

# Comprehending landslides from the Locals of landslide vulnerable villages: A general field observation

Shikha Subba

*Institute for Social and Economic Change, (ISEC), Bangalore, Karnataka, India*

(Received 26 August, 2021; Accepted 23 December, 2021)

## ABSTRACT

Local knowledge refers to the relationship that people have developed with their surrounding over the time. In the literature, local knowledge is referred to as the indigenous knowledge, 'traditional knowledge', 'folk knowledge', 'folk science', and 'citizen science' etc. Local knowledge is dynamic and is always changing through experimentation and socio economic changes over the time (Dekens, 2007). However, it is important to know how local people view and interact with their surrounding environment, whether their local understanding and knowledge helps them to respond with the dynamic changes in their environment including the disasters preparedness. The strategies adopted by the people for Disaster Risk Reduction largely depend upon the resources available to them. The decisions taken for adopting strategies are on the basis of social cohesion, solidarity and mutual support among the people. The strategies can be either long term or short term. The short term strategies deal with the crisis of short period whereas the long term strategies are adoptive strategies for leading permanent and sustainable solutions to the problems. This paper is developed from the evidences that are collected from the field survey from the some of the severe landslide zone of Sikkim-Darjeeling Himalayan region. The study focuses on the social memory of the landslide victims and its impact, how people have developed their idea about landslide disasters and their way of dealing with it.

*Key words* : Disaster risk reduction, Local knowledge, Landslides, Social memory

## Introduction

In the decades of 1960s and 1970s, geographers studied the impact of disasters on people mainly from a technical perspective. Natural hazards were understood in the context of simplistic determinism (where physical processes determine human actions) and linear causal relationships were suggested from geophysical events to impacts to human responses. People were assumed to live in disaster prone areas due to lack of knowledge. In the 1980s and 1990s, researchers in the field of natural hazards and disasters began to criticize these perceptions. In

fact, researchers in the late 1990s have complained about the absence of social science research in Disasters especially in developing countries. The growing focus of research and development is that there is need to take human dimensions of natural hazards into account (including local knowledge, practices, and perceptions) in disaster management (Dekens, 2007).

It is argued that natural hazards are complex events shaped by the combination of geophysical, meteorological, political, economic, socio-cultural and psychological (or perceptual) phenomena and factors. The social dimension of risk is important

(Ph.D. Scholar)

Corresponding author's email: Shikhasubba476@gmail.com

because local communities perceive hazards from their own cultural lens which largely depends on their view of the environment and their experiences (Doreen, 2011).

However, it is important to know-how local people view and interact with their surrounding environment, whether their local understanding and knowledge helps them to respond to the dynamic changes in their environment including disaster preparedness. Therefore in this background the paper attempts to capture the local landslide knowledge through the narrations of the local people from landslide-prone villages.

In landslide prone villages of Sikkim and Darjeeling also, people have their own understanding about landslide disasters. The region has faced landslide since the time immemorial, and people have tackled these disasters with their own knowledge. Their experiences have made them understand about what can be done for landslide safety or landslide risk reductions, which might not have been recognized by the scientific community. For example, some of the local spices like Hathibar, Panisas trees etc., which according to people in this region are very effective for combating landslides are yet to gain attention from the scientific community. Amliso (broom plant) are very famous in literature for landslide mitigation. However, according to many respondents, it is not effective and they consider it as a weak plant, and use as fodder for animals, though the local government has done the distribution with the landslide mitigation purpose too.

## Methodology

To fulfil the objective of the study, a questionnaire survey was done. The general field observation is provided from 6 villages that are severely affected by landslides were selected. It was proposed to select 25 households in each village through random sampling. It was however found that many sample villages were having less than 25 households (ranging from 13-24 households). All households from such villages were surveyed. The Gram Panchayats under severe landslide zone are Turung Mamring (South Sikkim) and Sangsay (Kalimpong).

## Literature Review

### People's perception on Disaster

Local knowledge refers to the relationship that

people have developed with their surrounding over the time. In the literature, local knowledge is referred to as the indigenous knowledge, 'traditional knowledge', 'folk knowledge', 'folk science', and 'citizen science' etc. Local knowledge is dynamic and is always changing through experimentation and socio economic changes over the time (Dekens, 2007).

However, it is important to know how local people view and interact with their surrounding environment, whether their local understanding and knowledge helps them to respond with the dynamic changes in their environment including the disasters preparedness.

In the Himalayas and in Asian region many rural poor perceive the occurrence of disasters as fatalism<sup>1</sup> and accepting the natural hazards as the "will of God" or they consider it as the punishment delivered by God for their awful deed which is different from western connotation of fatalism which is related with passivity, resignation, and apathy. Therefore what the outsiders can perceived as fatalism is the part of socio-cultural and psychological coping response of the people who lacks the individual choice and power to reduce or remove the distress during stressful situation (Dekens, 2007).

The study study by Kitutu et al (2011) on "*Farmers' perceptions on landslide occurrences in Bududa District Eastern Uganda*" reveals that most of the farmers developed their knowledge about landslide and their causes on the basis of their experiences over the time. They had identified steep slopes, water flowing from underground, prolonged rainfall, sandy soils, slope undercutting to make terraces and flat lands for constructions, deforestations etc contributes to landslides. People who have the recent and frequent experience of disaster are be likely to be more knowledgeable about disaster (Doreen, 2011)

According to Alexander (1993), many poor people in developing world believe that disaster management is impossible to them as they view disaster management as the luxury of rich nations where governments and civil societies have the better facilities for dealing with disastrous event. However this kind of attitude wipes out the fact that disaster management is the collective activity involving both rich and poor.

### People's involvement in dealing with Disasters

The impact of disasters largely depends upon the vulnerability of individual or community. Vulner-

ability can be conceptualized as the function of three elements – exposure, sensitivity and the adaptive capacity. Strategies to cope with disaster also determine vulnerability (Helgeson et al. 2013). However, the strategies adopted by the people largely depend upon the resources available to them. The decisions taken for adopting strategies are on the basis of social cohesion, solidarity and mutual support among the people. The strategies can be either long term or short term. The short term strategies deal with the crisis of short period whereas the long term strategies are adoptive strategies for leading permanent and sustainable solutions to the problems.

In general, people affected by disasters adopt strategies based on their experiences of disasters. Perceptions for coping with disasters vary among the people which largely depend upon the available resources. Disasters which are chronic may reduce the coping capacity of people. Zarafshani (2007), therefore, stresses on the need to learn from history which explains the idea of disaster subculture which means the cultural adaptation for coping with chronic disasters which is perceived through the experiences and capability to manage the adverse disastrous impact.

Local strategies and local knowledge are inadequate in the affected regions of chronic disasters where there are increasing intensities of hazards. Therefore focus should be more on community level interventions and to promote social cohesion mutual support for mobilizing people to manage disaster in better way.

According to Verma and Mushtaq (2013), landslides are the global phenomena and their worst form is seen in the Himalayan region which sustains a huge population and replenishes many several river systems. From the case study of Pir-Panjel Himalayan range, the authors found that both the natural and human made factors are responsible for landslide in this region.

There is constant increase of tourist flow in Ponch- Rajouri (Jammu and Kashmir) because of which the government agencies and the local people are developing large scale infrastructure, roads, huts, guest houses and other amenities of tourist use. This has no doubt increased the tourism but had hampered the environment (Verma and Mushtaq, 2013).

#### **Landslides from the Local people lenses: Field notes**

One of the senior respondents said about 1890's

landslides which he heard from his parents when he was very young. He mentioned that he heard people saying 1890 landslide was also disastrous which was during the time of Namgyal Dynasty. However, not much information was provided about 1890 landslides and couldn't find any substantive literature to support this statement. The other famous landslide stories which people still talk, heard or still carry on their memories are the landslides of 1950, 1968, 1976. The recent memories they carry are about the landslides of 2002, 2007, 2015.

Almost all the respondents in both the states said about the 1968 landslides. When asked about the stories they heard from their parents, majority told about 1968, which is dangerous so far according to them, tagged as "daarlagdo bhal paireo" (dangerously flooded landslide). From the highly landslide prone villages of South Sikkim and Kalimpong, people remember which they don't forget and they continued passing it to the next generations.

This kind of Passing of memories from the entire society to the next generation is termed as Cultural Memory of disaster (Dalisay). These memories have become a common memory for the entire community in those villages.

Many respondents have heard about the landslides deaths of their family members, their relatives and neighbor. These stories, they still carry with them. Almost all respondents have heard about 1968 landslides, many have experienced also and many don't want to remember.

There were quite a few numbers of respondents remembers the stories they heard about 1950's landslides. However, almost everybody has heard about the 1968 landslides, including the respondents from both the high landslide and low landslide prone villages.

According to some respondents they were the survivor of 1968 landslide when they were small. One of the respondents said 'I was all dumped within the mud and but somehow people found me alive, my other 7 family members were killed.'

As told by one of the Respondent Ash Bdr Rai, 1968 was heavily disastrous that they were not able to take the deceased body to the cremation place. They did all the rituals together for atleast 17-18 deceased bodies nearby. Respondents said that many people shifted from the village because of the severe landslide problem.

There are varieties of responses that came when

asked about the belief about landslides. Some are of the opinion that it's a natural disaster. However, many are of the opinion that it's due to the excessive human intervention. Some respondents from the villages of Turung Mamring (South Sikkim) blame the government for underground tunnel construction which has made the land more vulnerable to landslide. Some other denies these statements as they believe that the tunnel construction is not the reason for landslides as landslides were there before the tunnel constructions.

Many respondents believe that landslides will occur anyway if it has to occur. Landslides occurs even in unexpected places. They have witnessed landslide even in dense forested regions. Some believes that landslide is the result of the animal sacrifice nature of worship followed by some people in the village, because God doesn't support violence. Most of the respondents have experienced landslides within the village. Some say that outside village also they have faced landslides. Respondents said that their belief is based on their experiences, incidences they have faced and what they have heard from other people.

Landslide being a major problem has left a marking impression. Many felt the nature itself is so unjust and doesn't treat everybody equally, then how can they believe in human beings. Some respondents are of the view that being poor is being vulnerable to natural calamities. If they had enough money they would have shifted to a safer place like some others did. Respondents are also the opinion that they have to face it anyway; no human being is problem free. Many youth respondents felt that the government is always ignorant towards these rural vulnerable places and not doing anything to lower the risk of landslides agricultural field.

According to World Health Organization health is defined as "a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity." Landslide has immense effect on the health and well being of the people especially people living in high vulnerable zone. They feel that

landslide destroyed everything, their family members, friends and relatives were killed. One of the female respondents (from Mull Kharka village) told that when she saw a big landslide happening nearby her house, she felt her heart was shaking and was taken to hospital ('mutu pura kamera hostpital lago'). Many respondents gave a common type of response that landslide is mainly damaging their agricultural field which is their basic means of earning livelihood. Whenever it rains heavily, their stress starts. Landslides have hampered their mental health badly according to people.

The question was asked to the respondent about their household location with regard to landslide safety. Talking about the high landslide prone Gram Panchayat, 63.63% of the household respondents feel their houses are the in severe landslide zone. In case of Sangsay Gram Panchayat area, 96.42% of the household respondents felt insecure about their houses and considers their houses to be located in highly prone landslide region.

#### Personal Experience and Observations from the field

The two Gram Panchayats under severe landslide zone were situated on the rough topography without proper roadway connection. Other than one village (Kirtipur) the rest villages were having the scattered household settlement pattern. There were many cases where there are no footpaths also and people asked me to jump from the stone wall directly. Walking within the cornfield was everyday's activity while surveying Danak village. Absence of jeep able roads was more time consuming. It took me four months (March 2019- July 2019) to cover six villages from two Gram Panchayat of severe zone. The respondents were from the age group of 25 to 82 years.

Finding accommodation was not a problem, but covering the households from the residing place was very challenging. The most scattered villages surveyed were Mull Kharga, Bich gaon and Lower kharka of Sangsay Gram Panchayat. Crossing large

**Table 1.** Distribution of household by landslide severity and Gram Panchayat

Gram Panchayat	Highly landslide prone area	Medium landslide prone area	Low landslide prone area	Completely safe area	Total
Turung Mamring (High)	42	18	5	1	66
Sangsay (High)	54	1	1		56
Total	96	19	6	1	122

portion of forested land was must to cover the household. I was told that it will take two and half hours walk to reach the other village from Mull Kharga where I was residing. However, it took me nearly four hours to reach the other village. Even after starting at early morning (6 a.m.), in a day I was only able to cover 2-3 households per day. For initial first two days survey in Kharga, it was night in the middle of the forest with almost no mobile connection, meet two groups of school students also crossing at the same time one after the other. There were bed-ridden people without medical care. The distance between the households were also huge, atleast 45 minutes walk. Therefore, MGNREGS work till now has not been able to complete the cc footpaths which are the major need of the people. In case of landslide risk reduction activity the scheme seems not to be of much help. The region is affected by many landslides and is known as Paireni (Settlement in landslides)

Staying for nearly two months in the villages of Turung Mamring Gram Panchayat, many things came into notice. This place in south Sikkim is better in infrastructure wise than the Kalimpong's Sangsay. Jeep able roads and footpath were better here. However, the society is highly caste based (a rare phenomena in the state) and superstitious in many aspects like there are many witch hunters (locally call as dhami, jhyakri, mata etc). School dropout rates are quite high followed by marriage through eloping at an early age. I've been told that some of the children have left school after they fell ill (with unsound behavior) in school. People believe that the school should do some big prayer service (Pooja rituals) in order to control the evil forces. One of the officials from block office have informed that this area is very sensitive area and a few years back they have rescued four female children from sexual assault.

The villages are affected by two major landslide (famously known as Turung Pairo and Bimbong Pairo) and many multiple small landslides. The area is semi arid in nature and sometime faces forest fire (darelo) during the dry windy season.

Plantation of bamboo and broom plants (Amliso), which are believe to be effective for landslide prevention are seen in abundance. These plantations are done on private land through MGNREGA. Beside these, the forest department has also done some of the tree plantation for landslide prevention.

In one of the village (Kirtipur) Water harvesting

tanks are built through MGNREGA in most of the surveyed household; however it came into notice that, due to scarcity of water, people have started using these tanks mainly for storing drinking water. Among the household surveyed, one of the household has also made water harvesting tank at their own expense, which they are using for rainwater harvesting for landslide mitigation and for agriculture purpose. Jhora Binding also known as jali wall (protection wall with nets) has been done more on the roadside's slope.

The field survey was not very easy, but gave the experience to understand the subject and staying in the different villages provided an opportunity to understand the rural disaster problems very closely.

## References

- Alexander, D. 1993. *Natural Disasters*, Boston London, Kluwer Academic Publisher. Retrived from <https://journals.sagepub.com/doi/abs/10.1177/030913339501900210> (Accessed on 12/08/17)
- Dekens, J. 2007. "Local Knowledge for Disaster Management. *International Centre for Dorren, M (2011). The Role of Community Based Knowledge and Local Structures in Disaster Management, A Case Study of Landslide Occurrences in Nametsi Parish of Bukalasi Sub County in Bududa District, Eastern Uganda*, (Master's Dissertation, University of Agder). Retrieved from <https://brage.bibsys.no/xmlui/bitstream/handle/11250/135207/UT503%202011%20spring%20Master%20thesis%20Misanya%20Doreen.pdf?sequence=1> (Accessed on 02/03/2017)
- Dorren, M. 2011. *The Role of Community Based Knowledge and Local Structures in Disaster Management, A Case Study of Landslide Occurrences in Nametsi Parish of Bukalasi Sub County in Bududa District, Eastern Uganda*, (Master's Dissertation, University of Agder). Retrieved from <https://brage.bibsys.no/xmlui/bitstream/handle/11250/135207/UT503%202011%20spring%20Master%20thesis%20Misanya%20Doreen.pdf?sequence=1> (Accessed on 02/03/2017)
- Helgeson, Simon and Stefan, 2013. Vulnerability to Weather Disasters: the Choice of Coping Strategies in Rural Uganda. *Ecology and Society*. 18 Retrieved from <https://www.ecologyandsociety.org/vol18/iss2/art2/> (Accessed on 2/11/2019)
- Kitutu, M.G., Muwanga, A., Poesen, J. and Deckers, A.J. 2011. Farmers Perception on Landslide Occurrences in Bududa District, Eastern Uganda. *African Journal of Agricultural Research*. 6(1) : 7-18. Retrieved from <https://www.mak.ac.ug/documents/Makfiles/theses/>

- Kitutu\_Kimone\_Mary\_Gorret.pdf (Accessed on 2/11/2019)
- Kumar, M. 2014. Living with Floods-A Study of Rural Communities in Sundarban, Sodhganga.s
- Kumars Zarafshani, 2007. Drought Vulnerability Assessment- The Case of Wheat Farmers in Western Iran. *Global and Planetary Change*. 98-99. Retrieved from <https://core.ac.uk/download/pdf/55764073.pdf> (Accessed on 4/11/2019)
- Verrma, A. and Mushtaq, 2013. Landslides: An Environmental Hazard in the Pir- Panjal Himalayan Range in Pooch District of J & K state, India. Retrieved from <https://pdfs.semanticscholar.org/d1a7/6810c65163df7054f9db806cf48b1e6c4454.pdf> (Accessed on 4/11/2019)