

# Assessment of Rural Socio-Economic Recovery in a Post-Disaster Scenario: A Case Study of Mahadevsthan Mandan, Kavre

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## Abstract

The Gorkha earthquake of 2015 was responsible for quite a significant loss of life and property. The loss was prominent enough to mask the socioeconomic recovery needs of the affected areas. Rural livelihood recovery must consist of much more than shelter building and the impact it has had on livelihood (and by extension on the socioeconomic fabric must be considered). This research focuses on examining the impact of the 2015 Gorkha earthquake on rural livelihood and recovery efforts in the post-earthquake scenario. This research adopts a cor-relational strategy. The research tools adopted are questionnaire survey and focus group discussions, whose data are triangulated for validation using key information strategy as well as field observations. Total nine focus group discussion was held with nine different clusters of population, which were formed considering the most prominent nine ethnic groups found in the case study area. Purposive sampling of 30 respondents was taken from the same nine population cluster for the questionnaire survey. The research findings include the positive co-relation between losses in seed stocks during earthquake and loss in food production which has caused added economic stress and less reliance on home-grown food in the case study area. Irrigation as infrastructure is observed as an important dimension of rural livelihood and how the adaptation of new methods have helped in rural agricultural irrigation. The research also sheds some light on how marginalized communities have suffered in the education sector, having to abandon education to meet families' demands. The research concludes that livelihood recovery has, unfortunately, taken a backseat in the present recovery scenario due to which rural population such as Mahadevsthan Mandan have not been able to recover from the effects of the 2015 Gorkha earthquake..

## Keywords

Disaster, Livelihood Recovery, Rural Recovery

## 1. Background

Recovery has been defined by many scholars in their own different ways. (Mileti,1999) and (Joakim,2008) have defined it as “the longer term activities undertaken to recover from a disaster event in an attempt to return the community to pre-disaster norms”. However, the view has not been universally accepted as (Alesch, 2004) argues that communities rarely return to pre-disaster form as “they struggle to achieve viability in the newly-emerging environment within which they exist”. More recent definitions explore how recovery entails the “decisions and actions taken after a disaster with a view to resorting or improving the pre-disaster living conditions of the

stricken community while encouraging and facilitating necessary adjustments to reduce disaster risk” (UNDP, p. 3).

Most post-disaster recovery efforts addressed the social, built, economic and environmental domains. The types of recovery activities included; (a) Social: physical and psychosocial support such as health care, counseling, and programs targeted to increasing community welfare such as art initiatives or memorials (b) Economic: support to buffer and improve the local economy. This may include stimulus activities, assistance to primary industries or tourism, employment programs, or business counseling development. ( Ryan, Wortley, and Shé,

2016) The phases of post-disaster situation varies from country to country given their economic condition to cope with calamities. The issue becomes more complicated when the country, place or the region is affected by the political and security crisis. (Gaillard, Texier et al. 2008). Political and Security crisis according to author means, the crisis within the governance of the country which may include instability, social insecurity (education, health, income). This paper aims at examining the impact on livelihood due to Gorkha earthquake and efforts carried out to revive the livelihood in a post-disaster recovery phase.

## 2. Literature

Chambers and Conway in their book “Sustainable Rural Livelihoods: Practical Concepts for the 21st Century”, defines livelihood as “the people, their capabilities and their means of living, including food, income, and assets (tangible and intangible). A livelihood is socially sustainable which can cope with and recover from stress and shocks, and provide for future generations. (Chambers and Conway, 1991). (Ellis, 1998), further elaborate that livelihood comprises of both incomes in cash and in kind. Considering a growing trend among Nepali households to rely on multiple income sources which necessitate to widen the scope of circular income flow with livelihood (Chatterjee and Okazakia, 2017).

(Rakodi, 1999) suggests at household level, the assets available are a superset of capitals which can be used to create income or other benefits for the household. So, at the basic level, household and livelihood are connected by the circular income flow where households provide labour, land and capital and in return gets wage, income and goods and services (Chatterjee and Okazakia, 2017) Restoring employment and income generating opportunities to disaster-affected communities is a vital component of post-disaster reconstruction. Livelihood opportunities are severely disrupted by the destruction or loss of essential assets; with the result that people are unable to engage in normal income generating activities; become demoralized and dependent on humanitarian aid. (Practical Action, n.d.) Every livelihood activity requires a person or a group to have resources or capitals such as tools, livestock, farmland, etc. The person or a community who doesn't have their own livelihood (such as – child, senior citizens, disabled, etc.) are either dependent on the family member for

their livelihood or charity from the government or other agencies especially NGO's and INGO's (Gaillard, Wisner, and Kelman, 2012).

A livelihood may involve countless types of income-generating actions ranging from begging to business, farming to working in industry. In relation to threats, livelihood is one of the basic component or capacity to protect themselves. Like we discussed while explaining vulnerability with the role of government to provide the opportunities to the people for living a less vulnerable life. Livelihood vulnerability of the people is largely dependent on the level of income available to the household to fulfill the criteria of preparedness, awareness and make them resilient to cope after the disaster phase. (Cannon and Terry, 2008). When we thoroughly look at Cannon (2008, p. 25) , the main indicators are categorized specifically into two aspects: The amount and the quality of capital owned or accessible to the person to enable his/her productive and income-generating activity. Access to employment activities or other income-generating opportunities when lacking productive capital

**Table 1:** Component of Vulnerability, Livelihood and Determinants

Type of Vulnerability	Components	Determinants
Livelihood Vulnerability	<ul style="list-style-type: none"> <li>- Income opportunities</li> <li>- Livelihood type</li> <li>- Assets and Savings</li> <li>- Health status</li> </ul>	<ul style="list-style-type: none"> <li>Socio-economic:</li> <li>- Class Position</li> <li>- Gender</li> <li>- Ethnicity</li> <li>- Age</li> </ul>
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As shown in Table 1, various determinants of livelihood vulnerability socioeconomic factors such as ethnicity, age, gender and caste, and its components are livelihood type, assets and savings, and health status. However, in ‘Cannon’s Model’5, the components of livelihood vulnerability is determined by the action of the state and influence in resource distribution of the people in the area. (Katwal, 2016) (UNDP, 2013) , has classified livelihood’s assets of individuals, households, and communities into six capital assets: human, natural, physical, political, financial, and social assets. Human capital assets consist of skill levels and educational attainments, access to food education and healthcare, whereas natural capital assets consist of an environmental condition and natural resources management.

Similarly, physical capital assets focus on access to adequate housing, use of infrastructure, financial capital assets on coping and adaptive strategies like the loan is taken, selling or trading assets and social on participation in the social organization.

### 3. Research context/Setting

In 2015 a devastating earthquake hit the hilly region of Nepal causing heavy loss of life and properties. Fourteen heavily affected district are Gorkha, Dhading, Nuwakot, Rasuwa, Kathmandu, Lalitpur, Bhaktapur, Makwanpur, Kavre, Sindhupalchowk, Dolakha, Ramechhap, Solukhumbu and Okhaldunga. These districts are populated by various indigenous groups, of the total loss and damages caused in most affected 14 districts, 26 percentage of the damaged houses belong to female-headed households and 41 percentage to a member of Dalit or indigenous communities who are already more vulnerable groups in the society (PDNA). The proposed site of our project is Kavrepalanchowk district which is located in the southern part of the Sindhupalchowk district, in the south-eastern borders of Kathmandu valley.

The study area of our project is one of the ward of Mandandeupur municipality of kavre, Mahadevsthan. It is one of the biggest wards in kavre district. It is about 24k.m. north from district headquarter Dhulikhel. Mahadevsthan is a passway for Helambu, a tourism place, trekking route to melamchi and Gosaikunda Which is a place of religious importance. This ward is surrounded by Chandani Mandan in the East and Nayagaun in the West. This ward Lies on the highway to tatopani and has good access via road.

From the census 2011, it is found that the total household of this ward is 1873, with a total population of 8166 of which 3890 are male and 4276 are female. The average household size is 4.36 and the sex ratio is 90.97. The literacy rate of Mahadevsthan Mandan is 68.23% of the total population out of which the total literate male and female are 78.71% and 58.80% respectively. Agriculture is the main occupation with livestock keeping as supplementary to the household economy. The major source of income is milk production. The major farming crops are paddy rice, maize wheat, mustard, and potato.

### 4. Methodology

In this particular research, the factors or the variables behind the assessment of rural socio-economic recovery in a post-disaster scenario were to be found and such findings needed the data production. Since the nature of data required an opinion from earthquake-affected population and the opinion varying among them, data could not be produced from the qualitative method. The possible variables behind the rural socio-economic recovery can be described for most likely truth. Hence, this research used co-relational research strategy in which structured questionnaire survey methods was adopted. The survey was carried out in three stages; : sampling, construction of questionnaire and operationalization. In this research, the sample frame was collected from the beneficiaries of the Mahadevsthan Mandan of Kavrepalanchowk district.

Due to resource limitations, probability sampling could not be done for this particular research as the number of samples w simply too large to handle. Hence, the researchers worked in collaboration with active social mobilizers in order to derive population clusters within the case-area based on the ethnic background of the population. As the case area consisted of 9 major ethnic groups, the same number of population clusters were identified. After the clustering, a focus group discussion with each cluster was held. Purposive sampling was then done within each of these clusters to whom the structured questions were administered and data were collected. During the purposive sampling, the sampling was done in such a way that respondents consisted of different age, gender, and social class. The purposive sampling consisted of 30 respondents and the data thus obtained was validated by Key Informant Interviews and case area observations.

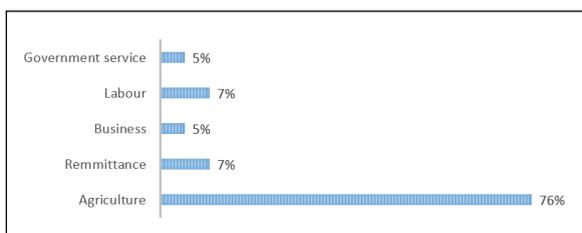
### 5. Dataset, Analysis and Findings

In this research, the primary source of livelihood was found to be agriculture. This finding was consistent with the literature review as rural Nepal has an agriculture-based economy. There was a minor contribution to the livelihood of the region by remittance, daily wage labor, business, and government service works.

Due to this agricultural nature of livelihood in this case area, the earthquake impacted seems to have

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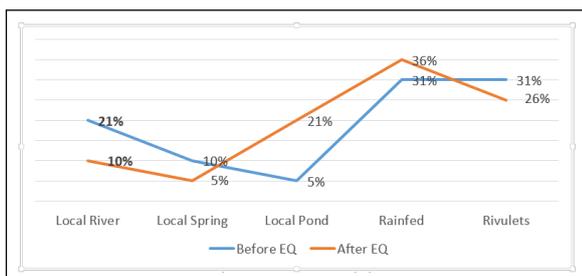
severely affected this sector. The food storage, as well as seed stock, have been hit hard by the disaster. 70% of houses saw their food storage completely destroyed whereas 60% of households saw their seed stocks destroyed. As a result, people have had to get their seed stocks from alternative sources. This hasn't helped them with their agricultural production, resulting in only half of the population to reach or exceed the amount of food production they were achieving before the earthquake.



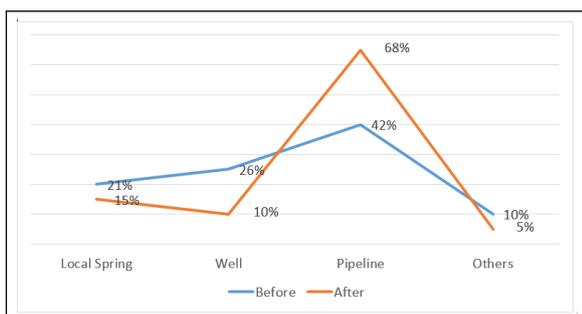
**Figure 1: Livelihood Sources**



**Figure 2: Seed Stock availability**



**Figure 3: Irrigation Practice methods**

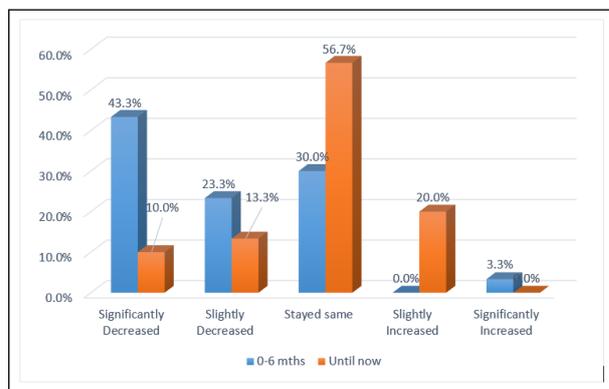


**Figure 4: Public access to drinking water sources**

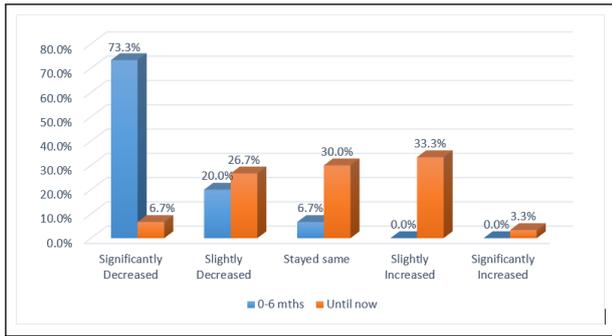
This has affected the household reliance on home-grown food in this area. 62% of the households responded that they are now less reliant on the home-grown food to meet their daily demands. This study area, where more than two-thirds of the population have agriculture as their main occupation has more than half the people relying less on homegrown food than before seems to be paradoxical. Irrigation is another dimension of livelihood which was hit by the disaster. 58% of the respondents have reported their usual irrigation systems to be damaged during the earthquake. This has caused the residents of this area to change their irrigation patterns and adopt new methods.

The study area has seen a rise of 5% in rain-fed irrigation systems due to impact other systems such as a local river, local springs or rivulets as a source. However, due to active beneficiary participation and livelihood recovery training programs conducted in the region, the concept of the plastic pond has been adopted as new irrigation technique which has seen "pond irrigation" rise by a significant amount (more than 4 times) the previous amount. The public access to drinking water has shown some positive results in the area. Where the local spring and well usage have decreased by a significant amount due to the damages sustained during the earthquake, the piped water supply has seen a substantial increase, resulting in easy access towards the community.

The local healthcare system has remained the same to a significant amount. The area only consists of one health post and the nearest hospital to the area is in Dhulikhel. No new infrastructures were built in order to cater to the healthcare system. An old health post was made operational, bringing little change in the status of the healthcare system of the community.



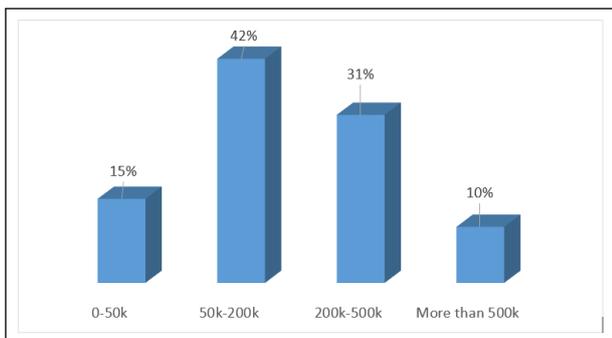
**Figure 5: Comparison of Healthcare access with pre-earthquake conditions**



**Figure 6:** Comparison of access to education with pre-earthquake conditions

The earthquake had a significant impact on the educational sector, especially of the school going children. More than 90% of the respondents agreed to decreased access to local school for their children. Among them, 23.3% dropped out of the school, 46.6% missed the classes frequently due to household problems and 30% had to change their previous schools. This amount has changed and the responded have said that access to schools is improving. It was also known that the locals are now preferring boarding schools instead of government schools and are even agreeing to send their kids to nearby town areas for better opportunities.

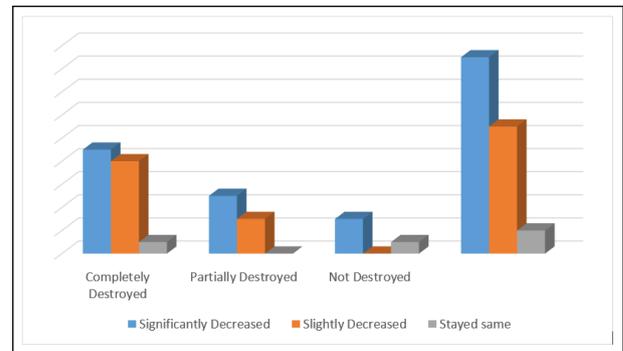
As the fund for reconstruction provided by the government was not nearly enough for the reconstruction purposes, nearly all the surveyed houses had taken loans from different sources. The study shows that 85% of the respondents had taken a loan of Rs. 50,000 and greater, with 40% exceeding the 2 Lakh mark (two-thirds of the government supplied fund). Most of these loans have been taken from co-operative organizations with the large interest rate, reaching up to 24%.



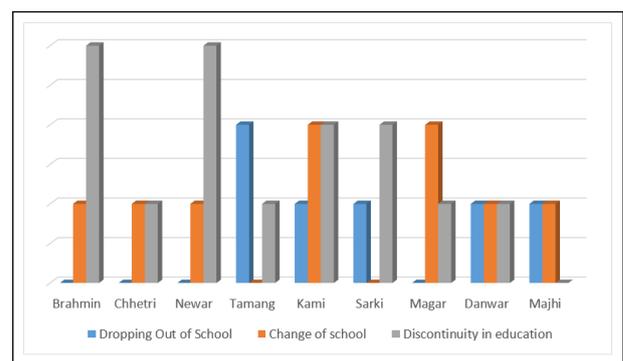
**Figure 7:** Amount of Loan Taken

## 6. Discussion

As the livelihood is mostly dependent on the agriculture-based economy, the effect of the earthquake on this has mostly been felt in the case area of Mandandeupur. The seed stock that was fully or partially destroyed by the earthquake was never recovered or replenished to the previous level. Thus there seems to be a drop in agricultural output of the area, causing the reliance on home-grown products to decrease and add extra economic burden to the households as they have to now buy food which they were previously producing themselves. When validated with key informants, it was known that the quality of seeds provided to the households in the aftermath of the earthquake was of lower quality, thus resulting in low food production.



**Figure 8:** Comparison of seed stock and food production

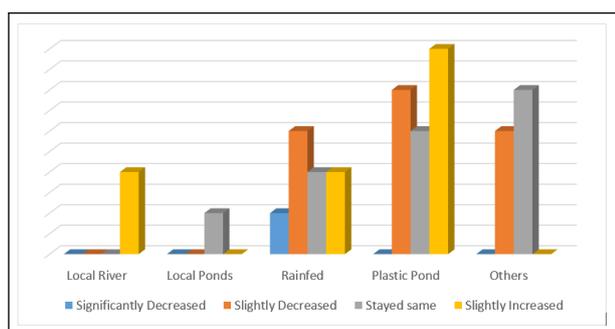


**Figure 9:** Comparison of irrigation and food production

There seems to have been significant changes in irrigation practices in the area as well. The newly introduced “plastic pond” method of irrigation seems to be proving a good alternative method of irrigation for the area as it has aided in food production. Other traditional systems such as rivers, rivulets, and

rain-fed irrigation system either needs to be reconstructed to achieve the previous efficiency in food production. As the local wells and local wells were damaged in the earthquake too, local access to drinking water has been supplied through newly built pipelines, which seem to have increased the public access saving time and energy at the same time.

The education sector also saw major disturbances due to the earthquake. Many schools going children faced difficulty in continuing their education in the aftermath of the earthquake. This effect was mostly seen in the marginalized communities as many of the children belonging to a lower ethnic group and marginalized community dropped out of school or faced severe discontinuities in their educations. Students were dropped out of schools and either sent to nearby cheaper schools or sent out to perform economy generating activities to meet the family's daily demands.



**Figure 10:** Comparison of education and ethnicity

As the majority of the population sought to find relief through loan systems to meet their livelihood demands, they were forced to accept an inflated interest rate in order to achieve the loan. As their most precious belongings were damaged in the earthquake, they had no choice but to accept this inflated rate. This has brought forward the culture of repaying one loan by taking a second loan. This practice, although seeming harmless at first, can be a slippery slope which may grow into cheating, fraud and Ponzi schemes which shall be detrimental to the economy of the community in the long run.

## 7. Conclusion

As government has prioritized shelter building in the post-earthquake recovery stages, the socio-economic

recovery of these disaster struck areas have seemed to be cast aside in the meantime. Although shelter building is of paramount importance, livelihood recovery as a socio-economic dimension cannot be left behind if a successful example of post-disaster recovery is to be set. Agriculture, irrigation, health care, drinking water, education, loan systems all have a vital role to play in the recovery process of rural context such as Mandandeupur and they should be taken hand in hand if a common goal of build back better is to be achieved.

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