



Landslide Disaster And Economy: Study From Kumaun Himalaya

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Abstract:

Geologically the Himalayas are new folded mountain. Neo-tectonic movements are very common with its geology. It causes earthquakes and landslides in the Himalayan belt. Mostly earthquake is the result of interior disturbance on earth. Landslides are triggered by heavy rainfall, tectonic and anthropogenic factors. The Middle Himalaya which is generally called Kumaun Himalaya, is always faces the problem of landslide in rainy season mostly. It is a common natural disaster which causes a great destruction of public and private property. There are many effects of landslides. They can be social and economic. Present paper traces out the economic effect of the landslides happened in Kumaun Himalaya in past years.

Key words: Natural Disasters, Kumaun Himalaya, Economic Effect.

1. Introduction

In the Himalayan region, landslides take place every year, and the nature and the factors, natural or manmade, responsible for generating these landslides are indeed diverse. Landslides are responsible for the loss of human lives and property in Kumaun Himalaya. Based on the general experiences with landslides, the rough estimates of loss in economy to India are of the order of Rs. 250-300 crore/annum, for the country as a whole. In almost every monsoon season, landslide of about 400-700 cu.m / Km of road occur along hill roads. 1960-1990 the yearly losses from landslides were 1,500 million US\$ and yearly fatalities were 1000 (Pandey, Tolia, Sharma & Pathak). In 1998 catastrophe caused due to landslides in Malpa area of Pithoragarh district in the inner belt of Central Himalaya took place mainly due to the torrential downpour for more than seven days. As per the available reports, 207 people (mostly Kailash-Mansarovar pilgrims) lost their lives along with a huge loss to the agricultural land, forest land and property. This calamity took place on 17 August 1998.

In recent years, due to rapid growth of population, over exploitation of land and natural resources has resulted in deterioration of the over all environment of the hill areas. Several studies have been carried out to evaluate landslide hazard in sensitive zones of the Himalayan region. Scientific investigations in the past 10 to 20 years have shown that much of the earth's surface has experienced landslides. Landslides are rapidly becoming the focus of major scientific research, engineering study and practices, and land-use policy throughout the world. U.S. Geological Survey (USGS) has developed the National Landslide Information Center (NLIC) in concert with the International Decade for Natural Disaster Reduction(IDNDR). The present study depicts the economic effects of landslide in Kumaun region. Every year landslides become the cause of destruction of public and private property. After decay region was trembled with a series of landslides. Near about 200 people were died.

2. Aims and Objectives

- To find out the economic effects of landslide disaster in Kumaun Himalaya.
- To prepare a data base. It will show the economic loss in the area of investigation.

3. Study Area

Kumaun Himalaya is situated in the state Uttarakhand, India and is bounded by $28^{\circ}44'N$ to $30^{\circ}49'N$ latitude and $78^{\circ}45'E$ to $81^{\circ}1'$ longitude. In the east river Kali makes its international boundary with Nepal. In the north the Great Himalaya makes another international boundary with China. Uttar Pradesh is situated in the south. Himachal Pradesh is situated in the south direction. Kumaun Himalaya is spread over six districts.

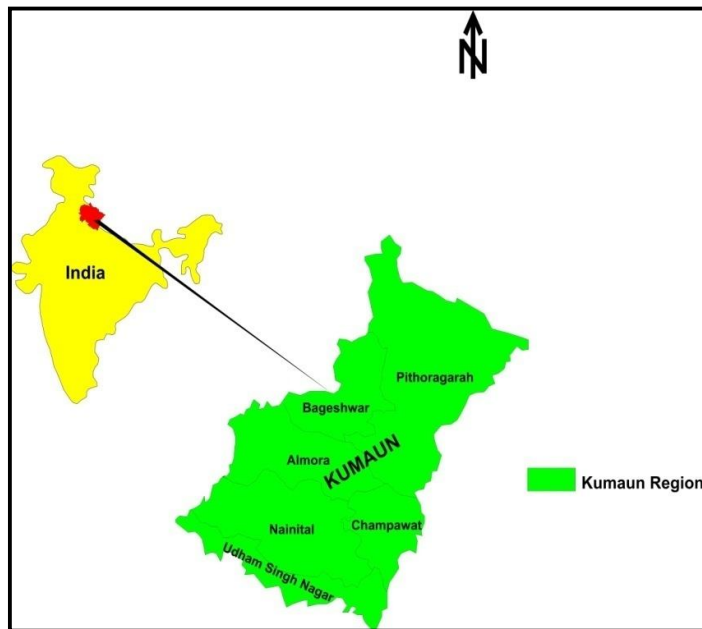


Figure1: Location Map of the Study Area

4. Malpa Landslide

Malpa is situated in $30^{\circ}01'55''$ to $80^{\circ}45'07''$ E longitudes. The way of holy Kailash Maansarovar pilgrimage falls in this zone. The sudden rockfall from heights of 3000 to 2100 m, which occurred on 18 August 1998 at 3.00 a.m., brought down rock chunks varying from 1 to 5 m in size. The dust cloud generated spread 1 to 2 km on either side of the Kali valley. The rockfall started on 16 August morning, giving an early warning and killing three mules. The rockfall was followed immediately by flash flood in the Malpa stream due to bursting of the debris dam that was formed due to rockfall. The Malpa stream was blocked at a height of 2280 m. The flood brought huge amount of bouldery debris to the other side of village Malpa where the camping site of Kailash–Mansarovar tourists and pilgrims was located. The dam gave way on 17 August night.

On 18th night there was yet another rockfall blocking the stream again and giving rise to a lake. On 19th evening the lake water burst out and flushed some of the dead bodies into the Kali River.

The total population of Malpa itself of about 30-40 person only but during the period of landslide Kailas–Mansarovar pilgrims also were staying there. Actual number of unluckly pesons could not be known. Detail of human loss according to administration and local bodies are given in table1.

Persons	Total No.
Kailash Mansarovar Pilgrims of twelfth group	60
Guides and workers of KMVN	05
Coolies of K.P	59
Labours of GREFF	09
Members of ITBP force	08
PWD labours	04
Members of 5 families of Malpa	16
Constables of UP police	03
Inhabitants of Gunji and Budhi village	32
Inhabitants of Dumling village	12
Hermit	01

Table1: Human loss in Malpa landslide

Source: Tehsil Office Dharchula

5. Economic Effect

Several assessment teams were sent out to the affected area by the UP Government, who assessed the cost of different types of losses separately as a result of this landslide. Large-scale landslides often have disastrous effects on the natural environment as well as on man-made structures. Villages and towns, agricultural and forest lands, communication routes, water bodies, and human and animal population are threatened by such slope movements; underlining the social and economic significance of landslides. In the case of Malpa landslide, besides loss of human life and cattle, a large number of houses, huts and tents were destroyed by the flash flood and the debris flow (Table 2).



(A) Malpa Peak



(B) KMVN Hut



(C) Landslide near Mangti



(D) Chautuladhar Landslide

Name of Damaged Things	Detail
Person Dead	209
Animals	69
Houses	05
Huts(KMVN)	02
Huts(PWD)	02
Huts(Army)	01
Wodden Bridge	01
Cultivated Land	0.408ha
Barren Land	1.701ha

Table2: Landslide Damage at Malpa(1998)

Source:Tehsil Office Dharchula

S. No.	Particulars	Public Cost(Rs.)	Private Cost(Rs.)	Total Cost Cost(Rs.)
1.	Livestocks	1,38,000	9,22,650	10,60,650
2	Settlements	21,55,000	4,90,000	26,45,000

3.	Arable Land	-	60,430	60,430
4.	Barren Land	-	1,08,000	1,08,000
5.	Vegetation	-	28,500	28,5000
6.	Wodden Bridge	1,00,000	-	1,00,000
7.	Porter's Income	-	3,26,700	3,26,700
8.	Other Items	6,00,000	7,64,923	13,64,923
	Total	29,93,000	27,01,203	56,94,203

Table3: Loss of Economy in Malpa Landslide (1998)

Source: Tehsil Office Dharchula

6. Tragedies of 2010

On 18 august 2010 a cloud burst happened at Sumgarh in Kapkot tehsil of district Bageshwar. It was a curse for innocent school children. 39 students were died in this calamity. School was collapsed because of landslide triggered by the cloud burst. After a month in Almora district at Devali and Balta villages 23 people were died in landslide which was triggered by cloudburst.

Total casualties were 196 from the month of June to September. More than 1000 houses were fully destroyed and near about 10000 houses were damaged. According to government record total loss was 2100Rs.

7. Standards of Relief

Government has provided relief works but common people were not satisfied with it. They have lost their all the crops but government is giving the compensation 60 Rs per Nali. Standards of relief are given table 4.

Particulars	Compensation
Irrigated Land	120Rs/Nali
Rain fed Land	60Rs./Nali
Mud flow in field (3-4 inches)	200Rs./Nali
Damage of animal shed	0
Cow (Which gives milk)	15000
Ox	10000
Goats (10 goats)	3000
Destruction of house fully	50000
Destruction of house ½	10000

Destruction of house $\frac{1}{4}$	3000
Fully Destructed field	200Rs./Nali

Table4: Standards of Relief

Source: Uttara Mahila Patrika

8. Conclusion

According to all the tables and given description we can say that landslide has destroyed a lot of property both public and private in Kumaun Himalaya. Relief standards are also not suitable for the region. A relief strategy should be made for the entire area which is geologically and geographically quite different to other parts of the country.

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