Post Disaster Socio-economic Recovery in the Heritage Settlement of Kathmandu Valley after 2072 Earthquake: A Case of Sankhu

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Abstract

In the disaster phases, the recovery of socio-economic aspects have remained least understood areas that increase the risks leading to disasters due to earthquake. This research contributes to have knowledge by focusing on the disaster recovery process of the heritage settlement, Sankhu which was affected during Gorkha earthquake 2015. In this research the socio-economic indicators were selected from literature review and pre-testing was carried out with local people in the case area. The research tool adopted is questionnaire survey, whose data is triangulated for validation using key informant strategy as well as observations. Total three key informant was selected and random sampling of 75 respondents was taken from ward6, the traditional area of Sankhu considering equal ethnic groups, gender and age group. The research findings include that the female population have suffered in an education sector than male. Though monthly income has slightly increased after earthquake, still this level comes under lower income earning. The new livelihood of this area has turned to be in business, declining agriculture sector due to the cause of lack of facilities in irrigation system. The tourism sector have been highly affected and no new methods have been adopted by government as well as ward to promote this sector, only plan has been documented. Hence, the research concludes that the economy sector in this area has not been able to recover from the effects of 2015 Gorkha earthquake.

Keywords

Post disaster recovery, Socio-economic evaluation indicators, Sustainable livelihood

1. Introduction

1.1 Background

Nepal is world renewed for its cultural heritages and its majestic natural heritages. There are about 53 historic 'newari' settlements within Kathmandu valley. Heritage settlements are 'living heritage' that denotes habitation in heritage environment. The historic cities and settlements are society's centres for community interaction, creativity, knowledge, diversity, culture, commerce and economic activity. When an earthquake of 7.5 magnitude struck on 25th April 2015, the widespread damage affected almost all 1700 households, 10 percent of households doing retail businesses in their own houses lost their houses and their livelihood and 6.5 percent lost monthly rental income and informal settling increased. Therefore, the people residing in this heritage settlement have been affected largely in context of socio-economic aspect.

1.2 Rationale of research

As in 2015 earthquake, many heritage settlements have been destroyed and has adversely affected people's lives and livelihood. In most of these settlements the physical recovery have almost been completed. Mileti has also conveyed that the post disaster recovery of community should also address socio-economic aspects, instead of focusing only on restoration of physical aspects [1].. Hence, it is necessary to study how these settlements have been recovered and for this purpose one of the oldest heritage settlement, Sankhu has been taken as 90% percentage of building there had been destroyed due to earthquake.

1.3 Problem Statement

The post-disaster recovery has received the least amount of attention from hazard researchers, and is the least understood area of study within the hazards field [2].

There is lack of coherence between the heritage settlement and present day while facing challenges during post-disaster recovery phase. This phase, actually represents a historical opportunity by the in habitants so that the current social practices and desires are adjusted within the environment [3].

1.4 Research Objectives

1.4.1 General Objective

The main objectives of this study is to analyze recovery process in the heritage settlement and how the local people residing in this area have recovered themselves from 2015 devastating earthquake.

1.4.2 Specific Objectives

- To examine and compare the selected indicators of socio-economic recovery of heritage site.
- To examine the people's perception of post disaster socio-economic recovery to housing reconstruction.

1.5 Limitations

The study is also limited to only ward no.6. the oldest core area of Sankhu of Kathmandu valley because of time and resource limitation. The research is carried out by surveying random sampling distribution, hence the data interpretation would not include whole of the population but would represent us the certain distribution pattern of the settlements.

2. Literature Review

Recovery is defined as a non-linear and dynamic process which begins just after the disaster occur in any regions and country. Many researchers have defined post disaster recovery in different ways. Berke Kartez, & Wenger, 1993 defined post disaster recovery has been defined as the social problem solving process such as inequality and poverty which reduces vulnerability of affected population and hence, sustainable development is realized [4].

Likewise, post-disaster recovery is a holistic approach leading resilience of physical, socio-economic and environmental aspects. This has been built up by communities and hence allow them to absorb, impacts, respond and recover. As said by UNSIDR, 2009, it is the restoration phase, improving the disaster affected communities livelihoods and living conditions and also includes the efforts to reduce disaster risk factors [5]. The post disaster recovery includes social, built, economic and environmental parameters. Physical and psychosocial support such as health care, counseling, and programs targeted to increasing community welfare such as art initiatives or memorials are included in social parameters. Whereas in economic parameters include support to buffer and improve the local economy. Business counseling development, employment programs, stimulus activities, assistance to primary industries or tourism, are also included in revival of economy [6].

To examine the recovery process different authors have developed different indicators. Brown, Platt and Bevington (2010) has developed physical, environmental, social and economic factors to evaluate the recovery process [7]. He has mentioned that the recovery process can be compared with the base statistics and then can be evaluated and monitored. Even the government of Kobe, after 1995 earthquake has mentioned seven elements to be considered in recovery process and they are housing, social ties, community rebuilding, physical and mental health, preparedness, economy, livelihood, and economic and financial situations, and relationship to the government [8].

UNDP's has conceptual framework for recovery that promote 'building back better'. This has emerged during 2004 Indian Ocean, whose motive is to make communities better than they were before by recovering, reconstructing and rehabilitating those affected communities.The BBB under community recovery has two main aspects which are psycho-social and economy recovery. Social recovery includes service providing individual support to affected family, counselling services, social activities and specialized assistance.Disaster recovery also depends upon a community recovery economically where government support is important to rejuvenate their business. This also includes incentives such as bonuses, raising wages to attract skilled labors to facilitate rebuilding. Post disaster economic recovery also includes introducing innovative and diverse economic and livelihood options.

Table 1: BBB indicator for social and economic recovery [9]

Social Recovery	Economic recovery
Community Advisory Service	Economic recovery strategy plan
Specialised assistance to the vulnerable group	Supporting locals to rejuvenate business
Psychological support and counselling services	Alternative livelihood options
Activities to create community's togetherness	Restoring economic activities
Informing Community	Tracking economic recovery
Rebuilding public facilities and heritage sites	Government support
Community input	Business advisory services
Owner driven rebuilding	Speedy business recovery
Transparency	New business options

According to the World Bank, 2012, "heritage" refers to assets having characteristics of physical and/or non-physical assets inherited from past generations, significance to community and being uncommon rare or unique. Heritage settlements have both economic and socio-cultural value. The basic principle of post-earthquake recovery in heritage settlements are community led-community mobilization, common interest and participation , owner built houses, technical assistance- built heritage personalized technical service required , local authority- manager and provider of subsidies, incentives, tax waiver etc, federal and provincial government role, monitoring and funding for heritage conservation and infrastructure improvement and development and in private sector role includes tourism promotion and marketing.

According to World Bank, in 2020 Nepal's gross national income (GNI) per capita was $1190 which exceeded threshold of $1036, thus it rose to a lower-middle-income country from a low income country. Globally, people live on $10.01-$20 a day, annually this income converts to about $14,600 to $29,200 for a family of four. Whereas, poor live on $2 or less daily, low income on $2.01-$10, upper-middle income on $20.01-$50, and high income on more than $50.

The recovery vision of Post disaster recovery framework established in 2016 have guidelines for socio-economic recovery that includes policy which would provide assistance to earthquake-affected families by not discriminating and maintaining transparency. The five recovery strategy are:

- To restore and improve disaster resilient housing, government buildings and cultural heritage, in rural areas and cities.
- To strengthen the capacity of people and communities to reduce their risks and vulnerability and to enhance social cohesion,
- To restore and improve access to service and improve environmental resilience,
- To develop and restore economic opportunities and livelihoods and re-establish productive sectors and
- To strengthen capacity and effectiveness of the state to respond to the people's needs and to effectively recover from future disasters.

3. Research Context/Setting

The study area is located at 20km northeast of Kathmandu, Sankhu. About six years ago, the earthquake killed 98 people, injured nearly 200 in this heritage settlement. Here, there was destruction of more than 6000 of monuments and homemade bricks and mud. Out of them, 70% ere traditional buildings and 24% were modern while rest was neo-classical [10].

The research area is Ward-6, the core area of Sankhu where many buildings, temples, ponds and hitis have been destroyed. According to Shankharapur municipality profile, 2075, the total population of Sankhu is 27202. Among them about 3209 resides in ward 6. of which 1581 are males and 1628 are females. The total number of households is 670. In Sankhu, 19% of total population are have received formal education, 18% primary level, 20% secondarry level, 16% higher secondary level, 8% master, 2% master and 1% Mphil. While 16% population are illiterate. Agriculture and business are the main occupation with livestock keeping as supplementary to the household economy. In this area, paddy rice, maize wheat, mustard, and potato are the major farming crops.
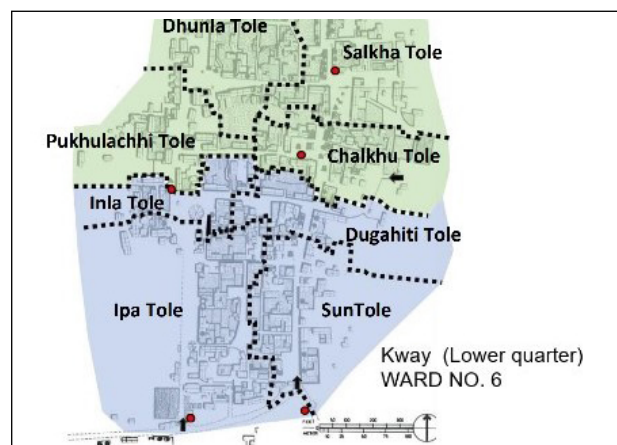

Figure 1: Wardwise and tolewise division of Sankhu(Source:Shankharapur municipality)

4. Methodology

In the post disaster recovery context, the findings needed the data production and this data could not be produced from the qualitative method. The possible indicators behind the 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.

In this research, the indicators for socio-economic recovery was selected from literature review and structured questions were prepared using nominal, ordinal and interval scale and then they were pre-tested with local people of Sankhu,, ward 6.The revised questions were distributed among the people in google forms. The sample size was determined by using simple random sampling size formula and was obtained to be 75 and the data obtained was validated by Key Informant Interviews and case area observations. The survey was carried out considering equal age groups, gender and ethnic groups.
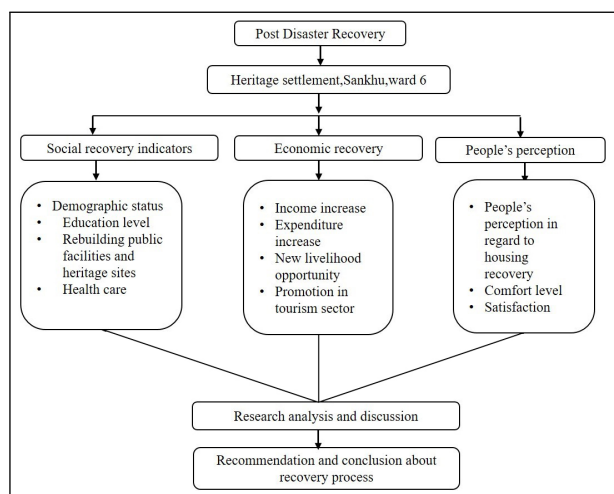

Figure 2: Conceptual Framework

5. Datasets, Analysis and Findings

5.1 Social indicators

5.1.1 Demographic status

The population of Ward 6, Sankhu grew 0.27 percent between 2068 and 2075 B.S (or at rate of 0.27 percent during seven years of time period). The lesser percentage of population growth is due to the casualties during earthquake. Likewise, the number of household has also decreased to 670 compared to census 2068 B.S. which is 695.This is because of the result of collapsed and damaged of houses at the time

of earthquake, which has affected the household of this ward.

Ward 6	2068B.S.	2075B.S.
Total population	3149	3209
Total household	695	670

Table 2: Demographic status in ward 6 (Source: CBS, Shankharapur municipality)

5.1.2 Education Level

The education level of ward 6 before earthquake were: 33.65% had studied primary level while 40.31% had studied secondary level. After the earthquake, the education level for primary and secondary level were 27.83% and 44% respectively. The trend after the earthquake for intermediate, graduate and postgraduate were 10.99%, 5.51%, 1.32%, which has slightly increased, while the illiteracy rate which is 10.35% after the earthquake has decreased.
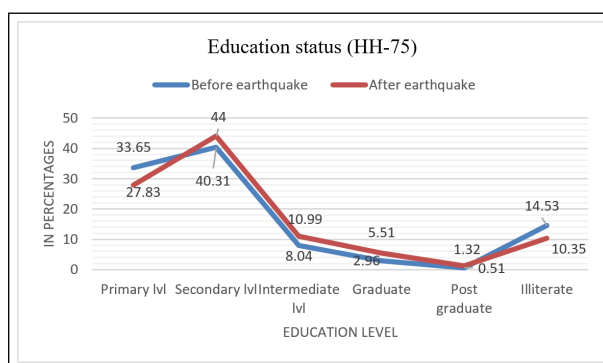

Figure 3: Comparison education level before and after earthquake)
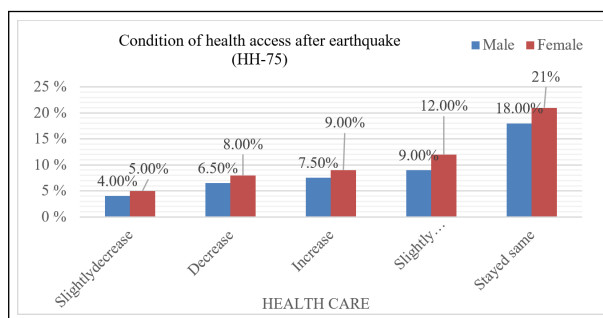
5.1.3 Health care access

Figure 4: Health care access after earthquake)

In the survey, when asked about the health care accessibility genderwise, the maximum respondent

that the health condition remained same before and after earthquake. About 12% female and 9% male respondent that there is slightly increased in health access. Likewise, 7.5% male and 9% female respondent that there is increase in health access. Similarly, 4% and 6.5% male respondent that there is slightly decrease and decrease ,while 5% and 8% respondent female there is slightly decrease and decrease in health access respectively.

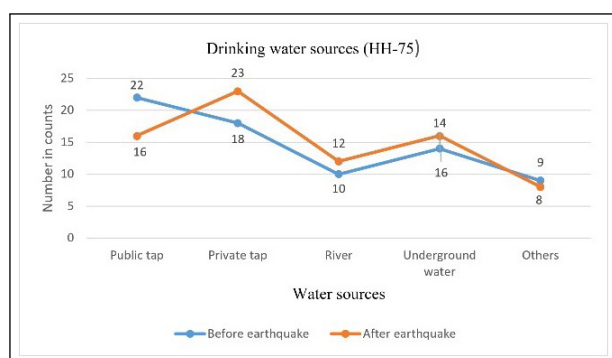### 5.1.4 Public facilities: Water sources

Figure 5: Comparison of water sources before and after earthquake)

The drinking water sources before earthquake was public tap, then comes private tap followed by underground water and river. Similarly, after the earthquake the use of water for drinking purpose have changed. The maximum people used private tap, then public tap whereas the underground water and river used remained in same order after the earthquake also.

5.2 Economic indicator

5.2.1 Monthly Income

Income(Rs)	Before earthquake	After earthquake	Var (%)
0-5000	12%	8%	-4
5000-10000	26.66%	17.33%	-9.33
10000-20000	32%	36.33%	4.33
20000-50000	25.33%	32.68%	7.35
50000-100000	4%	4.33%	0.33
Above 100000	-	1.33%	1.33

Table 3: Comparison of Monthly Income)

In ward 6, the range between 0-5000 and 5000-10000 has decreased by 4% and 9.33% respectively. Whereas in other ranges i.e. 10000-20000, 20000-50000, 50000-100000 and above 100000 has

increased by 4.33%, 7.35%, 0.33% and 1.33% respectively, hence, there is slightly increased in income rate after earthquake in these ranges.

5.2.2 Monthly expenses

Expenses(Rs)	Before earthquake	After earthquake	Var (%)
0-5000	13.33%	10.66%	-2.67
5000-10000	29.33%	20%	-9.33
10000-20000	37.33%	42.66%	5.33
20000-50000	18.66%	23.66%	5
50000-100000	1.33%	1.66%	0.33
Above 100000	-	1.33%	1.33

Table 4: Comparison of expense income after earthquake)

The expenditure in ward 6 is maximum in the range of 10000-20000 and after the earthquake the expenses has increased to 5%. Likewise, in the range of 20000-50000, 50000-100000 and above 100000 also has increased by 5.33%, 5%,0.33% and 1.33% respectively. While, in the range of 0-5000, 5000-10000, the income has decreased with the rate of 2.67% and 9.33% respectively.

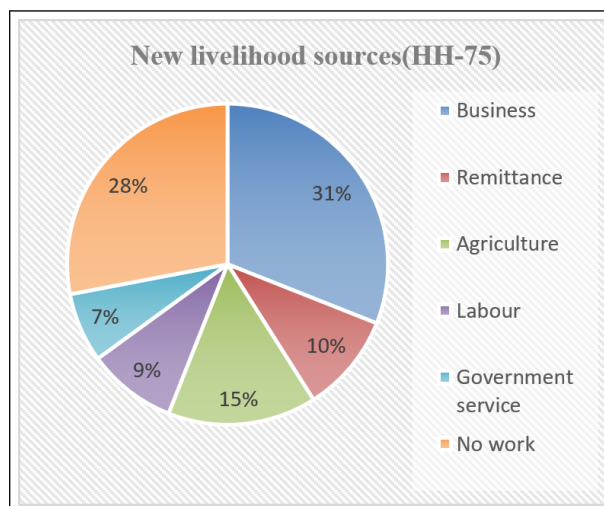### 5.2.3 Newly livelihood opportunities

Figure 6: New livelihood sources after earthquake)

The people mostly engaged in Sankhu is in agriculture. But survey says that the people in ward 6 are mostly engaged in business sector. About 31% people are in business, 15% in agriculture, 9% are labor while 10% are in remittance and 7% are in government services respectively. Hence after the earthquake most people have engaged themselves in business area, remittance

and labour which is the newly livelihood sources which is verified by key informant also.

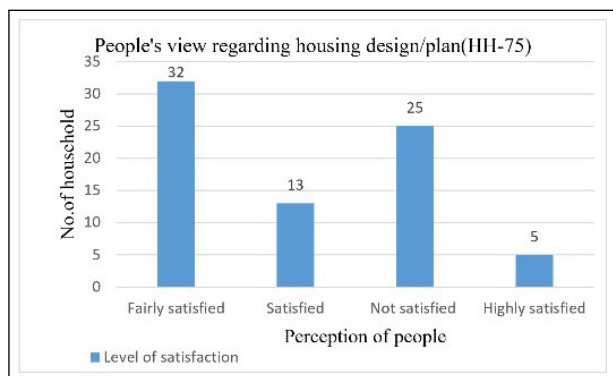## 5.2.4 People's perception about housing reconstruction

Figure 7: Showing people's perception about housing reconstruction)

People's view regarding housing design/plan, 32 respondents were fairly satisfied while 25 were satisfied, whereas 13 and 5 respondents were not satisfied and highly satisfied respectively.
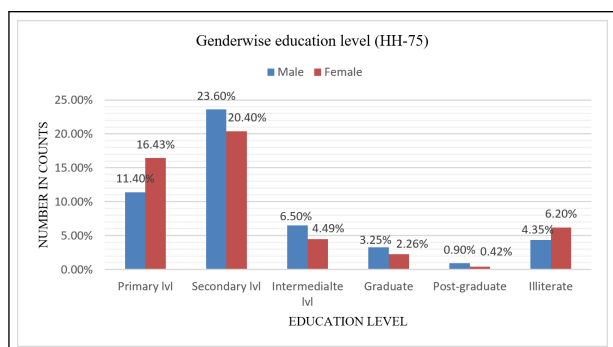
6. Discussion

Figure 8: Education level gender-wise in ward 6)

Out of 75 respondents, males studying primary, secondary, intermediate, graduate, post graduate are 11.4%, 23.6%, 6.5%, 7.2%, 3.25%, 0.9% and 4.35% respectively. While female receiving education in these levels are 16.43%, 20.4%, 4.49%, 2.26% and 0.42%, respectively. The illiteracy rate of female is 6.2% which is higher than male which is 4.35%. Hence, male is more educated than females in this ward.

From key informant, related to education sector got an information that this ward has about six educational institutions. For secondary level there is only one public school and two institutional schools. For higher secondary school, both public and institutional are of only one, whereas for college here is only one institutional for education. From graph, it shows that in ward level the people earning income at the range of 10,000-20,000 is the highest. Whereas in municipal level people earning at the range of 20,000-50,000 is the highest.
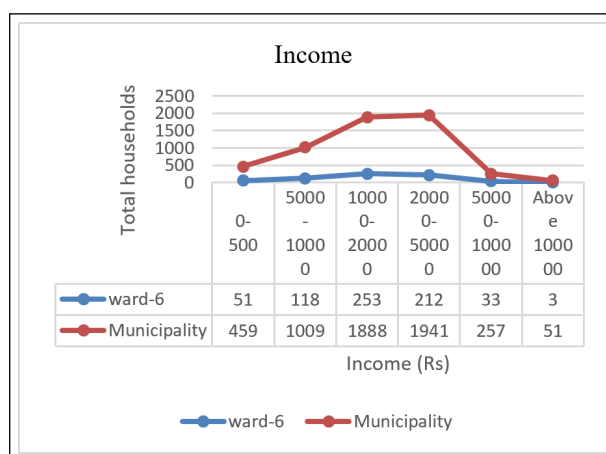

Figure 9: Comparison of income earning between ward 6 and municipality)

Table 5. Shows that the average monthly household income after earthquake in municipality is Rs.26100 whereas in ward level it is of Rs.21472.63. While calculating average daily household income it becomes Rs. 870 in municipality and in ward level it's Rs.715.7.This when compare with the standard income level world wise, in municipality average daily household income is $7.40 whereas in ward 6 is $6.14, hence this lies in the category of low income range from literature.

Income	Municipality	Ward
Average monthly household income	Rs.26100	Rs.21472.63
Average daily household income	Rs.870	Rs.715.7
Average daily household income in dollars	$7.40	$6.14

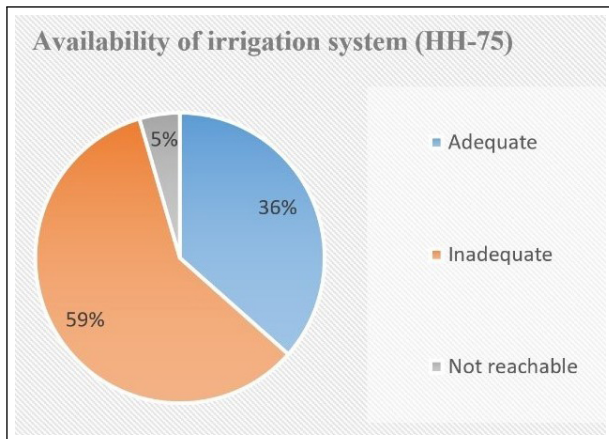**Table 5:** Comparision of Income after Earthquake

Figure 10: Public facilities-Availablity of irrigation system in ward-6

Though agriculture is the main occupation, the people have adopted new livelihood opportunities in business sector. The reason behind is the lack of proper irrigation system. During survey it was found that only 59% had inadequate irrigation system, 36% had adequate while 5% had no accessibility. Recently, Rajkulo (irrigation system) is under reconstruction.
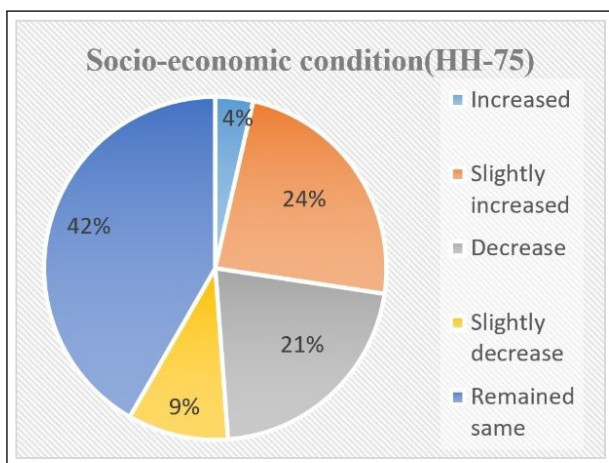

Figure 11: Perception regarding socio-economic condition)

People's perception regarding socio-economic condition when surveyed, 42 % respondent remained same , 24% respondent slightly increased , 21% respondent decreased while 9% respondent slightly decreased and 4% respondent increased.

When surveyed, 50% of people were comfortable with the design of their houses after the earthquake, 21% were comfortable before earthquake while 29% felt no change. Maximum people were comfortable as the buildings were made up of modern technology i.e. RCC structure with traditional facade treatment only

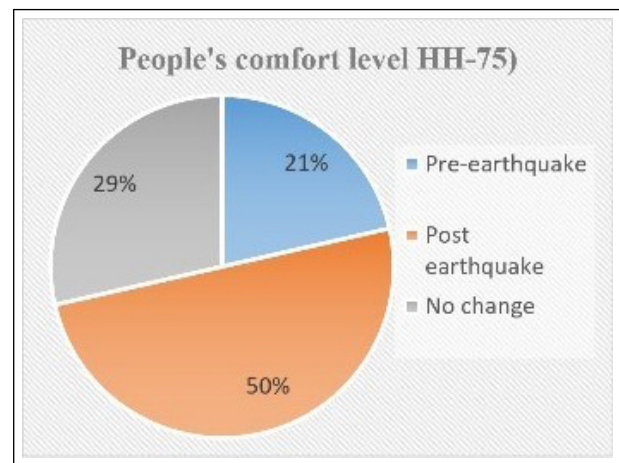as guided by Shankharapur municipalities building bye-laws.

Figure 12: Showing people's comfort level before and after earthquake)

The information that the researcher have got from key informant about the revival of economy; the women were involved in many vocational trainings by municipality like weaving, tailoring and making pickles. Many of women are now engaged in small scaled business like servicing pickles, dairy products etc. For income, the men are also involved in restoring the heritage structures.

In tourism sector, presently, there aren't any tourist visiting in this heritage settlement which has affected the economy state of this area. To attract tourist, for now only physical infrastructures have been focused like reconstructing ponds, temples, dungedharas, rajkulos and traditional style houses. The later projects that they have decided would be encouraging local people to engage them in art and culture.

7. Conclusion

The government has prioritized physical infrastructure in post-earthquake recovery stages. In ward 6, in Sankhu more than 90% buildings have been reconstructed. But, seeing socio-economic recovery indicators, education, income earning, agriculture, irrigation system and tourism sector need to be improvised in order to set a successful example of post-disaster recovery. Along with infrastructure these indicators play a vital role in the recovery process and they should be taken hand in hand if a common goal of build back better is to be achieved.

8. Recommendation

After analyzing the socio-economic condition of this area, the lives and livelihood of people must be revived. For this, following things can be adopted to increase economy of people.

- Introducing new business opportunities like money exchange, trekking, travel, travel, ticketing, souvenir's shop, market hub.
- Promoting tourism by establishing tourism related industries, resort, handicraft and homestay. Tourists can be attracted in this area by non- living heritage like local festivals, traditional Bhajans, songs, folk dance etc.
- Introducing new technology in irrigation as well as agriculture field.

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