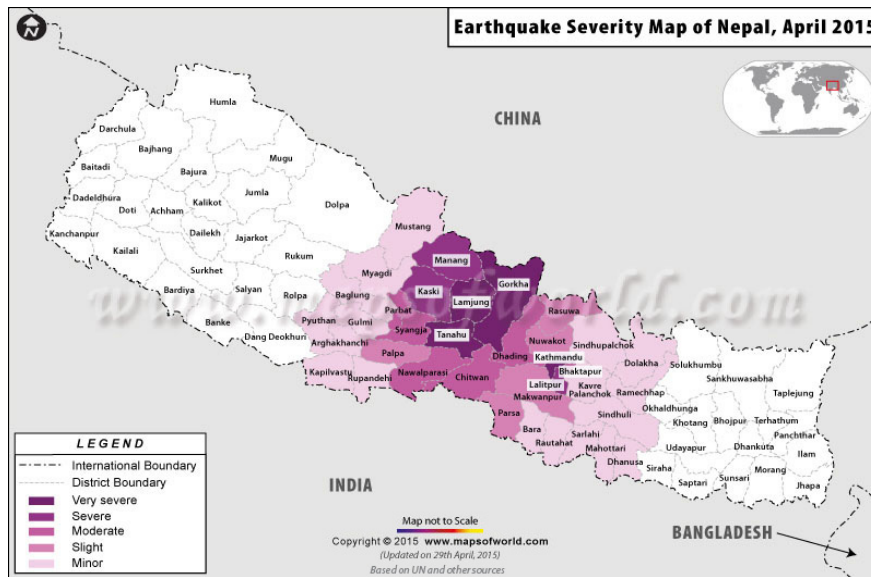
According to the government of Nepal the overall damage was estimated to be about \$ 10 billion which is nearly half of its gross domestic product (GDP) of 19.2 billion. According to IHS Global Insights, a research firm, the estimated cost for rebuilding homes, roads and bridges alone could run up to \$5 billion.

Nepal ranks **95th** in the world by GDP (USD 77 Trillion as per Sigma reports of Swiss Re). The top 10 countries by GDP (PPP) are: World, China, European Union, United States, India, Japan, Eurasian Economic Union, Germany, Russia, Gulf Cooperation Council, Indonesia, Brazil, United Kingdom, France.

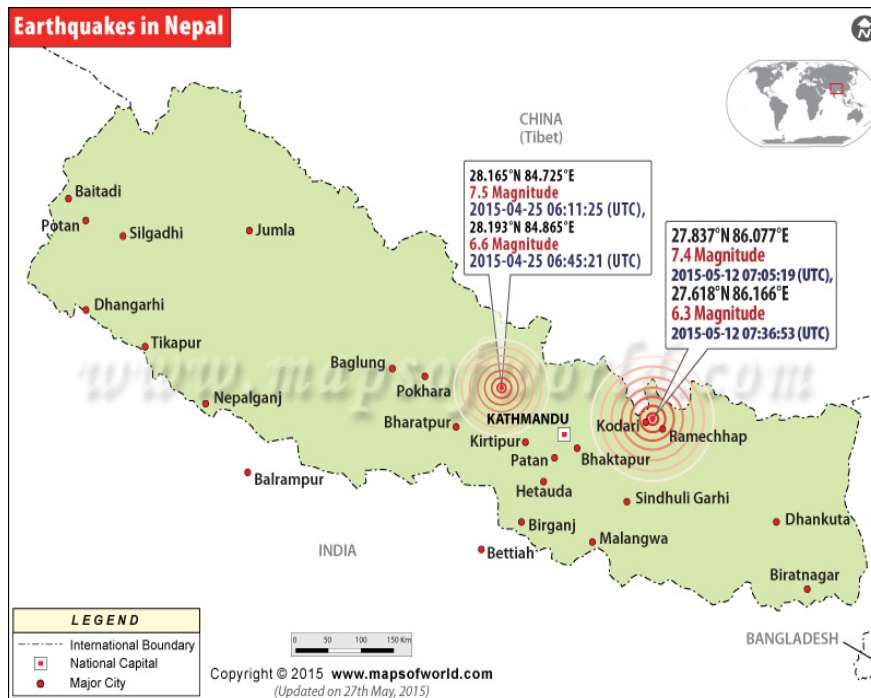
Nepal is ranked one of the poor nations in Asia with an unemployment rate of over 40% and with a GDP of less than USD 1,000 per person. The government statistics show that the tourist flow decreased by over 72% after the earthquake in 2015.

According to the USGS earthquake scientist Sue Hough, the location and other data dispatched from the USGS National Earthquake Information Center placed the focus of the M 7.8 main shock at a depth of only 8 miles with a 75-mile-long rupture and substantial seismic energy propagating east -- very close to the city. The motion on the fault shifted Mt. Everest 1.2 inches to the southwest.

April 25, 2015



May 12, 2015



Government of Nepal had declared a state of emergency. We saw lot of foreign aids and assistances in terms of search and rescue operations and also for other emergency necessities.

Casualties

Nearly 9000 people got killed including 164 in other countries, and about 22,000 were injured. The earthquake elicited an avalanche on Mount Everest killing 21 making it a dark day on the expedition History. There was another huge avalanche in Lang

tang valley, where about 250 people were reported missing.

Another monsoon disaster on June 11, 2015 took away 53 lives. Then a glacial lake burst in Solukhumbu district that hit hard, however its relation with earthquake has not been established.

About 60,000 livestock's got killed and the number is higher in the most affected areas.



(Photo: by NARANDRA SHRESTHA, National Geography, man buried in rubble at Kathmandu Durbar Square)

Property Loss

Damages to houses and building structures besides the heritage buildings have been in large numbers. The data shows 510,772 numbers that were completely destroyed and many others were partially destroyed. Most of the damages were from rural areas. About 8000 schools were affected by earthquake. The highly affected districts were Sindhupalchowk, Lalitpur, Dolakha and Gorkha. On the health facilities side about 963 health services centers were destroyed in different districts.



(Photo: National Geography)

Heritage and tourism

According to UNESCO more than 30 heritage monuments have collapsed and 120 have been partially damaged in Kathmandu valley. The count for monasteries, temples and shrines and some historical buildings all over the country is about 1000. Besides the other heritage sites, there was Dharara about 200 meters and 9 story tall tower - the landmark of Kathmandu, which also got destroyed.



(Photo: CNN news 18, Park Horizon apartment after the shock)

Infrastructure and Industries

About 16 hydropower plants and 239 micro hydro powers got damaged. There were about 294 brick kiln in the valley of which almost all of them were damaged.

On the infrastructure side, Tribhuvan International Airport, the run ways only got few cracks but were not hindering any flights. However, since there were lot of cargo flights bringing relief workers and aid materials, which further damaged, hence the runway was closed for one day on May 3, 2015 to fix it.

The roads and highways with most of it damaged, putting the connections at halt. Most affected districts were Sindhupalchowk, Nuwakot and Dolakha, where the roads were cracked on one hand and debris covered the road on the other; making it challenging for the relief workers to reach the remote affected areas. Subsequently the landslides made the situation worst.



(Photo: APF getty images)



Dharahara (aka Bhimsen Tower) in Kathmandu before and after the 2015 earthquake.



Joshi Dega Temple, Kathmandu before and after the 2015 earthquake.



Kasthamandap, Kathmandu before and after the 2015 earthquake.



Batsala Temple, Bhaktapur Durbar Square, Bhaktapur before and after the 2015 earthquake.



Changu Narayan Temple, Bhaktapur before and after the 2015 earthquake.



Temples Square in Kathmandu Durbar Complex, Kathmandu before and after the 2015 earthquake.



Patan Durbar Square, Patan before and after the 2015 earthquake.



Nau Talle Durbar, Hanuman Dhoka, Kathmandu before and after the 2015 earthquake.



Bishworoop Temple, Pashupatinath, Kathmandu before and after the 2015 earthquake.



Sat Talle Durbar, Nuwakot before and after the 2015 earthquake.

Insured Losses

Though the economic losses are high the insured loss is significantly less. Over all insured losses in Nepal, India, Tibet and Bangladesh were estimated to be around USD 200 million (Aon Benfield Analytics |Impact forecasting).

According to the data available with Nepal Insurance board the –

S. No	Portfolio	Claimed policy Sum Insured (in 00,000)	Claimed no	Claim paid no	Claim amount (00,000)	RI Recovery (00,000)
1	Fire	2,856,772	15,230	9518	90412	56708
2	Motor	13,746	988	823	789	186
3	Marine	18,525	4	3	8	-
4	Engineering	1,209,959	154	78	15448	4706
5	Miscellaneous	1,341,698	1422	1125	34735	31073
	Total	5,440,700	17,798	17,703	142,391	92,672

(Source: Insurance Board as on 16.04.2018)

The net retention of earthquake claim for all insurance companies is Nrs. 4,971,900,000 (approx. Nrs 4.9 billion) and the reinsurance recovery is Nrs. 9,267,200,000 (approx. 9.2 billion) and the rest are recovered through reinsurers located in India, Malaysia, Africa and Europe.

In case of Life insurance companies, they received about 400 claims with a settlement of about Nrs. 76 million.

The insurance coverage is still at a very low level. Until 2016 there were 17 non- life insurance companies and in 2017, three companies got the operating license making total number of non - life companies as 20. At the time earthquake there were 9 Life insurance companies and in 2017 10 others have come into operation.

In the later years we can see the insurance market growing at about 12-15% on an average. Due to reconstruction work after earthquake there is an increase in the insurance market size. Most of the claimed properties too had under insurance since the sum insured would be determined against the financial (bank) loan that they would take. Thus though the insured losses are high the claim settlement is lower. If we relate this to the rural areas where their properties were not insured, the world bank report says that about 3% of Nepal's population i.e. approximately 1 million people have been pushed into poverty. For the rural poor population in the earthquake most affected areas, their living is through agriculture and with their live stocks also killed and house and farms destroyed It has been a challenge to survive.

To encourage insurance and create awareness government has also subsidized crop and cattle insurance. The regulator has also played a strong role to encourage more and more participation in this sector. Besides these micro insurance for rural population has also been introduced for which the regulator has made it mandatory to the insurance companies to have a branch in their respective allotted region and to have minimum of 10% of the total premium from this sector.

With a regular awareness campaign by all insurance companies and the regulator, the market is definitely

growing for insurance companies. The total premium collection of non - life insurance companies in the fiscal year 2016-2017 was Rs. 3.19 trillion which subsequently grew by 16.78% in the fiscal year 2017-2018 to Rs.22 trillion (Source: media).

In fiscal year 2016-2017, nine life insurance companies had collected Rs 10.56 billion as their first premium, which was Rs 9.51 billion in fiscal 2015-16. Likewise, the share from foreign employment policy in the year was Rs 2.58 billion, against Rs 1.82 billion in the previous (source: The Himalayan Times).

Post - earthquake insurance companies saw lot of proposals flowing to get insured. With the government policy to promote insurance throughout the country making few classes of insurance like health, personal accident, Motor third party liability as mandatory, we can only be optimistic about the insurance market size to grow bigger.

The newly constructed buildings have to strictly adhere to earthquake resistant building standard codes set by the government; so as to minimize the losses in future. The lesson taught by this catastrophe is the necessity to have adequate sum insured which is now known to the financial institutions too. Secondly for high sum insured properties risk inspection report is a necessity for the insurance companies as well to the reinsurers prior to accepting the proposal and issuing the policy.

The experience of 2015 earthquake survivors is thoroughly taught to safeguard the value of their properties and understand insurance to be more for their security then as a formality /burden. I strongly believe that in future in case of such catastrophe the extent of loss will be much lesser than what we have seen.

Ms. Rama Dahal is a ACII, Charter Insurance Practitioner and also a life member of Insurance Institute of India.

•