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Post Disaster: Social Cultural Impact in the Resettlement: In case of Giraunchaur, Sindhupalchowk

by

Rabin Kambang

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DECLARATION

I hereby declare that the thesis entitled "Post Disaster: Social Cultural Impact in the Resettlements: In case of Giraunchaur, Sindhupalchowk", which is submitted to the Department of Architecture, Pulchowk Campus, Institute of Engineering, Tribhuvan University in partial fulfillment of the requirements for the degree of Masters in Architecture (M.Arch.) is a research work carried out by me, under the supervision of Prof. Dr. Sushil Bahadur Bajracharya between Chaitra 2078 to Bhadra 2079. I declare that the work is my own and has not been submitted for a degree of another University.

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The undersigned certify that they have read, and recommended to the Institute of Engineering for acceptance, a thesis entitled **"Post Disaster: Social Cultural Impact in the Resettlements: In case of Giraunchaur, Sindhupalchowk"** submitted by **Rabin Kambang (076March013)** in partial fulfillment of the requirements for the degree of Masters in Architecture.

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ABSTRACT

After Gorkha Earthquake 2015, Nepal faced rapid housing demand in urban and rural context. In consideration of ease of providing necessary services, integrated settlements have been prioritized for resettlements by Nepal Reconstruction Authority (NRA) and Department of Urban Development and Building Construction (DUDBC). In contrary to the popular belief of resettlement bringing well-being, issues of ignorance towards community identity, social-cultural and economic needs have been observed. The study focuses on two resettlements in close-proximity with similar social-cultural lifestyle in Giraunchour, Sindhupalchowk. Namuna Ekikrit Basti and Shree-Namadoling Ekikrit Basti has been built by Dhurmus-Suntali Foundation and joint effort of CG-Foundation and Nepal Reconstruction Authority (NRA) respectively. Field observation, key-informant interview, questionnaire survey has been done to understand the change in societal way of living in both areas. User-committee faces a challenge in addressing the building rapid houses along with addressing the demand of individual people in the community together with the economic challenges. Furthermore, the acceptance of ideologies of donor agencies plays additional impact. Both Basti faced restriction of livestock and has made a serious impact in agricultural chain and financial portion through live-stock. Earlier common courtyard-based living has been turned towards compartment-based housing. The study focuses on modification and adaptation to address living, and the comparison of satisfaction in two resettlement areas.

ACKNOWLEDGEMENT

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Rabin Kambang
076MARCH013

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ACRONYMS AND ABBREVIATIONS

CBS	Central Bureau of Statistics
DoA	Department of Archaeology
DUDBC	Department of Urban Development and Building Construction
GoN	Government of Nepal
ILO	International Labor Organization
MEERP	Maharashtra Emergency Earthquake Rehabilitation Programme
NGO	Non-Governmental Organization
NRA	National Reconstruction Authority
NRN	Non- Residential Nepali
NRNA	Non-Residential Nepali Association
INGO	International Non- Governmental Organization
UN	United Nations
UNHCR	United Nations High Commissioner for Refugees
UNDRO	United Nations Disaster Relief Organization

CHAPTER 1. INTRODUCTION

1.1 Background

Nepal has an urban population of 63% based on people living in municipality where as its about 32% population living in town or city areas refereeing to the presentation by Ministry of Urban Development. However, in rural context, majority of houses are in scatter form, the service and resources necessary to address individual is always challenging in concept of infrastructure development. The basic amenities like drinking water, proper cooking fuel and electricity are some of the challenges which are still faced in some of the rural. Integrated settlement has been major plan of planning authorities for addressing the issue. Gorkha Earthquake 2015 have severely affected 14 districts and 7.5 lakh houses and building were destroyed or damaged causing over 8790 death and affecting the lives of approximately 8million population (Britain, 2022). One of the worst-affected as a result is Sindhupalchok which lost 3075 people and 90 percent of the building were not safe for shelter (Britain, 2022). Referring to Shelter demand, the additional infrastructure challenge has been added where Government, NGO and INGO have actively participated in quick relief action. Since Majority of the people were in demand of permanent housing, Building were made with minimum consideration of the social-cultural aspects. Dhurmus-Suntali foundation incited and CG Foundation along with NRA and Local incited are the two-resettlement carried out in Giraunchaur, Sindhupalchok after earthquake. With the resettlement, the community

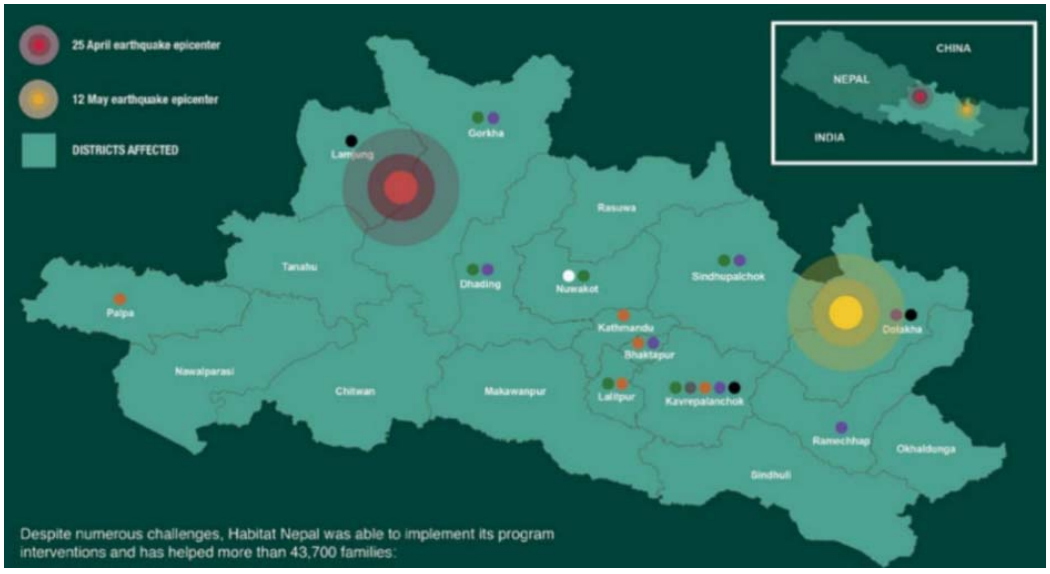


Figure 1 Gorkha Earthquake affected Districts (Britain, 2022)

experience new form along with modern amenities, which bring changes in pattern of way of living and culture diversification.

Based on article published by Republic on May1, 2018, On time of reconstruction, Chief of Urban Development and Building Division, Tanka Gautam mentioned the integrated settlement or community living is one of the promising approaches for social harmony, help, support and quality living compared towards building individuals. He mentioned out the current integrated settlement has been taken positively by the victim society. The Nepal Reconstruction Authority (NRA) has divided the government's funds into different pots totaling Rs. 4,00,000 for each hillside home and Rs. 500,000 for each mountain home in an effort to construct a minimum of 10 homes using integrated models each time.

Giraunchaur is located in Melamchi-10, Sindhupalchowk with 27.4726N Longitude and 85.3255E latitude with 1113m above from sea level. It lies 4 km uphill from Melamchi Bazar and 35km distance from Sakhu, Kathmandu. The Hill area consist of two rivers flowing from north and south named tribute of Indrawati khola (originated from Chisapani Shivapuri) and Sindhu Khola respectively. The area has been highly impacted by Gorkha earthquake and its aftershocks causing maximum number of buildings not safe for shelter. Two resettlements are done in same proximity with different foot-print to previous building. With the effort of Government, Private organization and public figures, both resettlements have been executed where one settlement initiated by Dhurmus Suntali Foundation completed in 6 months with completion of 65 housing units and another in collaboration with CG Foundation, Hill-top re-settlement is still under construction in present time with 8 houses still demanding for completion of total 62 houses. The Dhurmus-Suntali foundation had reported that it invested over Rs 50 million collected from Nepalis living here and aboard for the project. Following the project's completion in under six months, the team managed to steal significant media attention as the foundation (Bhandari & Singh, 2019). “After the two integrated settlement came in existence here, people were quite motivated. They could see the difference. Now, more of these settlements are being created at the victims' own initiative.,” said Rajkumar Bhattarai, president of Tourism Promotion Project. With the demand of rapid resettlement, vernacular architecture has been left in shadow and new building type has been introduced which believed to have caused some affect in social and cultural side of the settlement and life-style.

1.2 Statement of the Problem

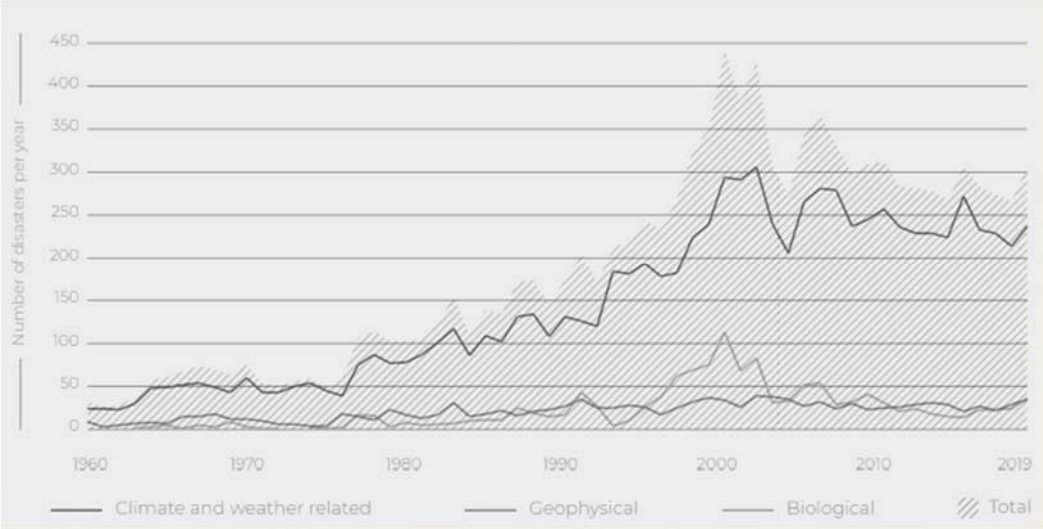


Figure 2 Comparison of different types of disaster triggered by natural hazards, 1960-2019(IFRC, 2020)

Based on Statistics, Global catastrophes increased significantly in the last years of the previous decade, but the number of risks and disasters has remained constant since the start of this decade (IFRC, 2020). Disasters are caused by both human activity and natural occurrences, and can result in major problems with a community's ability to operate as well as material, economic, or environmental losses.

People in resettled housing are contented with shelter issue however, the threat of losing many social ways of living is already experience by individual in the community. The build house is adopted with modern way of living, which were rare previously and are generating many changes in living ways by the functional planning based on cities housing of private and public spaces. Disaster risk reduction has been a major issue for marginalize people since, the impact of the disaster has long term impact on way of living and sometimes even forced to leave the community and resettle for better opportunity (Dekens, 2009). The replacement of ancient buildings with new ones obliterated the city's social and cultural core, as well as people's sense of place and identity (Vecco., 2010). To assess the traditional type of settlement or resettlement, a questionnaire survey has to be conducted at the site, coupled with direct field observation and interviews with local residents.

Concrete frameworks for resettlement programs are difficult to build based on prior experience since resettlement fluctuates in context and the demand for programs varies

substantially (UNHabitat, 2010). Due to the lack of perfect rules for relocation or rebuilding, the actions conducted may be instructive but they may not be as effective as they have been in other conditions. Public sector and combination of public and private sector, is observed in Giraunchour two settlement, where the both integrated settlements have its own prone and cons. Learn from it can help us understand people perception and willing for better future homes in similar incidence but will not be ideal guidelines for another similar resettlements.

Resettlement after disaster or any ways brings a huge challenge for the victims and they are often marginalized people or people from the rural, the compensation provided are often not enough for the loss of land and their property as well as the time taken for the delivery is often challenging and complicated (Bhandari & Singh, 2019). There are frequently issues with the family's safety and assistance for rebuilding due to the loss of living relatives. Therefore, relocation is a crucial problem at the individual level for victims, and appropriate action must be done for a community that values dignity while preserving identity, the preferences of displaced family members, and property rights.

The basic function of a building is to provide a space with a healthy structure and a controllable environment for the accommodation and protection of residents and its belongings (Kothari, 2006). Attractive residential structures with low purchase and running costs and high energy efficiency are currently the focus of planning and constructions. Buildings must be constructed quickly, efficiently, and sustainably (Pahiju & Bajracharaya, 2021). Even in Bhaktapur urban reconstruction with important value of cultural identity, the importance of societal architecture impact is kept with least priority. To restore the dignity, social, economic, and cultural aspects of damaged communities, effective housing restoration is necessary (Barenstein, 2006).

1.3 Justification of the Research

Nepal experienced large earthquake in 2015 and almost 7.5 lakh houses were completely damaged, causing people to rapidly develop shelter for living (NRA, 2020). In the course of time, Nepal reconstruction authority as well as many other organizations played vital role in restoring the shelter however, the lack of understanding of the societal value and low trust over load bearing vernacular architecture (Shrestha et al., 2022), intensive use of reinforced concrete were used in structure where such construction were not economically feasible. Shelter issues has been addressed well however, the identity loss in rural context has been noted out. Shifting from agricultural to non-agricultural, rural towards urban migrations, change

in settlement pattern, changing in spending behavior and value of people are some of the indications of urban way of living which are felt in integrated settlements after earthquake.

Re-settlement can occur due to various factors, the chances of losing ethnographical understanding of the indigenous tribes are always high in resettlement. A proper understanding of the practice, values and way of living should be considered(Groat, 2013). A group of indigenous people must transfer knowledge in order to survive and preserve its identity. One of the main risks to the community is the blending of traditional living practices with contemporary living accommodations (Macdonald, 2011).

Understand the impact that has been caused in the Tamang community by the re-settlement and the understand the societal value that has direct linkage with the architecture artifact are important in ethnographic understanding through resettlement. Architecture is not limited with enclose space but play a greater role in defining the character, living ways for individual. New building materials have benefits as well as drawbacks when it comes to preserving authenticity. Integrated shelters use urban planning methods. A new dimension of living behavior has been introduced by space planning, and certain restrictions on manner of life have resulted in a long-term shift away from prior ways of life in the neighborhood. In resettlement, housing is primarily a concern for the afflicted people, and communities' long-term goals are sometimes overlooked. (Carrasco et al., 2016). Housing demand in the wake of catastrophes is out of step with user expectations in terms of lifestyle, posing a challenge for agencies to execute while preserving culture and authenticity (Oo et al., 2018). quick recovery, the one-size-fits-all paradigm is prevalent. The issue of shelter is addressed, but other needs of the person and the community are not addressed. When a crisis or hazard occurs, the need for shelter takes precedence over other necessities for the populace, which might destroy the sense of place and community (Kothari, 2006).

1.4 Research Objective

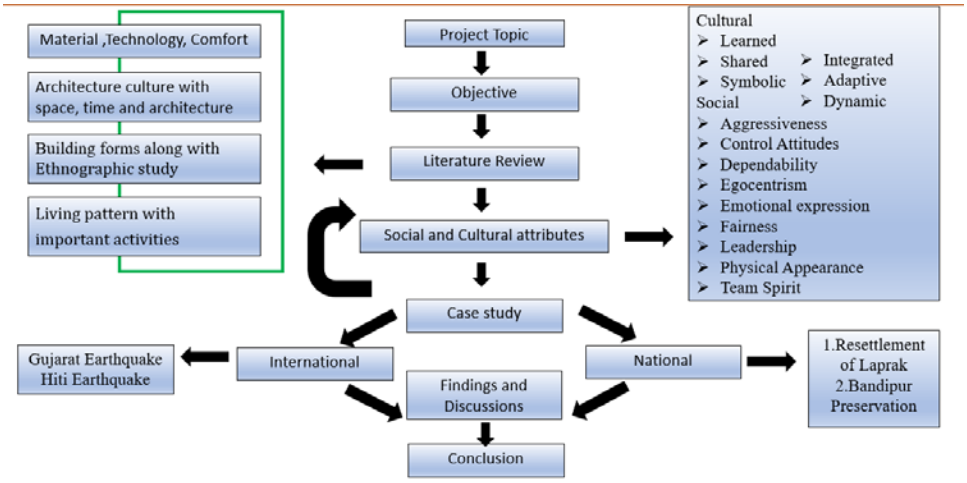
The Objective of research are: -

- To identify the societal impact on cultural and living through re-settlement.
- Monitor the housing satisfaction of the two re-settlements.

1.5 Research Methodology

The research is carried out based on objective fulfillment where key-personnel interview, field-based observation and literature review on Tamang has been done for societal understand. Mixed method of residential satisfaction of the both resettled communities is done with scale value range from 1-Strongly Dissatisfied to 5- Strongly Satisfied to test the perception of household of Namuna Ekikrit Basti and Shree Namadoling Ekikrit Basti using Google Form where sample is taken with 15 percent of number of occupied houses with 10 and 8 respectively. The result obtained is classified based on various social events and observation on changes seen in living lifestyle. Paradigm- Non-exact science falls on Post-positivist Paradigm.

Qualitative and Quantitative with mixed method approach is used.



1.6 Scope and Limitations

Study focuses only in Giraunchour resettlement two housing where the study out-put might not have similar result to individual housing reconstructed and resettlements. The study is based on key-informant interview, literature, case study, survey and field-based observation, some of the information might be particular to the individual respondent. The study limits on finding the architectural artifacts and might not be specific about the building exterior elevation until the relevance to social value.

CHAPTER 2. LITERATURE REVIEW

2.1 Housing and Hierarchy of housing needs

" Housing is the general word for many forms of lodging where a person might find temporary or permanent refuge to live, sleep, work, or unwind (Almssad, 2018)." Housing is not only concerned with the design of a specific housing unit. It is focused with designing a whole housing environment that includes housing, employment, education, and health services, among other things, in a setting that is accessible, secure, sanitary, beautiful, and also sustainable (Alao, 2009).

Figure 3 Maslow's Hierarchy of needs (Mulligan, 2019)

According to Maslow, humans have 5 different categories of need. It asserts that when individuals are satisfied with their basic needs—including their physiological and safety requirements—higher demands start to develop.

Individual housing units must offer its occupants a range of social and physical amenities as well as a secure environment to live in. In addition to these, a housing also has to offer the community a variety of infrastructures and services, some of which have been covered below.

The qualities of a good housing are: -

- Provides proper amenities and service to its occupants
- Better living standard of people
- Affordable
- Proper Health and indoor environment
- Safety and Security
- Accessible to all
- Proper lighting and ventilation

2.2 Environment, Society and Disaster

Chapter 1: While certain disasters, like landslides, floods, and volcanic eruptions, can be prevented in certain situations, others, like earthquakes and storms, cannot. The environment is the area of existence where civilization and humans have existed. In many situations, societal changes occur after resettlement due to the existence of existing technologies and ways of life. Even if disasters result in significant loss of life and property, they also have societal repercussions and lead to novel ways of living. Change is inevitable, and disasters are one of the contributing reasons. Although it makes it difficult to get work and live comfortably, the influence of ethnography is constantly understood and even has the potential to improve society. It is possible to observe the accessibility of resources and training, as well as the assistance and support offered by various organizations. The impact of disaster on developing countries is greater since re-development of the affected region requires significant money, which has been a big difficulty for many countries in previously mentioned disasters. In the current environment, the nation's idea of disaster relief has evolved into catastrophe mitigation at the local or regional social level. The ethnographic studies on societal study even show that it is considerably simpler and more successful to accomplish any particular endeavor in an ideologically unified community (Oliver-Smith, 1996). Due to incorrect neighborhood building or society expansion without comprehending the environmental problems and risks that the society may confront, high-impact technological and natural disasters are now more common in emerging countries than they were in the past. These events to some extent affect the community's physical infrastructure and sociological structure. The trend of society working together for long-term development is now growing, although some people still look to local governments for partial or full help.

After a disaster, resettlement or reconstruction begins with the provision of fundamental necessities; but, after this need have been met, human social components become crucial for a harmonious community. According to several researchers, the social elements are frequently delicate in nature and include things like money and means of subsistence, infrastructural access, racial, religious, and socioeconomic background, as well as cultural identity (Dikmen, 2006). Appropriate livelihood and basic essentials were the pioneering stage of resettlements initially mentioned by Michael Nelson in “The Development of Tropical lands”. A resettlement community's long-term viability is dependent on factors like a low unemployment rate, chances for gainful job,

inexpensive housing costs, easy access to infrastructure and amenities, and green or open space regions (Werna, 2001). The aftermath of a tragedy provides new community beliefs that were challenging to impart in a short period of time and there are many new opportunities. Better performance of the displace community's socioeconomic background, educational attainment, skills, and cultural factors leads to the sustaining community.

According to (Correa, 2010), The elements that should be taken into account for the resettlement program's spatial planning include: -

- The type of uses to be made of the land (residential, commercial, industrial, agricultural, etc.).
- The areas required for public services infrastructure, social services, and community facilities.
- Lot size (total area for the settlement and individual land assessments)
- Accessibility (access to the resettlement area and proximity/accessibility to public services and infrastructure)
- Topography of the land (to assess the safety, cultivability, etc.)

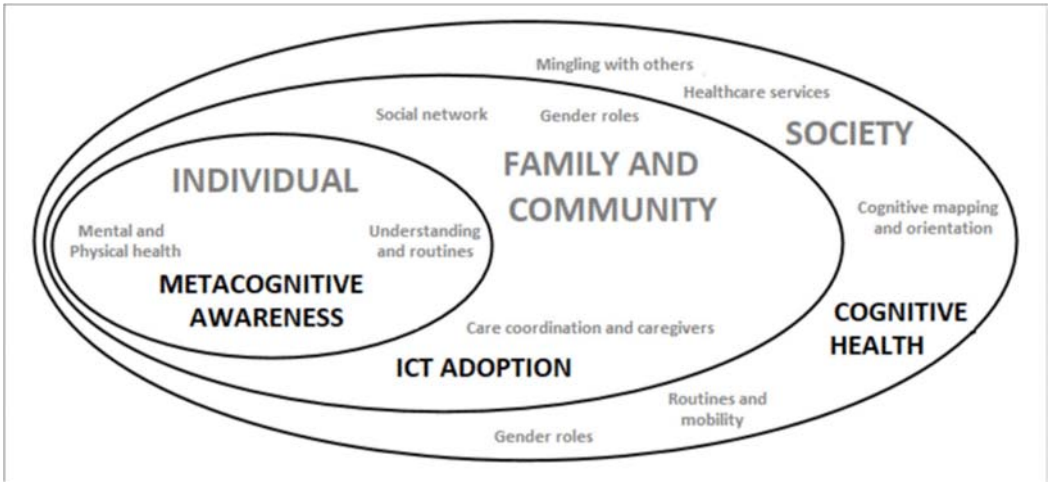


Figure 4 A schematic representation of the individual, family and the Society (Della Gatta, Terribili, Fabrizi, & Moret-Tatay, 2021)

Table 1 Categorization of social factors affecting the success of post-disaster resettlements (Keraminiyage & Piyatadsananon, 2013)

Theme	Social factor	References
Cultural identity	Ethnic, religious and social mix	Sugathapala (2008), Dikmen (2002)
Cultural identity	Cultural identity	Sugathapala (2008), Jain (2010), Dikmen (2002), Bartolome *et al.* (2000), Kinsey and Binswanger (1993), Karimi *et al.* (2005)
Cultural identity	Recognition/acceptance of the displaced community within the host community	Bartolome *et al.* (2000), Sugathapala (2008), Correa *et al.* (2011)
Financial and economic	Continuation of the livelihood	Jain (2010), Bartolome *et al.* (2000), Kinsey and Binswanger (1993), Dikmen (2002)
Financial and economic	Insufficient funds allocated for resettlement and rehabilitation	Bartolome *et al.* (2000), Kinsey and Binswanger (1993)
Financial and economic	Affordable expenditure for living in community	Jain (2010), Correa *et al.* (2011)
Financial and economic/ cultural identity	Socio-economic background of the host community (educational level, skills, cultural dimensions, etc.)	Sugathapala (2008), Correa *et al.* (2011)
Infrastructure and facilities	Access to basic essentials and infrastructure	Jain (2010), Dikmen (2002), Correa *et al.* (2011)
Infrastructure and facilities	Access to green or open space	Jain (2010)
Political	Institutional capacity gaps	Sugathapala (2008), Kinsey and Binswanger (1993)
Political	Territoriality, inter-group relations, leadership structures	Dikmen (2002)
Political	Involvement of resettles in the planning process	Karimi *et al.* (2005), Bartolome *et al.* (2000), Correa *et al.* (2011)

2.3 Indigenous People

Indigenous peoples are the inheritors and practitioners of distinctive cultures and ways of connecting to people and the environment, according to the United Nations. They still exhibit social, cultural, economic, and political traits that set them apart from the societies that are the norm where they dwell. Indigenous peoples have long fought for acknowledgment of their identity, way of life, and claim to ancestral lands, territories, and natural resources. Despite this, their rights have consistently been violated throughout history. The world's indigenous peoples are undoubtedly one of the most marginalized and vulnerable populations today (Macdonald, 2011).

The term "Indigenous Peoples" refers to several socioeconomic and cultural groups that have shared ancestral links to the lands and natural resources that they now reside on or have been displaced from. Their reliance on the land and its resources is integral to their identities, cultures, means of subsistence, and overall physical and spiritual health (Vecco., 2010). The term "Indigenous Peoples" refers to several socioeconomic and

cultural groups that have shared ancestral links to the lands and natural resources that they now reside on or have been displaced from. The land and natural resources they rely on are integral to their identities, cultures, ways of life, and overall bodily and spiritual health.

Since the 1920s, the ILO has been involved in issues affecting indigenous and tribal populations. It is in charge of the Indigenous and Tribal Peoples Convention, 1989 (No. 169), the sole international agreement that addresses the rights of indigenous peoples and is still open for ratification. The ILO's Decent Work Agenda provides a framework for the empowerment of indigenous and tribal peoples, including gender equality and non-discrimination as a cross-cutting priority. Indigenous men and women may maximize their potential as change agents in the fight against poverty, sustainable development, and climate change by having access to good jobs.

2.3.1 Tamang and way of living

Tamangs are one of the major Tibet Burmese speaking communities in Nepal. They believe that they originally came from Tibet. The entire community of Tamang is divided into several sub castes known as 'thar'. Each 'thar' has its own name like Sangden, Bomjan, Yonjan, Pakhrin, etc. (Tamang, 2003). Language wise, these people are the third largest ethnic group in the kingdom, but they would be the most numerous group in the Tibeto-Burmese category if measured from that perspective. In Nepal more than 61 ethnic groups are dispersed all over the countries. Tamang people account 5.5 per cent of the total population of the country. The majority of people reside in Nepal's hilly areas, which border the valley of Kathmandu, the country's capital. The Tamangs originated in Tibet, as evidenced by their historical and mythological accounts.

Figure 5 Tamang women in Mala Dress Source: Clothingnepal.com

Sonam Lhosar is a celebration that the Tamang population of Nepal celebrates to mark the beginning of a new year. ‘Lho’ means year and ‘Sar’ means new or fresh if translated, and the word ‘Sonam’ is referred to the Tamang people in Nepal, thus the festival ‘Sonam Lhosar’ is the New Year event, according to the calendar followed by Tamang people. This festival is also observed by minority Yolmo, Dura, the Thakalis of Mustang, the Dolpalis, and the Sinsas from Sankhuwasabha in the Himalayan region.

Table 2 Festival Celebrated by Tamang (Hall, 1982)

Festival	Purpose, Participants and Setting	Agricultural Stage
Losar	Village-wide celebration of New Year, Households erect flags and entertain Kinsmen.	Manuring of fields, preparation of soil.
Kurim	Households have shamans and lamas perform protective ceremonies	
Ke-lha	Lamas perform Palten Lhamo ceremony, shamans perform clan god worship. Every Household sponsor own ceremony.	Planting of potatoes, maize, etc. Begins.
Yul-lha	Tribal priest performs worship of village god to obtain good harvest.	Woodcutting, weeding of maize
Saune-Sankranti	On eve of Nepali month of Shrawan Households prepare special foods, make offerings to local demons.	Planting of Millet.

2.4 Disaster Management Cycle

Disaster brings various trauma and the aims on Disaster management is to avoid, reduce and prevent potential losses of property and lives. Disaster management cycle helps in understanding the cycle of activities that happen during disaster.

2.4.1 Prevention

Preparedness and avoiding the disaster is the primary steps of Disaster management, understanding of the possible risk area, mitigating its risk before the any incident should be the first priority. Even-though some disasters are not predictable, earlier prevention through monitor of possible hazard detection can be done. Preparedness and mitigation are the important phases as it requires list financial support along with least loss of lives and property.

2.4.2 Disaster or Conflict

There are various types of disaster, some are man-made disaster, complex emergencies, natural disaster and Pandemic Emergencies.

2.4.3 Emergency Relief

According to the definition of an emergency, it is "urgent situations in which there is clear evidence that an event, or series of events, has occurred which causes human suffering or imminently threatens lives or livelihoods, and which the government concerned has not the means to remedy; and it is a demonstrably abnormal event, or series of events, which produces dislocation in the life of a community on an exceptional scale." To this day, we continue to assist millions of people who have been displaced, including refugees from war and natural disasters Through a variety of crises over many years and numerous interventions, we have amassed a special body of knowledge about dealing with catastrophes.

2.4.4 Recovery

Following a natural or man-made disaster, essential technology infrastructure and systems can be recovered or kept running with the help of a set of rules, tools, and procedures called disaster recovery. Disaster recovery, which is different from recovering data and services back to their original location, is a process of restoring data and services to a secondary survived site under the assumption that the primary site would not be recoverable for some time. The disaster preparedness strategy comprises of actions to lessen the consequences of a disaster so that the company can carry on with operations or swiftly restart mission-critical tasks. Typically, a DRP involves an analysis of business processes and continuity needs. Before generating a detailed plan, an organization often performs a business impact analysis (BIA) and risk analysis (RA), and it establishes recovery objectives.

2.4.5 Reconstruction/ Resettlements

Planning, relocation, and provision of the essential facilities depending on the population that has been impacted by human activity or natural disasters constitute the process of resettlement. Such a population prioritizes safety and the need for adequate housing over all other considerations. Similar incidents are more likely to lose their ethnic, social, and cultural context. Even though the relocation project offers a higher level of life in a rural environment, it falls short of what the affected people expect in terms of socio-cultural demands (Carrasco et al., 2016).

2.5 Post-Disaster Rehabilitation

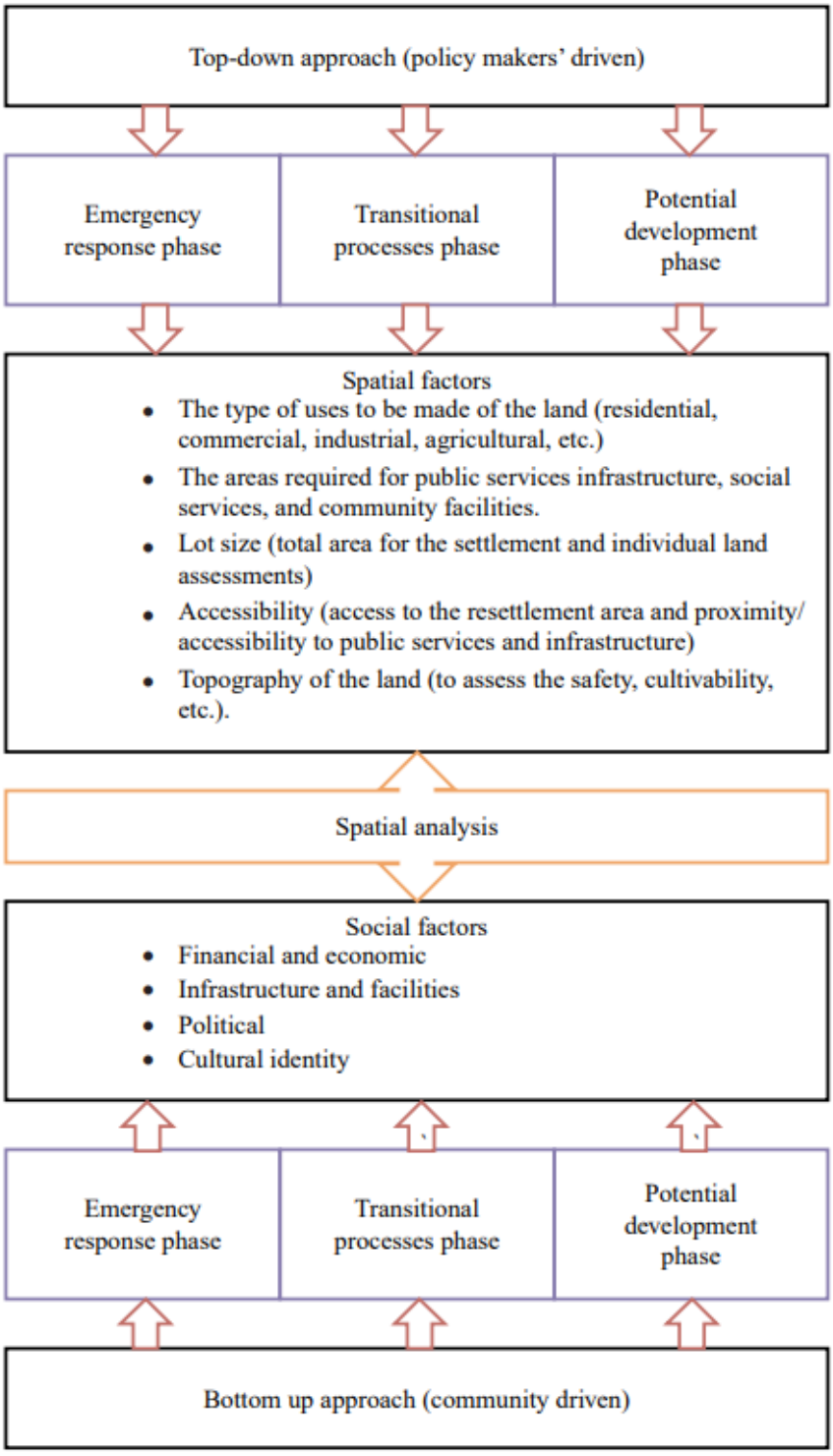


Figure 6 Post-Disaster Theoretical framework (Keraminiyage & Piyatadsananon, 2013)

Earthquake, Landslide, flood and storms are natural disaster destroying the lives and built environment. Loss of life, property, health issue and post-trauma are some of the rehabilitation measures to be taken in account. Initially removal of debris and temporary shelter are quick response whereas infrastructure development and building reconstruction are long term interventions. Rehabilitation needs many factors like support from government and other organization in many cases as well as steady income of the family which gives a hope for a better future. Food, money and basic necessity are the aid for stop-gap arrangement whereas long-term impacting is provision of skills, employment opportunity which constantly support in family income. A proper rehabilitation is considered once the housing reconstruction is sustained within the community through the proper economic and social-cultural cycle (Oliver-Smith, 1996). Based on the earlier researcher, Disaster brings the chaos and trauma in the society however, it is one of the important time for the societal change and understanding of a behavioral and organizational response and political economical/ environmental change (Oliver-Smith, 1996).

Post-disaster rehabilitation is one of the controversial issues faced in development due to challenge of tied up with local culture and providing a global solution towards the context might not be the best fit for rural context. Majority of issue are on rural context since they are more vulnerable to disaster and challenge of proper and faster rehabilitation. Speed of construction for the shelter after the disaster and permanent housing solution addressing the over-all societal and cultural context is very difficult in critical condition. Although modern construction material poses high value on disaster prevention and post-disaster development, significancy of the space have higher threat of losing it. Speed and cheap reconstruction are major choice of the victims with limited resources however, the long-term impact of it towards the satisfaction are always a major threat. The solution of prefabricated houses in demand of post-disaster were seen previously however, the impact of it on social-cultural context is invincible along with its lack of addressing the way of living (UNDRO, 1993). The solution has been mentioned as unviable by UNDRO report as early as 1993.

2.6 Large Scale-Housing

A Disaster causes a large damage in village or an area creating increasing the demand of rapid shelter program. Reconstruction of large scale-housing are managed by small group of architects and contractors limiting the variety and contextual towards individuals (Mathur, 2011). Mass housing is one the popular design for large scale

projects and the design are similar in prototype or few additional prototypes are available. In such work a set of designers, single concept, few prototypes and singular implementing agency executes. There will be limited intervention that can be done by the family, since the rely on the aid and support provided by the donor agency. The overall challenge is with the cost since they might have faced many other issues of finance so such kind of project are experienced with intervention in long term when well income is established in the family. Due to the lack of individual addressing, these houses are usually modified by home owner and adding delay and cost to the project (Bosma et al., 2000). A user centric mass housing design platform should be considered in the development for mass housing otherwise the intervention will be additional to the project demanding improper space usage and area occupancy with unhygienic condition of living (Schnabel et al., 2015). Changes in living can be traced with family income and pattern of space and form gets change with time. A house is one's individual expression and has values of societal expression where large scale mass-housing have potential threat of creating project like military barracks (Habraken, 1972). Various alternative like support and infill, site and services, open Building are considered in many cases of post-disaster and one choice might have worked well with the another in some aspect where as one might not have been worked well on another. In basis of cost and time, mass housing seems promising where as in context of authenticity and individuality it plays a major threat on loss of societal and cultural identity by the influence of global swing.

2.7 Vernacular Architecture and Culture

"Vernacular architecture defined as a type of local or regional construction, using traditional materials and resources from the area where the building is located. Consequently, this architecture is closely related to its context and is aware of the specific geographic features and cultural aspects of its surroundings, being strongly influenced by them. For this reason, they are unique to different places in the world, becoming even a means of reaffirming an identity (Nabakov & Nabokov, 1999)". Vernacular and way of living in present time is highly influence by the intervention of the technology, once limited to the developed nations are now in constant reach to every individual living in developing county. The taste of modern technology has surpassed our thought for relying on previous way of living and constant introduction of new building materials, devices, way of living and so-on even adopting to the verse of information technology limiting the experience and way of vernacular. The vernacular

is in transferring state of time which has to be addressed in as close context to the tangible and intangible way of living and intervention on the need basis rather adopting to what has been offer (Oliver, 2006). Acceptance of vernacular material over the industrial product are in constant replacement by the reliability of the material, such materials are corrugated iron sheets in place of thatch and has been replaced in most of the areas of Nepal, cement plaster over red-mud on building façade due to consistent maintenance needed for the mud plastering. Based on reliability and access towards global world, vernacular architecture is in shifting phase which has to be accepted by the society in long run with continuation of positive social cultural side of the study. Distribution of CGI sheet on rural part of the country has been initiated where there is thatched roof on any of the resident.

Culture is difficult to understand in its normal form of tangible and intangible elements, and the relevance might vary among members of a typical community. Finding its actual meaning cannot be done by simply knowing it in terms of shapes, materials, and space. All in all the culture is through in its own with interconnected values of individual to the group of individual leading in the frame of the society that has been living and moving on from years and years (Oliver, 2006). Devastation caused by Gorkha earthquake in 14 district of Nepal is experience threat of losing the identity of the society that has been there from generation after the settlement pattern has emigrated towards the town and vehicle accessible regions (Dhakal et al., 2011). Along with the definition of the area based on town and urban manner of living, the sense of society living is in the process of disappearing. Without a thorough grasp of the building material, cement and concrete are being introduced quickly into the construction industry, which appears to be a threat now and in the near future.

2.8 Approaches for Post Disaster Housing

2.8.1 Cash Approach:

Unconditional financial assistance is given without technical support.

Advantages:

- Most cost-effective, rapid delivery of aid to households
- Assistance can be adjusted according to household size, livelihood, socio-cultural requirements etc.
- Doesn't discourage repairing and salvaging houses
- Best when local building capacity and financial support are adequate.

Disadvantages

- No improvement in building skills i.e., vulnerable

No opportunity to use new technologies

2.8.2 Owner-Driven Reconstruction

The provision of conditional financial aid is complemented by rules and technical support designed to guarantee that dwellings are rebuilt more effectively. ODR is the most respectable and powerful strategy for homes. The main distinction between this strategy and agency-driven strategies is that contractors and hired workers are answerable to the homeowner rather than an outside organization

Advantages:

- Mobilizes household to take active role in rebuilding
- Consistent with incremental housing construction practices
- Encourages repair and salvation of houses
- Involves local industry, manpower
- Helps preserve the socio-cultural aspect of society as the owners are heavily involved.

Disadvantages:

- Without proper standards and oversight, a poor and vulnerable end product is possible,
- Maybe difficult with communities with no prior building experience,

2.8.3 Community-Driven Reconstruction:

Community groups that are actively involved in decision-making and administering rebuilding are the conduits for financial and/or material aid.

Advantages:

- Useful where new materials and technologies are used,
- Can foster social cohesion between people,
- High level of flexibility

Disadvantages:

- High probability of corruption,
- Overheads maybe high

2.8.4 Agency-Driven Reconstruction in-Situ:

Describes a method where a government or non-government organization employs a building business to replace destroyed homes where they were before the tragedy.

Advantages:

- Communities are not displaced,
- New technologies in same location,
- No land acquisition is required.

Disadvantages:

- Construction quality and location may hinder the reconstruction process,

Table 3 Comparison of Approaches for Post Disaster Housing (Jha et al., 2010)

Reconstruction Approach	**Degree of Household Control**	**Form of Assistance**		**Role of Actors**	
		Financial	Technical	Community	Contractor
Unconditional/ unsupervised reconstruction	Very high	None or unconditional cash transfer	None	None	Household may hire
Owner-driven reconstruction	High	Conditional cash transfer to household	TA/Training of household	None	Household may hire
Community-driven reconstruction	Medium to high	Conditional transfer to household or community	TA/Training of community and household	Project organization and oversight	Community may hire
Agency-driven reconstruction	Low to medium	Funds handled by agency	Limited or none	Limited	Agency hires contractors

2.9 Cultural Village Identification Criteria

The Cultural Village Identification Criteria Based upon the presentation made by Dr. Sanjaya Uprety on of the presentation: -

- Unique Local culture- Tangible and Intangible attributes
- Local Cultural Products, food, art, craft, music festivals
- Unique Architecture
- Multicultural
- Existing Social Infrastructure
- Province/ Local Government Poverty
- Village wiliness to develop in cultural villages
- Demarcation/ Area collineation
- History, Culture and Tourism Potential

2.10 Post Disaster Housing

Planning, creating, and executing shelter and housing reconstruction plans after a catastrophe for relief, recovery, and rebuilding are referred to as post disaster housing. It comprises procedures used by organizations, communities, families, and contractors for site selection, material selection, procurement, and rehabilitation.

Comparative analysis Between Owner Driven and Agency Driven Approach

Table 4 Comparison of Approaches

Owner Driven Approach	Agency Driven Approach
• Favors in-situ reconstruction mostly	• Favors relocation mostly
• Uses local materials and promotes recycling of any materials that owners may have	• Brings industrial material and no recycling is possible
• Leads to construction of larger houses that can fulfill the family needs	• Results in smaller size of houses insufficient for family needs
• Strengthens local economy	• Does not contribute to local economy
• Provides flexibility for customization as per every family's need	• No such flexibility, at best provides 2-3 models to choose from
• House allotment is not an issue of conflict	• Allotment process is usually contested and has conflicts
• Ensures transparency and accountability in the process	• No such accountability and transparency

2.11 Social Structure

In sociology, social structure is the distinctive, enduring configuration of institutions that govern how people interact and coexist in a community. Social change, which examines the processes affecting social structure and societal organization, is frequently discussed in conjunction with social structure. The main function of social structure is to regulate behavior. A person's views, attitudes, and behaviors are influenced by where they are in the social structure (their social class, social standing, the roles they perform, and the culture, organizations, and social institutions to which they belong) (O'Connor, 2015).

The elements of social system are:

- belief and knowledge
- sentiment
- goal or objective
- norm
- status and role
- rank
- power
- sanction
- facility

The major components of social structure are

- statuses
- roles
- social networks
- groups and organizations
- social institutions
- society.

Society can be classified by:

- Level of Development
- Inequality
- Urbanization
- Level
- Political Organization

2.11.1 Factors causing social change

Social change occurs in all civilizations and across all eras. Multiple factors interact with one another in different ways, causing changes that shape society. Among the causes of social change, which is the change in society brought about by social movements as well as external influences, collective behavior and social movements are just two examples.

- Biological factors or demographic factors
- Physical or environmental factors
- Psychological factors
- Technological factors
- Ideological factors
- Economic factors
- Cultural factors
- Political factors
- Legal factors
- Planning
- Social movement and social revolution Impact

2.11.2 Biological factors or Demographic factors

Social transformation is influenced by biological forces. The population's inherited traits play the largest effect among the biological variables. The birth of strong and famous persons is largely determined by genetics, and these biological elements influence societal transformation. Additionally, society is continually changing due to biological processes like natural selection and the battle for existence.

Social change is greatly influenced by demographic parameters, such as population size, composition, and density, which are influenced by social mobility, migration, and reproduction. Population changes affects society in both good and negative ways. High population growth speeds up the migratory process, which helps society by fostering innovation and discoveries via the interchange and sharing of skills, information, and ideas. In the end, societal change happens as a result of changes in people's attitudes, behaviors, and ways of life. These demonstrate how social transformation happens along with population change. But population expansion also causes unfavorable societal change. Population increase causes a number of issues, such as poverty, child labor, crime, juvenile delinquency, beggarly, and many health issues, and as a result, changes in society.

2.11.3 Physical or Environmental Factors of Social Change

Society undergoes significant changes as a result of changes to the physical environment. Physical environment changes may not occur quickly, but sporadic environmental changes can completely alter human social behavior. For instance, geographic risks like earthquakes, floods, severe rain, drought, changing seasons, etc., cause people to relocate to other places; as a result, people must adapt to that civilization. This results in changes to culture, etiquette, social interactions, etc.

2.11.4 Technological Factors of Social Change

Technological elements are a significant contributor to societal transformation. Technology is the methodical use of scientific knowledge to address particular issues in daily life.

Technology is developing quickly. The "Age of Technology" refers to the present. Through modifying our surrounds, which we then embrace, technology transforms society. Our social structures, conventions, and practices change often as a result of the adaptations we make to adapt to the environment as it changes due to technology.

For instance, the advent of technology (computers, mobile phones, and the internet) has altered how we choose partners. Dating and love marriages have steadily taken the place of the custom of planned marriage. Another illustration is how advances in communication and transportation have shortened social distances, causing cultural dispersion and, ultimately, societal transformation.

James Watt's development of the steam engine in the middle of the 18th century paved the way for the mechanization (use of machines) of industries and, ultimately, the start of the industrial revolution. Mechanization has altered society's economic structure while also gradually devaluing previous modes of social organization as well as outdated ideals, standards, and values. In fact, technology has fundamentally and irrevocably altered how people connect, communicate, study, work, play, travel, worship, and conduct business in the twenty-first century.

The Economic Factors

The social changes have an economic explanation according to Karl Marx. The entire society's structure and operation change along with changes in the economic system. Health, mortality, marriages, divorce rates, suicide, crime, and emigration are all impacted by a nation's economic situation. It may also result in conflict, revolution, and societal turmoil. Of course, not all social changes are directly related to economic

circumstances; some have arisen as a result of educational programs that have influenced people's views, etc.

The Cultural Factors

Social change underpins all cultural change. Aspects of culture and society are intertwined strongly. There is no disputing the close ties that exist between our values (a component of culture), social institutions (a component of society), and our beliefs (a component of culture) (element of society). Therefore, it is evident that every change in culture—that is, ideas, values, beliefs, etc.—brings about a comparable shift in the entire social order (i.e., social change).

Max Weber, a sociologist, has demonstrated how cultural beliefs impact monetary structures. He said that since this faith group urges people to engage in economic activity, protestant ethics contributed to economic improvements among the protestants.

Political Factors

The state is the most powerful institution, with the authority to enact new laws and repeal existing ones in order to bring about social change in society. The social fabric of a community is greatly altered by laws governing child marriage, widow remarriage, divorce, inheritance and succession, and untouchability. The pace and scope of social change are also influenced by the kind of political leadership and those in positions of authority.

In many civilizations, the political elite directs the economy and encourages technical advancement for the benefit of the populace. The actions of political institutions like chiefs, lords, monarchs, and governments have an impact on how development proceeds. Political institutions, i.e., the government, are what encourage economic development and social welfare for its citizens.

Legal Factors

The state never created any statutes or laws during the ancient and medieval eras, and the King had no authority to enact legislation. But laws were progressively passed to preserve peace and harmony in the country as time and circumstance demanded. These laws needed to be updated to reflect the times and circumstances, and this legal shift helped establish new social norms and values.

Psychological Factors

The majority of sociologists believe that psychological variables play a significant role in social transformation. The psychology of man himself is the root of societal

transformation. Man is by nature a change-loving creature; thus, he is constantly striving to learn new things and eager to explore new experiences in life. The mores, traditions, customs, social interactions, etc. of any human community change constantly as a result of this trend. Old traditions and conventions are replaced by new ones in this process of transformation, although some adjustments or alterations are made.

2.11.5 Ideological Factors

The introduction of fresh viewpoints, concepts, and ideas is one of the additional drivers of societal change. We now have an inventive and critical viewpoint thanks to the advancement of science and technology as well as changes in beliefs and ideologies. Unlike in the past, we now base all of our activities and decisions on reason (i.e. ideas and logic).

Therefore, we just don't do anything because our ancient conventional authority instructs us to do it. Therefore, this shift in behaviors is conceptual, which simply implies that ideas have an impact on social transformation. Ideas and ideologies may inspire people to make societal changes in significant ways. It is true that neither social nor material elements alone can bring about change; this also holds true for societal concepts. Self-improvement, freedom, equality, and democratic participation ideals have sparked social revolutions and reformation movements.

For instance, dowry, the caste system, female education, and other attitudes have changed, leading to significant societal variances & adjustments. In actuality, the bulk of societal revolutions originate from the development of novel thought patterns. Mahatma Gandhi, Karl Marx, and other thinkers' ideas affect the populace and have a socioeconomic effect that leads to societal transformation.

2.11.6 Planning

Large-scale, goal-directed social planning may lead to societal transformation. In contemporary cultures, there are more opportunities for planning by huge institutions like the government. Governments, for instance, carry out planning via the creation and execution of laws, such as those governing old-age pensions, guaranteed health care, unemployment benefits, etc., which have had a considerable impact on contemporary society.

However, there are so many unanticipated significant changes taking place in communities today. For instance, the discoveries (inventions) made at universities,

government research labs, and commercial companies can lead to unanticipated social change.

2.11.7 Social Movement and Social Revolution

A social movement is a group of people working together to create a new way of life that eventually leads to changes in the current social structure of that society, state, or nation. A social movement starts when individuals want to develop a new way of life or when they are dissatisfied and unhappy with the current social structure or social order.

The French Political Revolution, the Industrial Revolution, the Russian Revolution, the Chinese Revolution, and other social upheavals and revolutions have all had a significant impact on society as we look back at global history. The People's Movement I, People's Movement II, Indigenous Peoples' Movement, Dalit Movement, Women's Movement, etc. were significant turning points in Nepalese society and politics.

These campaigns have successfully changed the constitution's provisions for women's rights, native rights, and rights for the underprivileged/Dalits. In addition to beginning to give these groups identity and freedom, the establishment of women's rights to parental property, 33% women's reservation, and quotas for Muslims, Dalits, Janajatis, and other minorities in public services and governance structures, etc. have raised morale and dignity generally.

2.12 Planned Authorities of Nepal

Town Development Committee

The town development committee has following objectives:

1. Gradually raising the standard of living of the people of the Kathmandu Valley,
2. To conserve and promote the manmade and natural, historical, religious and archeological monuments and places,
3. To control the haphazard growth of the municipal areas and give the right direction to the development of the cities,
4. To protect the agricultural and pasture and forest land,
5. To protect and improve the archeological, natural and tourist sites,
6. To control the pressure on the city core of Kathmandu, Patan and Bhaktapur municipalities,
7. To develop the residential places to promote planned settlements,
8. To initiate expansion of the city development in the suitable places, and

9. To prepare land use plan so as to develop the city zoning.

Local Bodies: Municipalities

Municipalities have following responsibilities in development.

1. To frame land use plan in the municipal areas
2. To prepare housing plans and implement them in their areas;
3. To plan, operate, maintain and repair the drinking water and drainage;
4. To plan and operate green belts, parks and recreational areas;
5. To manage public toilets;
6. To approve the design of buildings to be constructed in the municipal areas; and
7. To build community buildings and rest houses.

2.13 Strategies of Settlement Planning

2.13.1 Land pooling

It is recognized as one of the finest readjustment strategies for the planned supply of urban land and environmental facilities without outside investment. The idea of land pooling is buying dozens of tiny plots, replotting them, and then returning the new plots to their original owners after finishing all required improvements. The owner then receives a plot of property that is 12- 30% smaller but still includes the required infrastructure, such as parks and open areas. In places like Gongabu, Lubhu, Kamal Binayak, Liwali, Sainbu, and Nayabazaar, among others, land pooling has been done effectively.The Objectives of land pooling are:

- To assist in Urban development and planning
- To manage lands for the growing population
- To manage the basic infrastructures in the systematic way
- The basic infrastructures include:
    - Electricity
    - Road
    - Telephone
    - Drainage
    - Water Supply
    - Open Space
    - Parks

The main reasons for housing in Nepal are:

- Increase in demand for living units.

- Inadequate space management in individual level.
- Need for proper provision for basic infrastructures.
- Housing demand after natural disaster and hazards.

2.13.2 Site and Service

The land parcel, infrastructure (such as roads, water supply, drainage, power, or a sanitary network), and the actual home are the three main parts of a housing project. They require a variety of inputs, including labor, building materials, and technology. The sites-and-services strategy therefore supported the involvement of government organizations solely in the creation of land parcels or plots with some minimal infrastructure, which were to be purchased or leased by the intended beneficiaries. The recipients were left to handle the actual house-building process using their own resources, including family labor, informal financing, and numerous other forms of community engagement. Depending on the availability of funds and other resources, the beneficiaries might even begin construction of the home at their own pace. This took the fundamental idea of creating a squatter colony, but without the actual "squatting" part.

Sites-and-services schemes were activated in a variety of different ways, depending on the investment made, the resources available, the implementing agency, or the degree of organization among the beneficiaries. This variance was the outcome of an effort to reconcile the affordability of the beneficiaries with the requirement for minimally "acceptable" living conditions. The degree of involvement and contributions of the implementing agency on the one hand, and the beneficiaries on the other, varied widely despite adhering to the fundamental norm of a piece of land (sites) and required infrastructure (services). They varied from a piece of undeveloped property with a few utilities (such as water, power, and sanitation connections) to the construction of a "core" home on the plot of land with additional facilities.

2.14 Neighborhood Planning Guideline

A neighborhood plan is a framework for planning an area's future growth, regeneration, and conservation that is driven by the local community. It focuses on the use and development of property and may include a vision, goals, planning policies, and suggestions for enhancing the neighborhood or constructing new amenities, as well as the designation of critical locations for particular types of development.

Planning for your area is a relatively new idea. Neighborhood plans may be created by local communities for their local regions, setting out a vision and set of guidelines for the neighborhood's future growth. By establishing their own local planning aims and ambitions within the larger planning system, communities may have a bigger role in determining the future of their neighborhood by creating a neighborhood plan. Once finished, a neighborhood plan will be utilized to make choices on new development proposals alongside the council's local plan. A neighborhood plan enables communities to take control of two crucial aspects of planning: allocating land for development and formulating policies to guide how development occurs. It should bring together local groups, businesses, residents, and developers to share ideas and forge consensus about what needs to be done in the area.

A Neighborhood Plan can:

- Decide where and what type of development should happen in a neighborhood.
- Promote more development than is set out in the Local Plan.
- Include policies, for example regarding design standards, which provide more local details on existing policies in the Local Plan for the neighborhood – provided the Neighborhood Plan policies do not conflict with the strategic policies in the Local Plan.

Neighborhood planning includes:

- The development of housing, including affordable housing (housing that is not normally for sale on the open market), and bringing vacant or derelict housing back into use
- Provision for businesses to set up or expand their premises
- Transport and access (including issues around roads, cycling, walking and access for disabled people)
- The development of schools, places of worship, health facilities, leisure and entertainment facilities, community and youth centers and village halls
- The restriction of certain types of development and change of use, for example to avoid too much of one type of use
- The design of buildings
- Protection and creation of open space, nature reserves, allotments, sports pitches, play areas, parks and gardens, and the planting of trees
- Protection of important buildings and historic assets such as archaeological remains

- Promotion of renewable energy projects, such as solar energy and geothermal energy

2.14.1 Neighborhood Planning Principles

Principle 1: Natural Areas

Each community is attentive to the local environment and existing land conditions, and features natural open spaces. Neighborhoods are created in response to natural characteristics or to include existing or improved natural and conservation areas. This might include wetlands, waterways, greenways, etc.

Principle 2: Mixed Land Uses

Every neighborhood offers a variety of land uses and population densities that offer choices for places to learn, work, play, and live. Transit, alternate forms of mobility, and parks are the focal points of more intensive land uses. Regardless of the form of transportation used, all residents may readily reach local stores and recreational requirements. Combine and blend the usage of commercial, recreational, and residential facilities on the same piece of property.

Principle 3: Multi-Modal Choice and connectivity

Every community provides people with practical mobility options for getting to, from, and within the neighborhood. Trails and streets are interconnected nicely to promote active ways of transportation. Parking and traffic are controlled and do not monopolize the neighborhood.

Principle 4: Compact Urban Form and Density

Every community has been planned to make the most use of the available space. Housing with a higher density is grouped together and situated near commercial, institutional, and public transportation hubs. Greater densities gradually give way to lesser densities. A diversity of applications and a healthy transportation user base are supported by density.

Principle 5: Integrated Parks & Community Spaces

Each community has top-notch public areas as well as a range of leisure and recreational options. Open areas are seamlessly blended and connected. A variety of ages and abilities can use public space since it is accessible and acceptable. Both active and passive spaces offer locations for gathering, socializing, recreation, physical activity, and outdoor leisure.

Principle 6: Housing Opportunity & Choice

A variety of structures, housing types, and unit sizes can be found in neighborhoods. Housing alternatives give residents in the community options, appealing to a variety of family kinds, economic levels, and "aging in place" possibilities.

Principle 7: Resilient & Low Impact Neighborhoods

Each community is built to be resilient and adapt to a variety of changing factors, including population expansion, demographic shifts, the local environment, fluctuating energy costs, climatic changes, and shifting resident demands and preferences. Designing affordable neighborhoods takes construction, long-term maintenance, operation, and resident affordability into account. Neighborhoods are designed to support a range of potential future uses, enabling effective adaptation of services, public areas, and structures as needed.

Principle 8: Safe and Secure Neighborhoods

Every community has been planned to enhance social interaction, overall neighborhood safety, and citizen health and well-being. Streets are made to be safe for both cyclists and pedestrians. Residents are familiar with their neighbors, feel secure playing, walking, cycling, and taking public transportation, using neighborhood areas, and using community facilities.

Principle 9: Unique Neighborhoods

Every neighborhood has a unique character that promotes pride in place and a feeling of belonging. At key junctions and other spots in the neighborhood, arrival features, focus points, natural elements, public art, and other emblems of the community are interwoven. A neighborhood's "look and feel" is expressed by its architecture and site design, which takes into account the interactions between buildings and open areas, the size of residences, the width of streets, the size of blocks, the materials used, and the architectural style.

2.14.2 Objective of Neighborhood planning principle

In supporting sustainable Neighborhoods, the Five Principles seek to:

- Increase land efficiency, reduce urban sprawl, and encourage high density urban expansion.
- Encourage vibrant, diverse, socially equitable, and sustainable communities in ways that are economically feasible.
- Encourage walkable Neighborhoods and reduce car dependency.

- Optimize use of land and provide an interconnected network of streets which facilitate safe, efficient and pleasant walking, cycling and driving.
- Foster local employment, local production and local consumption.
- Provide a variety of lot sizes and housing types to cater for the diverse housing needs of the community, at densities which can ultimately support the provision of local services

2.15 Disaster Recovery Framework

Developing Disaster Recovery Frameworks, The Sendai Conference Version, March 2015, suggests using the Recovery Process Framework. It is divided into six components or parts called the Disaster Recovery Framework. These modules follow the procedures necessary to build and put into practice a framework.

Module 1 - Conducting Post Disaster Damage and Need Assessment

A Post Disaster Needs Assessment (PDNA) is a pre-requisite for developing a Disaster Recovery Framework (DRF). The government must ensure participation and consultation by relevant government departments (both horizontally and vertically), civil societies, the private sector and face to face with people in the affected communities.

Module 2 - Policy and Strategy setting for Recovery

This module describes the vision, guiding principles, and appropriate strategies needed to achieve integrated, cross-sectorial disaster recovery

Module 3 - Institutional Framework for Recovery

How institutions are set up is critical for a successful recovery. A collective effort across government, NGOs, the private sector and communities promotes a successful recovery process.

Module 4 - Financing for Recovery

There are four main finance issues in disaster recovery. They must immediately calculate the disaster's economic toll, create budgets for recovery and reconstruction, pinpoint funding sources, and put up the systems necessary to handle and monitor finances.

Module 5 - Implementation Arrangements and Recovery Management

To assist the rehabilitation program, coordination brings together a broader number of partners and stakeholders. To satisfy the urgent need of the recovery process, existing project approval and procurement, reporting, and personnel systems must be streamlined.

Module 6 - Strengthening Recovery System in National and Local Governments

It refers to enhancing governmental capacity to help country and its people recover from disaster. The government needs to incorporate disaster risk management (DRM) in its development planning.

2.11 Article reviewed

Topic	Findings	Conclusion
Effect of Contemporary Urbanization on Historic Town Tokha	On Building by Structure stability, easy to construct, financial value	1.Changing life-style 2.Vehicular movement 3.Increase in family size to high land value
Sustainability Assessment of Non-Public Sector Initiatives in Housing for Marginalized Groups: Cases of Dhurmus-Suntali Foundation	1.Giraunchaur is more sustainable compared 2. 215 people per hectare 3.Opening to floor area ratio- 0.25 4. Job opportunity	R1. (Social integration and connectivity to other community) R2. Common Open spaces for performing social activities. 1.Lack of drinking water, solid and liquid management 2.Culture left on time of reconstruction 3.Concern with economy earning
Post Disaster Socio-economic Recovery in the Heritage Settlement of Kathmandu Valley after 2072 Earthquake: A Case of Sankhu	Post-disaster recovery as social problem-solving process such as inequality and poverty	Impact on agriculture, tourism and loan on reconstruction, the post disaster is struggling
Urban Reconstruction Process and Challenges for Residential Building after Nepal Earthquake 2015: Case Study at Bhaktapur Municipality	1.Legal inheritance of land and house among siblings 2.Poor financial status 3.Increase in number of toilets 4. Stair take more space in 200-500 sq.ft land	1.Improve on indoor light, Electrical and sanitary 2.House-owner financial management

Impacts of Urbanization on Intangible Cultural Heritage: A case of Rato Matsyendranath Rath Jatra	1.Space Crunch 2.Displacement of Indigenous people 3.Haphazad Development	1.Upgrade Economic Activities 2.Social Harmony
Urban Reconstruction Process and Challenges for Residential Building after Nepal Earthquake 2015: Case Study at Bhaktapur Municipality	1.Legal inheritance of land and house among siblings 2.Poor financial status 3. Increase in number of toilets 4. Stair take more space in 200-500 sq.ft land	1.Improve on indoor light, Electrical and sanitary 2.House-owner financial management
Impacts of Urbanization on Intangible Cultural Heritage: A case of Rato Matsyendranath Rath Jatra	1.Space Crunch 2.Displacement of Indigenous people 3.Haphazad Development	1.Upgrade Economic Activities 2.Social Harmony
Social Impact Assessment: A Tool for Planning Better Resettlement	1. Affect people are concern in assessment 2. Proper procedure is at most important	Individual and groups have a different view in development and outcome.
Reflections on Social Impact Assessment in the 21st century	Environmental impact assessment open way for	1.Climate change brings change in living pattern impacting in social way of living in future

	Social Impact Assessment	2. Social impact assessment has not always been effective to satisfy affected people.
Cultural issues of community resettlement in Post-Disaster Reconstruction projects in Sri Lanka	Investigation of cultural in various community should be monitored regularly	Addressing of the community culture through identification of the important events and activities is necessary
Community participation framework for post-disaster resettlement and its practical application in Pakistan	Involvement of multiple organization had caused difficulty in proper coordination	Active population have dominancy on presenting idea over the community participation
Post Disaster Socio-economic Recovery in the Heritage Settlement of Kathmandu Valley after 2072 Earthquake: A Case of Sankhu	Post-disaster recovery as social problem-solving process such as inequality and poverty	Impact on agriculture, tourism and loan on reconstruction, the post disaster is struggling

2.16 Barpak-Laprak Resettlement

Coordinate:

Longitude:29 12 26 N

Latitude:84 47 11 E

Elevation: 2707m above from Sea

Figure 7 Satellite Image of Laprak by NRNA

Barpak is a village situated in the northern part of the Gorkha district of Nepal, in the Village development committee of Barpak. Gurungs, Ghales, Sunwars, Pariyars, and others live there. The community contains more than 1,200 homes. Except during the rainy season, the hamlet can be accessible by direct bus transportation from Kathmandu and has 24-hour power, internet access, basic medical care, and nice hotels. Barpak is located on a hilltop in Gorkha, about 1,900 meters (6,200 feet) above sea level, and about 45 kilometers (28 miles) from Gorkha Bazar. A gravel road connects Abu Khaireney and Barpak along the Darauti River, and it continues on to Laprak, Gumda, and other locations.. Barpak has nearly 1200 households and nearly 15000 residents. There are small number of Kami, Damai and Sunar (Dalit tribe) in the village residing the community from generation after generation.

Figure 8 Barpark after 2015 Earthquake (Source: ekantipur.com)

Nearly all of the community's old stone masonry structures were destroyed, and the earthquake's epicentre in the village of Barpak was completely destroyed, killing 68 people. The hamlet, which was formerly one of Nepal's largest rural settlements but now has no structures, has been seriously affected by disruption in social functioning and is on the verge of losing its identity. Some villagers who were given training through INGOs are now all employed as construction workers and have given up their farms, livestock farming, and other activities. They either have temporary housing or desolate land on what were formerly farmland. Festivals are no longer enjoyed as much as they once were, and many customs that have been passed down for generations are now under peril.

2.16.1 Shelter

According to a Shelter Cluster assessment, 90% of the district's population, or 240,000 individuals, do not now reside in the same place as they did prior to the earthquakes. While 5,000 individuals live in impromptu communities, the bulk are residing in temporary housing close to their houses. Any kind of damage is included, even tiny cracks. According to reports, 55% of homes were severely damaged or destroyed. Only 6% of those have begun repairs, and labor and strong building supplies, especially corrugated galvanized iron sheets, are required.

2.16.2 Vulnerable groups

According to the 2011 census, the district has a disproportionately high percentage of households with a female head of home (37%). During a multi-sectoral study of seven northern VDCs, elderly-headed homes were found to be the most vulnerable category, followed by female-headed households.

2.16.3 Food security and livelihoods

During a Food Cluster Assessment in May, 31 of Gorkha's 67 VDCs were categorized as having a severe or high level of food insecurity. With the present rice, maize, and potato harvests, things should become better. However, a shortage of storage space and resources like labor and seeds is likely to limit agricultural production. The majority of the district's southern and central markets are operational. Shops are virtually shut down in the usually remote north, and important sources report that most demands cannot be met with cash. Communities are concerned about their ability to provide for their needs during the monsoon season (which lasts from June to September), and they have developed coping techniques as a result.

2.16.4 Social structure

Gurung (98%) and Bisokarma (2% of the population) make up the majority of the hamlet. The locals' primary jobs are in agriculture, animal care, and working overseas. Laprak village's primary agricultural products are potatoes, maize, barley, wheat, millet, beans, and other crops. Some people also gather herbs from plants. To find Yarshagompa and other medicinal plants and sell them in the market, the people travel to the high mountain (lekh) around July or August. They handle their everyday lives and make some money doing this.

2.16.5 Cultural values

This community has unique customs, traditions, and cultures. They continue the customs of their ancestors, of whom 20% are Christians and 80% worship the Bon religion. They offer animal sacrifices to their ancestor, the Himalayan deity or goddess, the jungle god or goddess, and bitches. The social life is bursting with humorous and entertaining aspects of the life cycle, including birth, marriage, and death.

The primary holidays observed by the people include Buddha Jayanti (the birthday of Lord Buddha) with the Ghatu dance, Lhosar, Dashain, Tihar, Tamu Losar (the Gurung Community New Year), Maghesakkranti, Makai ko biha (Corn Marriage), and many more. The primary rituals and customs of Laprak include Rodhi, Arukhun (cremation ceremony), Chewor (hair cutting), and Jhakri nanch (Tantric or shamism).

2.16.6 Health

Health care institutions have been seriously impacted by the extensive infrastructural damage. During the PDNA, just 11 out of the 67 VDC health sites reported no harm. Communities in northern VDCs, however, said that the current medical facilities were sufficient and had the ability and resources to handle the problems that were there. There have been no significant illness outbreaks noted.

2.16.7 Education

The Department of Education claimed that 60-65% of enrolled pupils showed up to class on June 2, the day that functioning schools reopened, despite damage to the infrastructure. The risk of landslides and blocked roads are the primary barriers preventing children from getting to school, and attendance rates appear to be lower in the isolated northern VDCs.

2.16.8 Wash

38 out of 67 VDCs, or more than half of them, were designated as having a high priority for WASH initiatives. The extensive destruction of sanitary infrastructure has been linked to a rise in open defecation, according to reports.

Hazards

The stability of the ground in mountainous areas has been significantly influenced by the earthquakes. In Gorkha's steep and mountainous regions, over 800 landslides have been reported since 25 April, and more are anticipated throughout the monsoon season.

2.16.9 Physical Aspect

Architecture

The architecture has been developed according to hill slope

- Stone masonry buildings contributed to determine uniform settlement pattern in the past
- After the earthquake, temporary shelters and RCC building have had destroyed beauty of settlement
- Houses are faced towards road, parallel to the roads
- They used to be stone masonry with slate roof, now many temporary structures are present
- Many have stone-paved shared open space in front of houses, used for social activities
- There is small porch in front of house, with door almost in middle of the house. There is open kitchen through the door. Kitchen is also used as semi private space, as a living space.
- Chulo is present towards back in middle of kitchen. Beside this is a small space for puja and a basket above it. The basket is used to dry grains and other materials
- The position of chulo is most important in Ghale house
- Opposite to kitchen is store and workspace, in some cases used as bedroom
- One side of the kitchen hosts stairs to go to upper floor. Upper floor has storage (for winter) and bedrooms.
- Slates were used in roof
- For post and structural support on critical areas, use of timber posts has been done

Planning

The road network may be considered as the foundation for the settlement's development and expansion. The primary highways are on the side of every building. Cowsheds have been constructed next to or behind the house in the majority of the plots. They often have a small field on the land behind the building as well as restrooms and a place of prayer. 'Pidi' is the name of the porch that welcomes the residences. The dwellings mix nicely with the surroundings and have a sturdy aspect. A straight flight of stairs is positioned in the corner of the room connecting to the top level, which is frequently used for bedrooms. The ground floor is multipurpose with kitchens, bedrooms, or stores. The latrines are situated outside the home. Mud mortar is typically utilized in construction projects with stone and brick. Stones that may be obtained nearby are chiseled and utilized for the foundation and wall. Following that, wooden posts are built to hold beams.

Figure 9 Walkways of Laprak After earthquake (Source: Resettlement planning project, 2017)

Nearly every home has access to the main road for vehicles. After the earthquake, homes were moved setbacks were increased by an average of 3 meters.

Figure 10 Masterplan by NRNA (Source: nrna.org)

A master plan had been created for a specific area's overall usage, including the allocation of that space for industry or residential purposes and the associated environmental effects. The home was built to seem like the old village community in order to preserve the local vernacular architecture. The number 12 is extremely significant to the Gurung culture, including 12 years, 12 names, etc. As a result, the 605 Energy Integrated in Rural Reconstruction plan has twelve courtyards. The new community is divided into sixteen blocks, and the dwellings are organized in a grid arrangement. These amenities are skillfully developed to create a more secure and long-lasting model town. Along with a new school (Shree Manikam Devi School), which is

currently open to the north and lower down the hillside, the new community will also contain a medical facility. To create a safer and more sustainable style of settlement, open and green spaces, communal areas, residential areas, forested areas, water springs, and roads are all included. Sanitary pipe layout and electrical distribution lines have been set up in accordance with the location.

2.16.10 Construction Technology and Materials

For the foundation, stones with cement mortar were utilized, and compressed earth bricks were used to build the ground floor wall. The lighter concrete blocks that are being used for the top portions of the walls are being hauled from Chitwan, while all of the bricks are being made on-site. R.C.C. was used in the plinth construction as well as other distinct bands. A non-metalled road from Barpak that crosses the 2800-meter Mamche pass is the only way to reach both new and ancient communities by vehicle. This road was built in the wake of the earthquake. The attic floor and an upper course of the wall were originally intended to be made of bamboo, but lumber was substituted in their place. Due to worries about excessive condensation, the initial plan called for zinc sheeting for the roofs, which was later substituted with UPVC roofing.

Figure 12 Building at new settlement Ghupsipakha(Pandey & Maharjan, 2019)

Figure 11 Testing of insite prepared Brick(Devraj & Gustavo, 2021)

Figure 13 Settlemetn under construction of Ghupsipakha (nrna.org)

2.16.11Comparison between damaged and new buildings

- In terms of material, locally available materials like timber, stone and mud were used in Laprak village where as in model settlement bricks, light weight concrete, PVC sheeting, R.C.C and steel truss and posts.
- Entrance porch (pidi) were provided whereas no porch is provided in model settlement

2.16.12 Some concerns of people

Forty-something Surman Gurung says, “There are no farms up there. We can’t sit idly, doing nothing. In order to have a livelihood, I must farm, and in order to farm, I must stay in the village.” Many residents, stayed in temporary shelters in Gupsi Pakha for a couple of months after the earthquake, but they moved back down to the village after the 2015 monsoon. Due to the economic reason people are returning down Laprak although there is a risk of landslide. Also, in the interview by Kathmandu post Shirmaya Sunwar, 37 resident of Laprak stated that she won’t be moving. She had already spent 7 lakh rupees rebuilding her house in Laprak. Her farm, where she cultivates potatoes, corn and millet, was below Laprak, and the journey between it and Gupsi Pakha would be unsustainably long and arduous. She smiles when asked about the project: “Khai, thik pani lagcha, bethik pani lagcha.”(lal, 2019)

Other aspects include Due to its unique location and elevation of about 2,750 meters, Gupsi Pakha experiences intense cold for over half of the year. Laprak is at a lower height, has a smoother terrain, and offers some protection from the weather, according to Mani Gurung, a Laprak social worker. The temperature of Gupsi Pakha is unbearable, especially for elderly people.(lal, 2019)

Also, for religious and spiritual reasons, locals are hesitant to leave their ancestral houses. The vast majority of the Gurung people that live in Laprak are animists, and their ceremonies are connected to certain elements of the surroundings of their dwellings. The 65-year-old Kamala Gurung tells the Kathmandu Post that even if she were to move to Gupsi Pakha, she would always retain her home in Laprak and return there to do pujas. In her opinion, Gupsi Pakha would only serve as a temporary home for a few months each year (lal, 2019).

2.17 Bandipur Conservation

Bandipur is a hilltop market place in Tanahu District, (Gandaki Zone) of central Nepal. Because of its preserved, old time cultural atmosphere, Bandipur is increasingly becoming a tourist town. The town is located at 27.56 N latitude, 84.25 E longitude at an elevation of 1030m from sea level and on a mountain settlement of (Mahabharata range) approximately 700m above the Marsyangdi River Valley, 143 km to the west of Kathmandu and 80 km to the east of Pokhara.

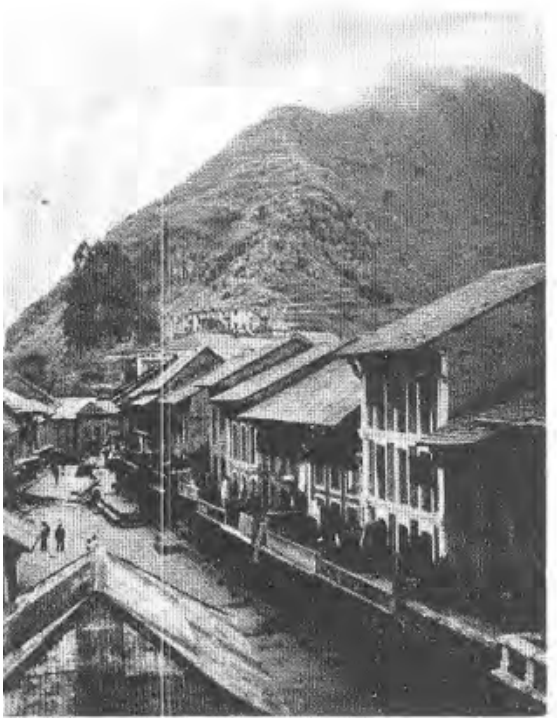


Figure 14 Newar Architecture in Bandipur bazaar 1980(Iltis, 1980)

Since 1998, an 8-km access road from Dumre has connected to it (of Kathmandu Pokhara highway). The city was formerly cut off and only connected by a shaky road. Tractors are the sole means of transportation during the monsoon. The main roadway is just broad enough to fit in the mountain saddle, which is only 200 meters long and has two to three storey houses on either side. These homes' rears have steeply

sloping surfaces that are utilized for kitchens and gardens that can only be accessed by stone stairs.

After being taken over by Prithvi Narayan Shah in 1769, Bandipur was developed as a tunneling site of trade by Newar traders from Bhaktapur in the Kathmandu valley. They took advantage of its location to grow into a significant halt on the Butwal-Kathmandu India-Tibet commerce route. They carried the mostly unaltered architecture of the Kathmandu Valley and their cultural legacy with them. Bandipur, which up until the early 19th century was a collection of unassuming Magar villages, transformed into a thriving commerce hub and a neighborhood with town-like characteristics: The opulence of the time is evident in the enormous buildings with their neoclassical façade, shuttered windows, and slate-paved streets. Bandipur was at its most powerful and prestigious during the Rana era (1846–1951), when it was given special permission to create its own library, which is still in operation. After opening of highways in the 1970s, trading fell into a steep decline with the construction of the Kathmandu - Pokhara highway. The people moved down to the valleys. For technical reasons, the highway was logically built in the Marsyangdi valley, leaving Bandipur isolated up on the mountain. In addition to that, and its result of poor accessibility, Bandipur lost importance because the district headquarter of Tanahu was moved down to Damauli.

The covered veranda that runs nearly the whole length of Bandipur Main Street on the northern side is one of the street's distinguishing features. It is adorned with vibrant flowers and plants. The majority of the structures still contain small stores. The main street's slate pavement was ruined by high traffic, for which they were not designed, but it is still possible to rebuild it along the perimeter and in the smaller lanes. The library was painstakingly refurbished in 2000 and is still in operation. Formerly a Magar village, Bandipur today is inhabited by multi-ethnic groups with different beliefs: the Bahuns, the Chhetris, the Newars, the Damais, Kamis, Sarkis, Kasais, the Magars and Gurungs.

Tourists could also be interested in the different Newari and Magar festivals, which up until recently were hosted for private celebrations several times a year. The Chutka and Sorathi dances are highly well-liked. The Bindyabashini temple and library in the town center, Thani Mai, Tindhara (the "Three Taps" washing spot on the southeast edge), Raniban (Queen's Forest), the ascent to the Siddha Cave, and a trip to Ramkot hamlet are among the other attractions. Bandipur itself is seen from Mukundeswari, where there is a small shrine on the hill at the western end of the saddle. Some of the people

produce oranges, which do well in the local environment. A silk farm is a one-hour hike to the west of Bandipur.

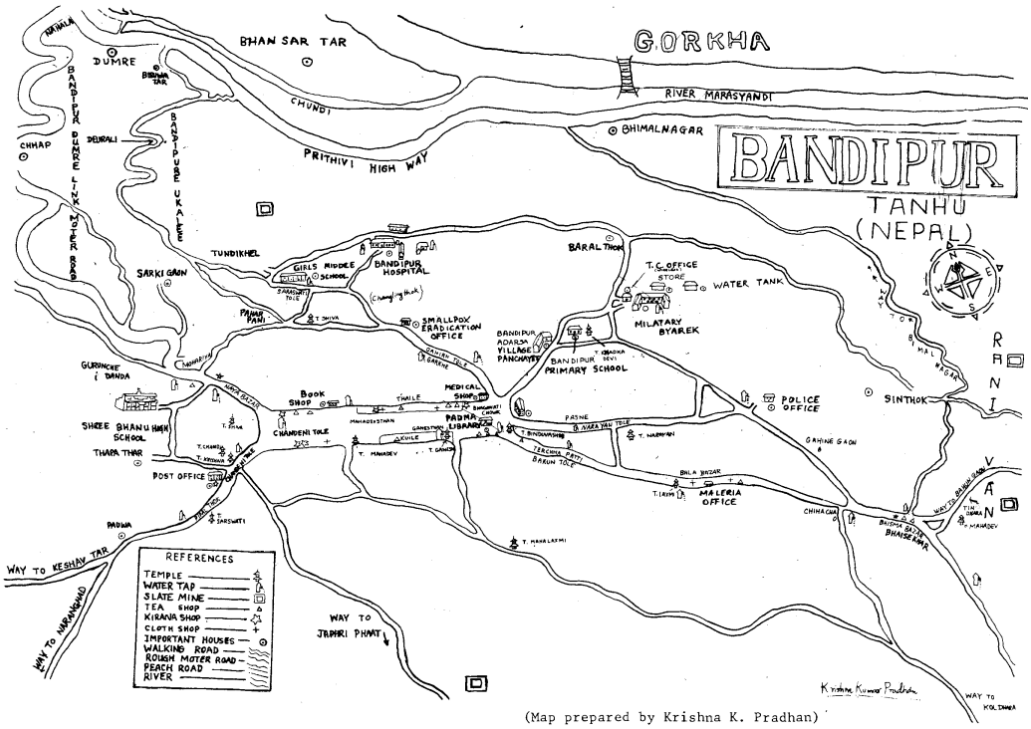


Figure 15 Map of Bandipur (Iltis, 1980)

2.18 Maharashtra India

Maharashtra is a state on western and central India's peninsula with a 720 km-long coastline along the Arabian Sea. By separating the former Bombay State into the two new states of Maharashtra (a Marathi-speaking state) and Gujarat, the state of Maharashtra was created on May 1st, 1960. (a Gujarati-speaking state).

Figure 16 Location map of earthquake (Source: relief.org)

2.18.1 1993 Latur Earthquake

The epicenter of the 6.2-magnitude earthquake that mostly hit the districts of Latur and Osmanabad on September 30, 1993, was located at 3:56 am in India. The earthquake caused around 8,000 fatalities and 30,000 injuries. About 190,000 homes in more than 2,500 communities were impacted

by the earthquake, and 28,000 homes across 52 villages were entirely demolished. (Barenstein et al., 2014)

2.18.2 Recovery Strategy

The Maharashtra Government (GoM) managed the earthquake recovery process with great skill, setting rules for housing costs and sizes as well as defining the minimum seismic resilience required for newly constructed structures (Davis Ian, 2014). After a few days, the government declared the "Maharashtra Emergency Earthquake Rehabilitation Programme" (MEERP). The project's housing component, which made up around 58 percent of the overall expenditure, comprised:

- Relocation of 52 completely devastated villages including reconstruction at the new sites.
- Complete reconstruction of another 22 severely damaged villages.
- Reconstruction in-situ, repair and strengthening of dwellings in over 2,400 affected villages of the Maharashtra state.

In addition to housing, MEERP also covered infrastructure, social and economic rehabilitation, training, equipment, technical help, and the creation of a disaster management strategy for the state of Maharashtra.

The MEERP was launched with the following major objectives:

- To restore the physical environment to pre-earthquake condition.
- To enhance the earthquake resistance of buildings through improved standards of design and construction.
- To reinforce the capability of the GOM to respond more efficiently to possible future disasters, including earthquakes.

The government provided financial and technical assistance for in-place rehabilitation for the moderately damaged communities, but displacement and full agency-driven restoration were planned for the 52 most severely destroyed settlements.

Entitlements for the housing assistance were divided by the government into 3 categories of people depending on their ownership of agricultural land.

Category	Housing area
1. landless and marginal landholders	250 sq. ft.
2. households owning between 17 ha of land	400 sq. ft.
3. households owning more than 7 ha of land	750 sq. ft.

Source: (Jigyasu & Upadhyay, 2013)

Wealthier households received noticeably larger dwellings and homestead plots than poorer ones under this rebuilding scheme, which caused some serious equity concerns. Additionally, it ignored the reality that for many landless households, the home serves both residential and productive purposes, and that the size of the household ultimately determines the amount of space needed.

2.18.3 The Case of Malkondji village

Malkondji is a hamlet in Maharashtra's Latur district that is somewhat far away. It is situated in Ausa Tehsil. It is located 40 kilometres from the district headquarters in Latur and 35 km from the sub-district headquarters in Ausa. At the time of the earthquake, there were 1,562 residents living in 281 houses, and 7 of them died and 5 were wounded.

2.18.4 Social Structure

The caste system, which historically established the positions of the social groups residing inside the villages, is the foundation of the social structure in many rural areas of India. In rural areas, the nominally recognized caste system is still prominent and significant. The settlement of Malkondji is not an exception. Malkondji's caste system is unique in that it consists of a multitude of social groupings rather than a rigid hierarchy. The table below displays the village's caste distribution.

Old Settlement Pattern

The original Malkondji village had an organic settlement pattern with narrow winding roads characterized by clusters of housing with distinct typologies and hierarchy of public and private open spaces used for religious as well as other activities guided

Figure 17 Old Village Settlement Plan

by the traditional occupation patterns. The clusters are formed on the basis of social structure. There were clusters of Muslim community, Brahmins and Marathas, Lingayats, Mali + Khumbhar + Navi + Chambhar, Harijan etc

Housing Typology

Before the earthquake, the great majority of people resided in traditional wada dwellings, which were distinguished by thick mud-covered roofs, timber frames, and stone walls with mud mortar.

The vernacular homes consisted of three basic spaces:

- at the center or front of the plot, there were courtyards for keeping cattle, bathing, cooking, storing farm equipment, and so on;
- open to this space were verandahs used for all kinds of living and working activities;
- at the very back of the lot were storage rooms used for the long-term storage of grains, and daily used items such as food and utensils. (Salazar Alex, n.d.)

This type features a front yard that serves as a partition between a home's private and public areas. The entryway is tastefully decorated and features a portico area where visitors may mingle with relatives and neighbors. The wada home has a complicated mixture of internal and external rooms, offering areas for a variety of domestic tasks as well as specific areas for storage, agricultural work, and animal keeping.(Daly Patrick T. & Feener R. Michael, 2016)

Major Spaces in the traditional wada houses are:

Space	**Description**
Dhelaj	Entrance Porch
Chaukhat	Threshold at entrance (Door)
Osri	Shaded semi open area around court
Tulsi Vrindavan	Sacred plant in the court for worshipping
Uttarand	Series of mud pots kept over one another containing first seeds of the harvest and kept for good luck and prosperity.
Soban	Storage space for firewood and cattle fodder.
Deoghar	Family shrine
Gotha	Cattle house
Kanagi	Huge grain containers made of wattle and daub.

(Building and Social Housing Foundation (BSHF), 2014)

The homes are more than simply structures; rather, they represent a self-sufficient family eco-system that has developed over many generations to accommodate the way of life and means of subsistence of the occupants.

New Malkondji

The community was moved from the original village approximately 600 meters to the west. The non-profit organization (EFICOR) refused to construct homes of various sizes for the three groups of people according to the ownership of agricultural land and instead constructed 336 identical homes, each measuring 34.5 square meters, using the "core-house" principle and carefully integrating enough space for future expansion.

Settlement Pattern

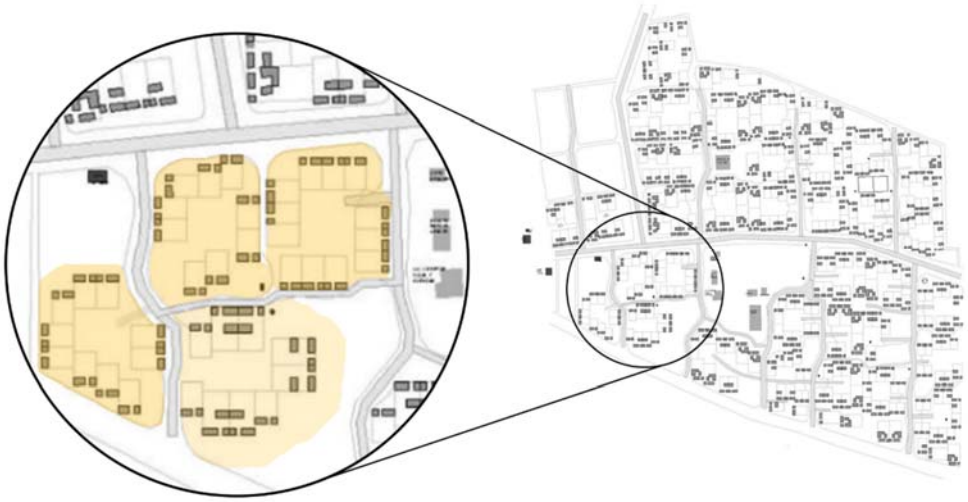


Figure 18 Cluster planning of new village

The majority of the communities in Latur had dwellings constructed from a donor-beneficiary perspective. The grid planning and contemporary architecture of the new settlements not only replaced the organic settlement pattern of the existing villages, but also created an environment that was alien to the pre-existing cultural pattern and ignored every aspect of the climate, topography, and regional customs. However, the Development Alternative Group (DA) suggested a cluster-patterned design for Malkondji Village based on Laurie Baker's "architecture as service" philosophy which included the allocation of communal spaces, building 10 public buildings (including a primary school, an office for the Gram Panchayat (local government), temples, a Mahila Kendra (Women's community hall), an Anganwadi (kindergarten), a primary health care centre, a cooperative society building, a veterinary clinic, and a library), and extensive tree planting to provide shade and fruit.

Through the provision of a hierarchy of spaces, including huge community space, smaller cluster space, and finally individual courtyards, the cluster layout enabled successful physical design and led to the hierarchy of roads and lanes being scaled to the needs of the village.

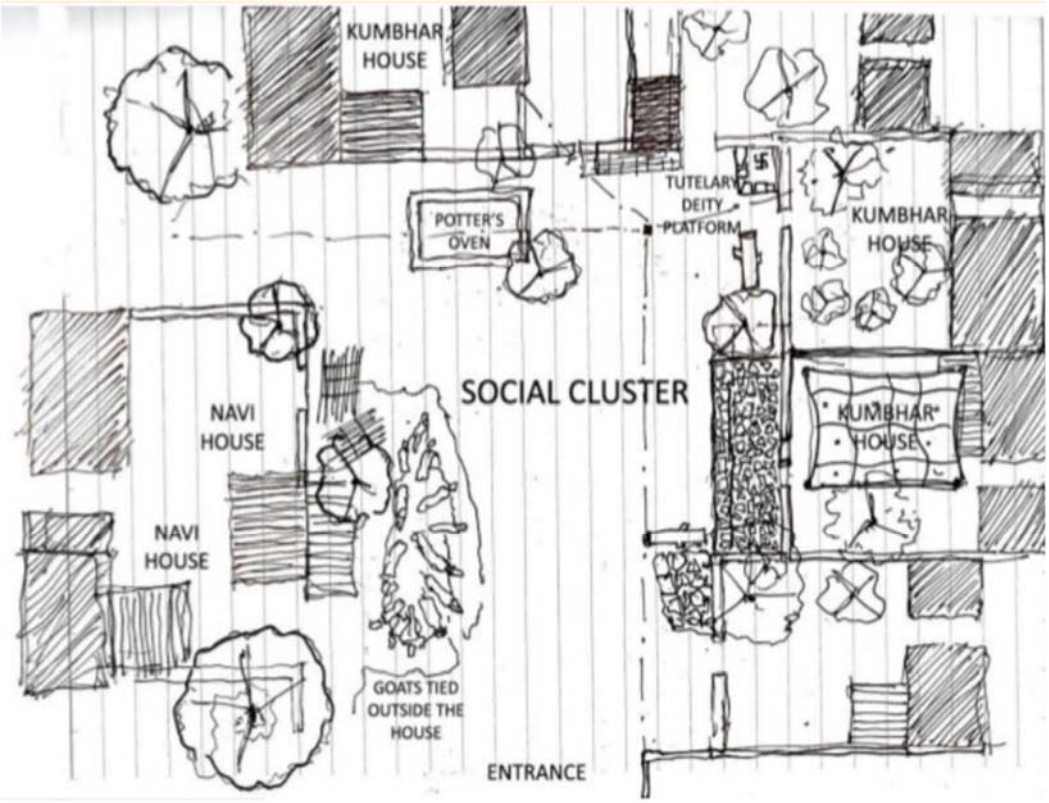


Figure 19 Model of Proposed Cluster Settlement Source: (Building and Social Housing Foundation (BSHF), 2014)

For instance, a potter cluster in Malkondji, where groups of potters used an open central space for large kilns to bake pottery. This allowed them to group in ways that are productive, and at the same time does not inconvenience other members of the village. The layout of the new community included widely spaced access to utilities including the water supply, roadways, and public buildings. The green belt offered by the clusters enhanced the microclimate and broadened the opportunities for neighborhood-level activities. The elderly began to congregate and unwind on the road that was shaded by Gul Mohur trees near to the main chowk (Jigyasu & Upadhyay, 2013). The residents were allowed to carry their gods and other culturally significant objects from the old village to the new village thanks to the welcoming outdoor public areas designed for social interaction. Building compound walls to encircle dwellings allowed agricultural

households to bring their livestock into common courtyards at night to give security against animal theft, preserving an essential aspect of a traditional village in the area.

Housing Typology

In the new settlement, the house was designed for a single-family unit, composed of two rooms, one as a kitchen and the other room as bedroom. Next to it, a separate unit was provided with a bathroom and pit latrine toilet. Later on, the Government of Maharashtra implemented its policy of providing larger houses to 3rd category households and built additional housing units in the provided larger plots.

Figure 20 Typical floor plan with two rooms and a bathroom unit

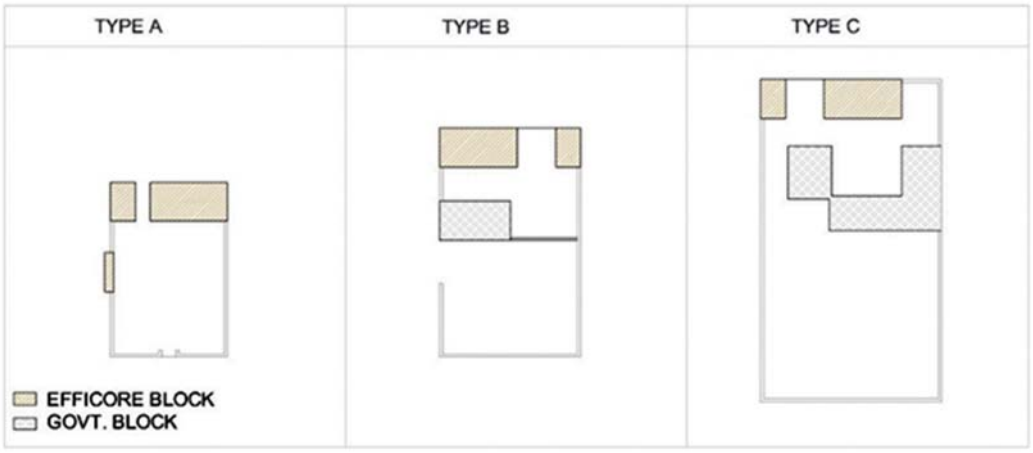


Figure 21 Plot layout by the NGO

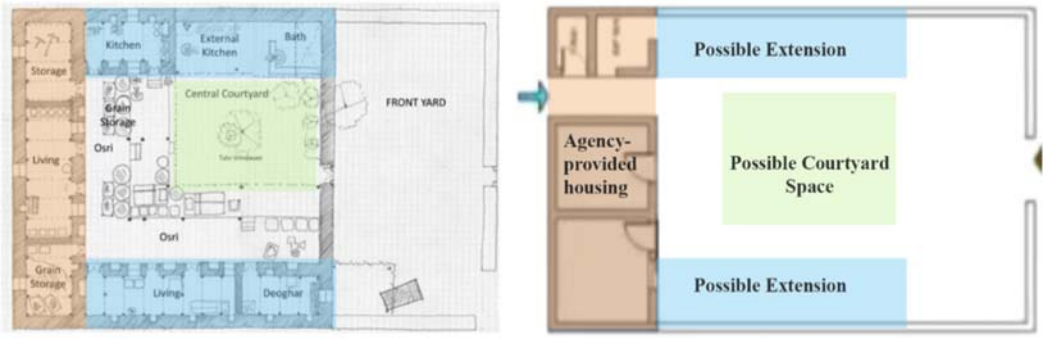


Figure 22 Space planning in reference to traditional layout

The house in the new community had two rooms—one for the kitchen and the other for the bedroom—and was built to accommodate a single family. A second structure with a bathroom and a pit latrine toilet was placed next to it. Later, the Maharashtra

government put into practice its plan to build larger homes for people in the third group and added more housing units on the bigger lots it had granted.

The dwellings were built using cement concrete blocks and fortified with RCC ring beams placed at plinth and lintel levels for added seismic protection. The roofs of the houses were also made of RCC and had a flat design.

One extremely important feature that influenced the design of later additions was the orientation of the core home inside the plot of land that was given to each household. The dwellings were situated in a favorable location for future additions along one of the plot lines. If the dwellings were in the middle of the plot, there wouldn't be enough room for additions, which may encroach on the public land outside the plot's boundary.

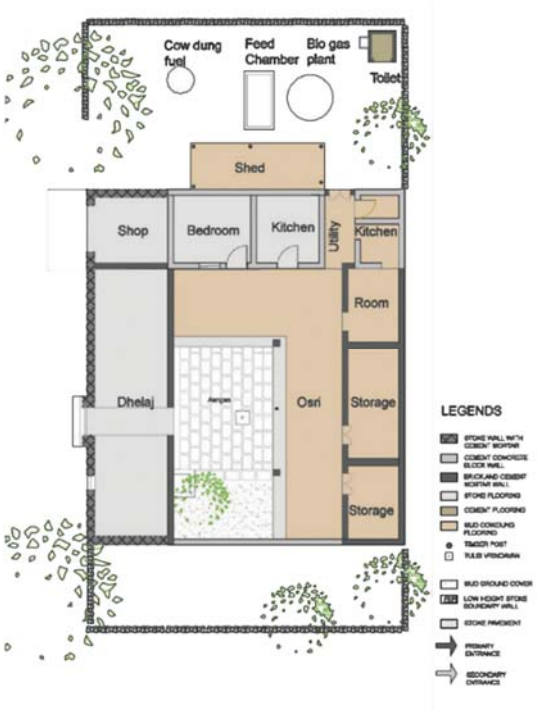


Figure 23 Modification in floor plan

Most families constructed a Tulsi Vrindavan and more rooms shortly after relocating in order to accommodate new family members. The wealthier households invested a lot of money in remodeling their front doors to resemble the essential elements of a classic home. In order to welcome success and prosperity, a number of homes along the main road decorated their doorways with two mythological door guardians.

Figure 24 Modification of Entrance

The different changes and extensions in the houses over the period of two decades are shown below:

Transformation	Reasons
Kitchen	The design of core houses did not consider that wood-fire stoves are predominantly used for cooking in rural areas. Thus, it is essential to have a kitchen with adequate ventilation.
Living	Shaded areas covered by tin sheets were created to sleep underneath due to the psychological fear of a heavy roof caving in if there is another earthquake.
Dhelaj/Exterior walls	Exterior walls were constructed either by salvaging dressed stone from old villages or by making walls from cement concrete blocks. Door frames were salvaged from old villages. The construction of dhelaj shows the aspiration of villagers to recreate the traditional wada typology in the reconstructed houses.
Storage	Covered storage for harvest, grains, firewood, and fodder was one of the immediate needs addressed by building extensions. In the absence of storage space, villagers keep their belongings in big chests that occupy space in the core houses.
Toilet	Though toilets were provided in core houses, the expansion of families and splitting of households in a plot created the need for more toilets per plot.

Source: (Jigyasu & Upadhyay, 2013)

Compared to the core residences that were built by contractors, the newly constructed expansions are of inferior quality. People have abandoned their traditional mud roofing technique in favor of light-weight tin sheets out of fear of earthquakes. The great majority of those who built new walls did not use the earthquake-resistant elements. The additions are frequently constructed using a variety of building materials, including mud, stone, scorched earth bricks, and cement blocks, due to financial limitations and a lack of safety concerns. (Barenstein et al., 2014).

Figure 25 Image of Reconstructed Houses and temporary Shelter

CHAPTER 3. STUDY AREA

3.1 Site Location: Giraunchaur

Study area is the two re-settlements in Giraunchaur, Sindhupalchowk developed by non-government institute. Two Resettlement of Giraunchaur, Sindhupalchowk, known as Shree-Namadoling Ekikrit Basti and Namuna Basti are the study area, located 4km and 14km from Melamchi town and Bhotechaur away respectively. Both the settlement affected severely by the 2015 Gorkha Earthquake. Before the earthquake, the houses were made up of stone and mud with 3 storied, and scattered clusters in hillside. Shree Namadoling Ekikrit Basti holds 62 houses where 8 Building are still not inhabited due to incompletion whereas Namuna Basti have 67 number of houses completed in time span of 6 month.

Figure 27 Location Map of Study Area

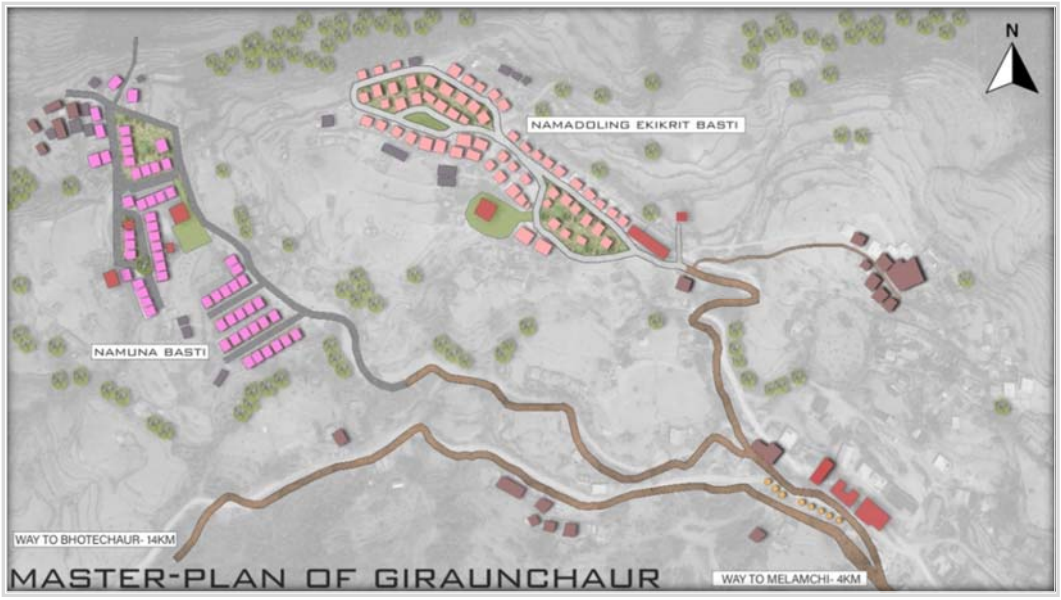


Figure 26 Masterplan of Giraunchaur

All the houses are hold by Tamang, in the integrated both resettlements, where majority of the households are involved in agriculture followed by building raw material-oriented employment and few on business and Government employments. Both the settlement has a site area varying from 5-7 ana of land based on understanding or lottery procedure.

Facilities in Giraunchaur

After the two resettlement and better flat land for ease of developing for infrastructure, Giraunchaur received many budgets from Local Government for the development of infrastructure like Community Library, Gumba Renovation, Skill Training Center, and Health post.

Figure 28 Community Library

Budget on the development of the Giraunchaur had been promising after the resettlement. Coordination of the community for the over-all development has been easily accepted by the community along with contribution from the fund collected within community for the development. Since the area has been able to get huge media attention, various other organization has also taken step for the betterment of the area with the provision of facilities like library with proper internet facilities.

Figure 31 Choten in Road Junction

Figure 30 Gumba in Namuna Basti

Figure 29 Dhaka Training Center

Resettlements has proven ease in community lead activities because of which we can see the number of governments funded project are constantly developing in the area.

3.2 Demography of Giraunchaur

Giraunchaur has 215 Population density per hectare and KVDA standard is of 300-400 Population density per hectare. Giraunchaur has very less density of 37 dwelling per hectare however, the future expansion is still not in consideration in early response to reconstruction after the disaster. Based on previous study, Giraunchaur (Developed by Dhurmus-Suntali Foundation) has been graded highly sustainable. (Bhandari & Singh, 2019)

Majority of People in Giraunchaur are engage in Agricultural activities. Giraunchaur lies very near to Indrawoti River and other smaller river, most of the people are engaged in the extraction of sand and aggregate. Almost all of the people have their agriculture land, they are almost busy in their own work. Few of them are involved in government job and some of them drives heavy vehicles to transport these building materials to Kathmandu and nearby districts. These days' people have lots of opportunities in the construction of houses after earthquake. The nearest market in Melamchi. So, there is few chances of getting some formal jobs within the town. Giranchour people have medium chance of getting job.

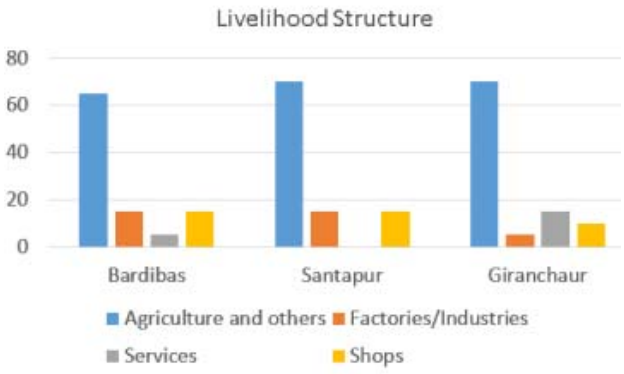


Figure 32 Percentage of People in Different Livelihood Structure (Bhandari & Singh, 2019)

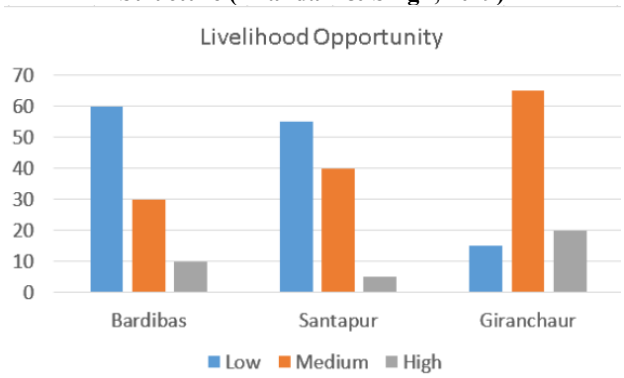


Figure 33 Livelihood opportunity around the vicinity (Bhandari & Singh, 2019)

Giranchaur faces challenges in environmental aspects like drinking water problem, solid and liquid waste management. Reconstructed building is similar prototype and are made with aarma-prambh approach with better thermal comfort. The reconstructed building has opening to floor area ratio of 0.25.

3.3 Namuna Ekikrit Basti

Coordinate:

- Longitude:27 47 24 N
- Latitude:85 33 02 E
- Elevation: 1170m above Sea

Figure 34 Giraunchour Resettlement by Dhurmus Suntali Foundation (Source: NRA)

Namuna Ekikrit Basti has been built with joined effort of Locals and Dhurmus-Suntali Foundation, Comedy actor has been able to grab media attention for the integrated resettlement and had received ample amount of fund and support from Government and Nepali peoples. It has been made with Aarmaha Parmaha approach in time frame of 6 months. House design are based on adopted vernacular forms with 4 rooms and one internal toilet in Ground floor which had not been seen earlier before. Whereas first floor is used as storage. Buildings are made with hollow concrete blocks with 6 RCC columns in corner and mid exterior wall. Facility of store has been provided in Namuna Ekikrit Basti houses in attic. It has been one of the important design adaptations from previous vernacular housing. Because of which there are no need of temporary shelter for storage. Migration based community has been observed in Giraunchaur, therefore, the additional extension might not be a greater concern in future.

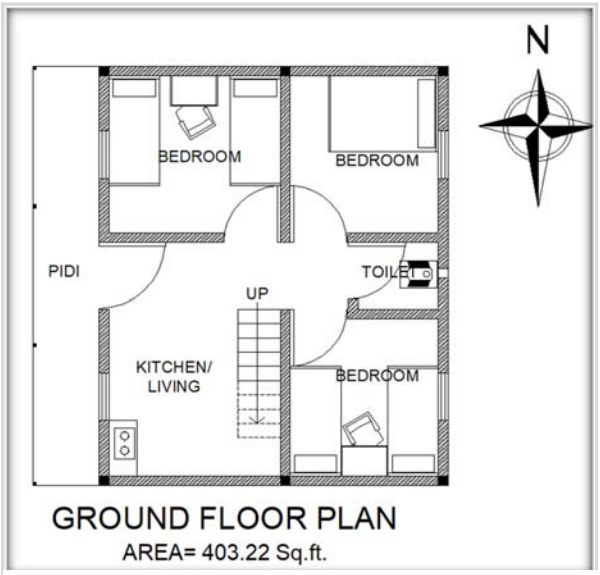


Figure 35 Ground Floor Plan

Figure 36 Attic for Storage in Namuna Basti

3.4 Shree Namadoling Ekikrit Basti

Coordinate:

- Longitude:27 47 26 N
- Latitude:85 33 06 E
- Elevation: 1180m above from Sea

Figure 38 Namadoling Ekikrit Basti Building Typology

Shree Namadoling ekikrit basti has been built with the joint effort of Locals, NRA and CG foundation. Technical assistance has been provided by CG foundation with collaboration with Build-up Nepal for interlocking blocks. The modality of the re-building houses where concept with skill providing perception. People in the locality were trained to produce the interlocking blocks and the blocks produced where used in the building of the infrastructure. Cement, transportation of Sand and Aggregate along

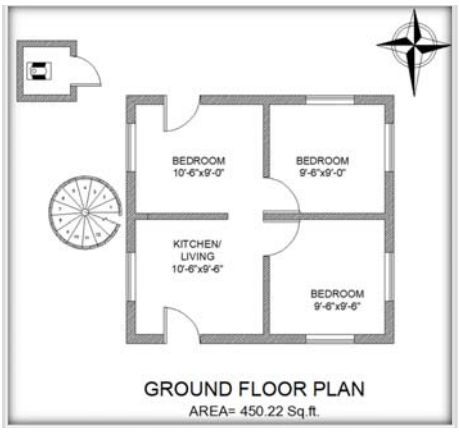


Figure 37 Ground Floor Plan

Figure 39 Settlement of Namadoling Basti

with exterior paint has been provided by CG Foundation, whereas NRs 4 Lakh.

3.5 Buildings Comparative Summary

Table 5 Comparative Study of Vernacular and Integrated Resettlement Buildings

	Vernacular	Namuna Ekikrit Basti	Namadoling Ekikrit Basti
Settlement Pattern	Scatter clustered Courtyard	Row Housing	Row Housing
Building Form	Rectangular	Rectangular Compact	Rectangular Compact
Building orientation	Facing Towards Courtyard	Towards Road Facing	Towards Road Facing
Building stories	3	1	2
Internal space arrangement	G.F- Kitchen/ Living F.F- Sleeping S.F- Storage	GF- Living/Bedroom /Kitchen FF- Storage	GF- Living/Bedroom /Kitchen FF- Future Addition
Semi-Open Spaces	Shaded Veranda and Balcony	Veranda	No
Wall Materials	Stone-Mud with Mud Plaster	Hollow Concrete Block	CSEB with Plaster
Wall Thickness	60 cm	15cm	12cm
Roof Materials	Thatch Roof CGI Sheet	CGI Sheet	RCC Flat Roof
Roof Type	Gable Roof	Gable Roof	Flat
Roof Overhang	Yes	Yes	Short
Foundation	Stone Plinth covered by Mud/Earth	RCC column and Stone filling	Stone Filling
Floor	Mud Layer	Plain Cement Concrete	Plain Cement Concrete
Ceiling	Very Low, Wooden Beams and lathwork	18mm Ply board	RCC slab
Opening	Small Size	Medium Size facing Road/ Backyard	Medium Size

3.6 Settlement Pattern Timeline

2014(BEFORE EARTHQUAKE)

In the initiation of quake victims, Tourism Promotion Project and Community Reconstruction Committee have been building 135 houses in integrated model in Giraunchour. The model of the house in both the settlement is different comprising of 65 and 72 houses respectively. Based on satellite study, the settlement has not seen significant changes till the earthquake of 2015, after which the resettlement project has occupied large land compared to previous settlement. This has changed the building planning pattern and the context of the previous settlement. Lack of understanding of the social-culture aspect of settlement, various issues seem to be immersed in the reconstruction.

2021 (SECOND SETTLEMENT)

3.7 Measured Drawing

Namuna Basti by Dhurmus-Suntali foundation, comprise of 65 houses of similar typology and additional two public buildings and where the houses foot-print is of around 400 Sq.ft. The present building pattern is influenced by modern way of living with proper declaration of spaces like living, bedrooms and internal toilet. Previously the houses were built with common hall for most of the activities and upper floor is used mostly on the time for sleeping at night. Whereas the top floor is used for the storage purpose. The building foot print is almost close enough to previous one however, the spaces for animal shelter and restriction of not allowing is hampering the agriculture-based society.

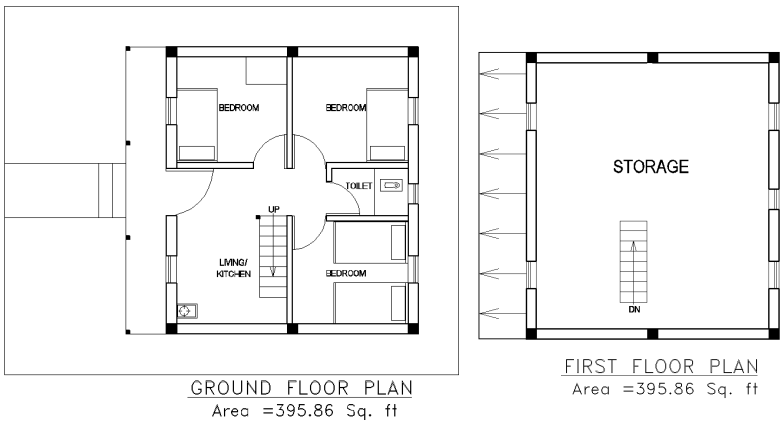


Figure 40 Reconstructed Building of Namuna Basti

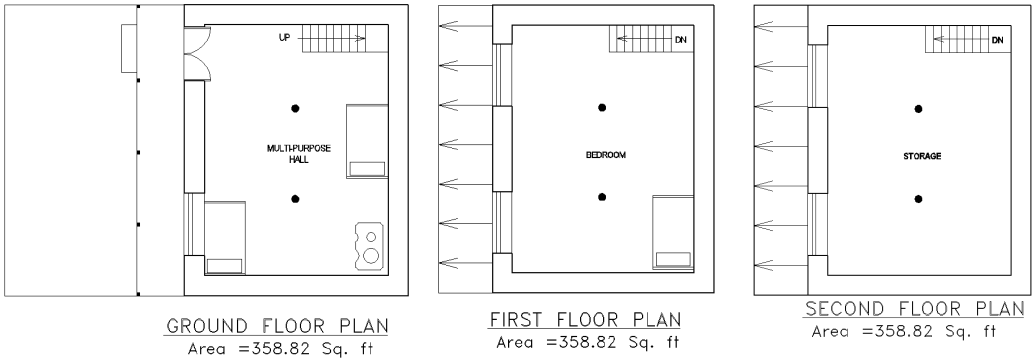


Figure 41 Building Drawings before earthquake

CHAPTER 4. ANALYSIS AND DISCUSSION

4.1 Key Informant Survey of Shree Namadoling Ekikrit Basti

Mr. Mohan Lama is one of the residents of Namadoling Ekikrit Basti where he has been active from his earlier time from the connection of drinking water from Shivapuri hill to the resettlement of Ekikrit Basti. His profession is painter and works as seasonal painter in Kathmandu and Melamchi Area.

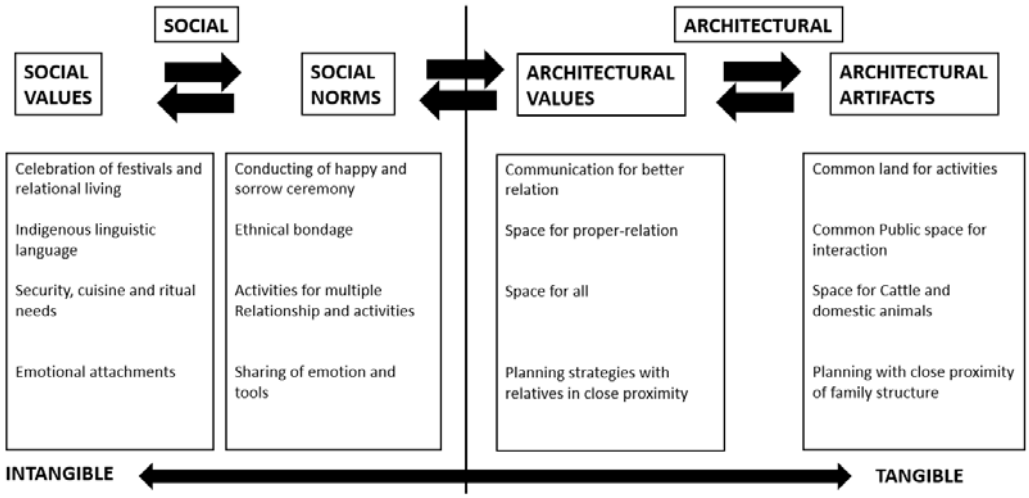
Construction of Housing	•People Participation along with resources •Skill learning Approach
Housing Design	•2 Option with Slope roof Provided later changed towards RCC flat slab for considering future expansion • Design limited without considering earlier building space
Provision of Basic Facilities in Resettled	•Heath post and Gumba are built.
Relocated Plots	•Individual houses has been build with excavation of land leading high elevation to road level •Plot open spaces are used for temporary shelther for storage of resources •Threat of landslide on North west Side of the resettled housing.
Proper Legal Transfer	•Since the project is still on construction phase, the property is still under the Joint-community
Rehabilitation of livelihood	•People engagement in animal husbandry had been restricted before, leading difficulty in agricultural based family and many reducing their agricultural areas.
Provision of Social Infrastructure	•Park space is allocated but no infrastructure has been made
Materials used for Housing	•CSEB Bricks along with Reinforcement in corners
Re-creation of the Neighbourhood	•Community space is allocated together with Gumba
Restoration of culture and heritage	•Building fabric are unique to previous •Lama houses are decorated with Religious Paintings
Empowerment of the Community	•Building Skills were provide however, not in demand.

4.2 Key Informant Survey of Namuna Basti

Mr. Dirga Bahadur Tamang is one of the residents of Namuna basti who has served as police Hawaldar and got retired. Ever seen then he has been actively working in his community. He is one of the team leaders of three group for Namuna Basti.

Construction of Housing	•People Participation along with resources provided •Sitaram Katel and Kunjana Ghimire worked together
Housing Design	•Identical building is made with pidi and storage facility as previous space form • Internal Toilet facility has been provided.
Provision of Basic Facilities in Resettled	•Community Hall (Gumba), Dhaka Learning center
Relocated Plots	•Earlier three cluster were made within three zones and the zone based houses were distributed based on lottery in case of conflict.
Proper Legal Transfer	•Since property requirement for official purpose is low, the property is still under the Joint-community
Rehabilitation of livelihood	•People engagement in animal husbandry had been restricted before, leading difficulty in agricultural based family and many reducing their agricultural areas.
Provision of Social Infrastructure	•Parks are made but damaged by used by adults
Materials used for Housing	•Hollow concrete blocks with 6 RCC Pillar and CGI Roof
Re-creation of the Neighbourhood	•Community space is allocated together with Gumba
Restoration of culture and heritage	•Buddhist flag is seen in some houses •No specific intervention is seen in building for culture
Empowerment of the Community	•Women empowerment through Dhaka training center

4.3 Societal value and Architecture



Community have linkage with individuals and its values and norms are bound on one another in intangible ways. Often in designing the understanding of norms and values are difficult to be understood and its proper impact in any intervention is hard to be predict. Understanding of the space with relation to inhabitant position, respect and limitation with one another, are important in proper understanding (Lestari, 2018). Behavior analysis on individual working style can be one of the ways to know the various space relation with the people living.

Social Value and norms are intangible aspect with tangible artifacts in architecture. Architecture values understanding the intangible aspects results in accepted physical structure(Vecco., 2010). Linkage of the social values can be done with the help of flow chart develop by Sanjoy Mazumdar and Shampa Mazumdar. Societal Values, Societal norms, Architectural Values and Architectural Artifacts, linkage is drawn for better understanding of the spaces(Mazumdar & Mazumdar, 1994).

Giranchour re-settlement are made with the effort of private organization which are being operated from the city area. The understanding of the demand of the rural agriculture base living has been missed out in the re-construction. Various adaptation of the new functional living is being adopted however, the understanding of the space and time frame still lacks causing challenge for the people for animal husbandry, the housing typology and functionality is based on city-based living.

Namuna Basti before earthquake had not had the facility of gumba whereas the majority of people living in settlement are Buddhist religion, the demand of gumba has been made and made during the resettlement at the center of the resettlement. Initially the infrastructure was made with CGI roof which later turned into RCC flat roof where

additional height is increased based on thermal better performance of earlier stage. The building is used as a religious purpose for prayers and ritual in buddhism by monks where as in other time, the space is being used as community functions. This is quite unique in context of buddhism based gumba or monastery. The reason might be the short trace existence of space otherwise the space is not allowed for any other activities other than religious activities.

Figure 42 Namuna Basti Gumba (Community Building)

Figure 43 Separate cooking space for cattle and beverage, pond for drinking water, Buddhist Victory flag and beverage

Even with proper drinking water facility, People still uses pond (Kuwa) for drinking water purpose. The social way of living is still found in children to the elder. The drinking water pipeline from Shivapuri is used for cleaning and other purposes. Gumba which had been one of the religious harmony of the society has been made after the resettlement, gumba is used in multiple purposes in the area from religious gathering, social gathering to more towards individual people occasional gathering. Earlier shop roof for CGI has been removed by casting flat RCC slab with the aim of adding floor

for specifically only for the religious purpose similar towards Namadoling Ekikrit Basti Gumba.

Figure 44 Stupa at the connection of the Road

Figure 45Adopted Cooking range for Firewood

People are in consideration of firewood since its cheap and easily available. Although the community has been provided with the gas and cooking ut ensils. People in the area uses fire-wood as far as possible since its more affordable than cooking gas. One of the major expenses of the family are in education and cooking gas as mentioned therefore it may have played the role in consumption of fire-wood. The settlement has proper facility of drinking water which is continuous however, based on way of living, they prefer to drink the water from the pond that they have been drinking from there ancestorial times and prefer to be much free from bacteria. Some intervention of introducing unique identity has been seen in the building front side with introduction of religious Buddhist victory flag. The building has adopted new form of cooking with the adaptation from the previous method.

People in Buddhism believe that the stupa protects the evil spirit and also protect human from such spirit in their travel. Therefore, the place is the connecting point of the two settlements where stupas are built. The space is worshiped in regular interval by lama, and also normal individuals.

4.4 Building modification and Site planning

People who have been in religious activities have intervened the auspicious symbols of Buddhism in the faith of having prosperous health, life and well-being. The symbols and mantra chanting are inscribed to show the faith of people Initial Namadoling Basti design has been revised with lack of space based on previous design which introduced RCC flab roof and the building had not been signed with stairs so the local has agreed upon to extend the building on basis of the need of the space. The picture illustrated the extension of the house room in first floor with the demand of the housing. Gumba in Namuna Basti is used with dual purpose of community event and religious in same space where as in Namadoling ekikrit basti Gumba separates the two-space ground floor for religious activities whereas top space for meetings. Namadoling Housing Morphology experienced various prototypes often revising on previous design due to lack of space in the building. The building initial proposed design had slope roof with coverage of only ground floor. Whereas later with the demand of community, the first floor reinforced-concrete slab has been introduced with the aim of future addition of space in case of demand by the family structure. Housing morphology can vary upon

Figure 48 Lama House in Namadoling Basti

Figure 47 Added floor in Namadoling Basti

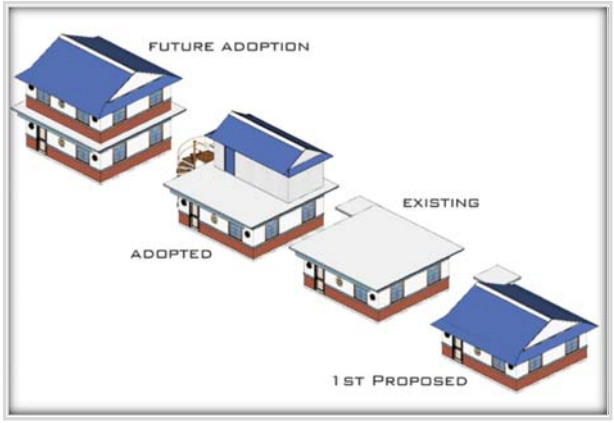


Figure 46 Namadoling Housing Morphology

the house owner wishes in Namadoling Ekikrit Basti. Since initial project is limited with only ground floor with flat RCC slab, it may take years to see its complete phase.

4.5 Infrastructure

Figure 49 Training Center in Namuna Ekikrit Basti

Training center has been built in Namuna basti where livelihood empowerment opportunity for the women is provided in the location. The space is constantly used by people in the area, the goods produced are sold to the wholesaler and has been one of the sources of income to the people living in Namuna Basti. Health post has been introduced near Namadoling Ekikrit basti which provides early treatment to any wounds and diseases. The basic facilities of school, health, drinking water and electricity are both provided in walking and reachable context respectively.

Figure 50Health Post near Namadoling Ekikrit Basti

4.6 Storage Space and Additional Space

Due to lack of storage space in Namadoling Ekikrit Basti, Temporary shelter has been made in close proximity. The Shelter are used for storage as well as cooking with the use of fire-wood. Such Temporary shelters ruins the aesthetic of the resettlement. The lack of understanding of the demand of the space in rural way of living is its result. Site areas are occupied by such structure.

Figure 51 Temporary Shelter for Storage

Figure 52 Cooking Alcohol

Tamang community are familiar with the consumption of alcohol, buying of alcohol is often expensive and family prepare alcohol on their own. Preparation of alcohol demand higher energy therefore, cost effective alternative of fire-woods are used in preparation of it. In availability of space, it is fermented on back side of the building otherwise is done in front open-space. Earlier, its preferred to be done in private space not often visible directly by-passing people.

4.7 Festival Celebration

Celebration of the festival is important even in the community, Losar, Ke-lha, Yul-lha and Saune- Sankranti are celebrated in community with offering of foods, performing cultural ritual and dances. Earlier common ground of family inherited were used for celebration whereas now a every people form the whole basti gather in Gumba, limiting the offerings and privacy of individual families. Family members from the distance gathers in such occasion and used to be treated specially earlier, which is not practical in present scenario.

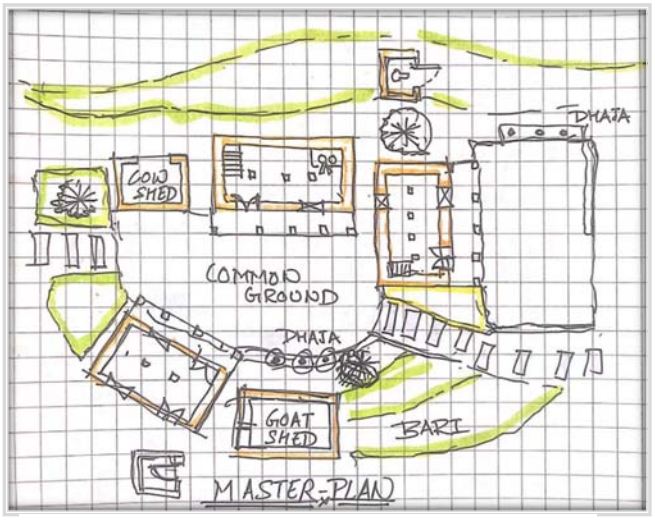


Figure 53 Master-plan of Pre-disaster Cluster

4.8 Agricultural and Animal Husbandry

After the restriction of animal in the resettlement, People sale or gifted their livestock, resulting in breakage in agriculture chain. Family relying on imported rice and other foods is ever increasing due to lack of cattle for agriculture and fertilizer. Chemical fertilizer demand has been in high rise after limiting the livestock. Many local-cuisines recipes and authentic test are found to be missing based on imported products.

Figure 54 Rice Grinding machine

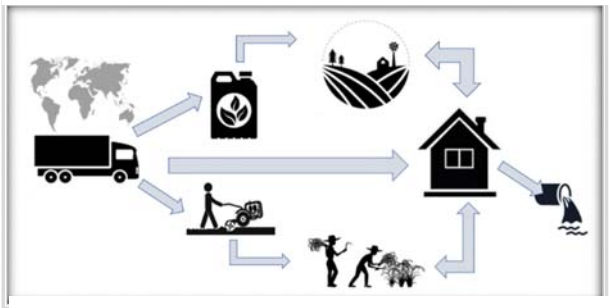


Figure 55 Food chain Linkage

Livestock removal of food chain has introduced chemical fertilizer, agricultural tools and the waste generated are generally not in compatible with domestic fertilizer. The whole chain cycle is break and linear flow can be observed, increasing the expenses of individual. Animal breeding-based earning for family has been interrupted.

4.9 Cooking Gas and cooking space

Figure 56 Adapted Cooking Range

One of the major changes has been notice in cooking. Since the access of fire-wood for cooking is easily available, people are rigid on shifting towards more expensive option of cooking gas. Elderly people have even mentioned that cooking in fire-wood is tastier than cooking in LPG-gas. Adopted portable cooking range is made which uses fire-wood for cooking. Due to the smoke, it's not used inside the house, previously, improvised cooking range were used with limited smoke inside and helped in warming space in winter.

4.10 Transportation

Figure 57 Bituminous Road in Namuna Basti

Proper black top road is found inside Namuna Basti with the width of 20 feet and Reinforced cement concrete road is found in Namadoling Ekikrit Basti whereas the connecting road to the location from both Melamchi and Bhotechour is still earthen roads. We can conclude with the community approach its effective on bringing the development. On contrary to the development, youth attraction towards two-wheeler is rising, even the mode of transport is being used for the transportation of agricultural products. Black-top Bituminous roads has caused heat-island effect in Namuna Basti, population in the area has mentioned the rise of the temperature. Women mentioned that the road are risk to the children due to the speeding of the vehicle and the impact of accident while playing the games in the ground by the children. The adaptation of accessing the two-wheeler by the community has been economical achievement of individual household even the usage of the vehicle is minimum for the family.

4.11 SWOT Analysis of Giraunchaur

Even though, the settlement has been resettled after the earthquake, people can experience rural mixed with urban facilities. Since the project is funded by the normal people through the Dhurmus-Suntali Foundation, inhabitants are thankful and welcoming towards the visitor. Analysis for the possibility of internal cultural resettlement tourism can be experienced if proper-planning is done. Giranchour re-settlement are made with the effort of private organization which are being operated from the city area. The understanding of the demand of the rural agriculture base living has been missed out in the re-construction. Various adaptation of the new functional living is being adopted however, the understanding of the space and time frame still lacks causing challenge for the people for animal husbandry, the housing typology and functionality is based on city-based living.

Table 6 SWOT Analysis of Giraunchour Resettlement

SWOT ANALAYSIS OF GIRANCHOUR SETTLEMENT

STRENGTH	WEAKNESS
• Less travel Distance to town and Capital • Settlement has all the basic necessary amenities • Highlighted Resettlement • Community with Similar Ideology	• New Settlement have no ancient artifacts • Lack of Cultural identity and alternatives considered away from resettlement • Consideration of home-stay and other rural based development is missing. • Lack of near by Tourism Destination
OPPORTUNITIES	**THREATS**
• Gate way to popular trekking destination of Helambu • Cultural tourism through integrated settlement can be encourage with available infrastructure • Handicraft industries and unique identity with small scale Dhaka fabric training center	• Influence of Modern amenities and way of living • Challenge of unique cultural experience with resettled new settlement.

Like every rural area, Giraunchour is in constant change due to globalization and its urbanization process has been boosted by the resettlement approach with ease of transportation facilities.

4.12 Housing Satisfaction

Social factor, cultural factor, environmental factor, and financial factor are basis of classification for the questionnaire survey. Continuation of Cultural acceptance by youth is major threat mentioned by elder people. Based on questionnaire survey, People in Namuna Basti found more satisfied with new building compare to Namadoling even with the small size of house. The major factor might be the less amount of investment made by Namuna Basti and limiting the building for further construction. Namadoling people have experience the construction period more than 6 years and still under construction and without few completed buildings. Burden of completing future extension of the building might be one of the reasons of least satisfaction.

Table 7 Comparative of Cases

	NAMUNA EKIKRIT BASTI		NAMADOLING EKIKRIT BASTI
HOUSE SIZE	★★		★
INVESTMENT	★	₹	★★★
TIME FRAME	★		★★★
PEOPLE ACCEPTANCE	★★★		★★★
DONATION AND FUNDING	★★★		★
MATERIAL AND TECHNOLOGY	★★★		★★★

In case of building material used, both the settlement is confident and satisfied. Some of the few people from Namuna Basti preferred RCC slab however admits that their houses are more thermal comfortable than Namadoling Flat slab building. Attic store performs as thermal mass in Namuna Basti Building.

Overall, both resettlements are pleased with the homes that were constructed using donor money. When compared, Namuna Ekikrit Basti inhabitants are better off due to factors such as the amount of investment, the time frame, and the participation of donor organizations.

CHAPTER 5. CONCLUSION & RECOMMENDATION

5.1 Conclusion

Shelter demand after the earthquake has been in major priority for the victims and consideration of social and culture aspect felt on shadow. Tamang community, social needs have been addressed through the urbanized way of living style. The changing way of living have higher dependency towards the market products and people major portion of income are spend on cooking gas and food products. Restriction of livestock has hampered in production of agriculture and one of the major sources of earning based through animal has also been stopped. Even-though with the restriction, way of living is unavoidable without livestock so, the raring of livestock near farmland has been started and is challenging to look after due to its distance from the resettlement. Since many houses do not have live-stocks, the farmlands are not offer for the people who can cultivate crops and shared half to the land owner (*adhya*). Lack of consideration of rural social and cultural ways of living is observed in planning of both the settlement.

Previously a common courtyard-based living pattern is identified with the major ritual and celebration are done in it whereas both the settlement does the activities in common place in Gumba, the Gumba is actually for the religious worships and often refer as holy place, activities of celebration sometimes create tension in use of meat and alcohol since the same space is used in celebration and religious activities. Some difficulties in providing hospitality to the guest has been mentioned by the house-wife based on common space of Gumba. Celebration of the birthday of children has been introduce after the resettlement and is now an adopted culture of the area. On same not market based food product are mentioned out to be least tasty compared to the earlier food products. The way of cooking through gas are found different in taste by many of the people and preferred for the fire-wood. Alcohol is regular consumed in Tamang community and fermenting it through the gas is not economical. Therefore, we observe the temporary shelter in back or the small space in the front of plot is used for cooking alcohol.

Understanding of the way of living is generally changing however, many changes take time even that are pessimistic side of the society. Some cultural activities are bounded in the practices that are not accepted in urban society even though its acceptance is compulsory, donor organization and local government tend to restrict on it. The action can partially reduce in it but the long-run execution might not get adopted by the

society. Similarly, many physical and cultural bounding are introduced in both the resettlement, the longevity of the system has not been accepted by the society. Therefore, the best way of the acceptance of the society is allowing of practices with partial restriction with minimum efficiency.

Introduction of Buddhist victory flags in the houses where as Lama (Tamang sub ethnic community who performs ritual) have found to decorate their houses with lama mantras and auspicious symbols. Art in the houses can help in identifying lama houses. Houses exterior are generally unchanged except with the victory flag however, Buddhism symbolic fabrics are often kept in entrance door, and roof eaves for the protection of evil spirits. Importance of and purity of the space is intangible of society, which may not be easy enough for the outsider to know initially. Majority of the outsider fail in understanding this aspect bringing many changes and adaptation in the long run of the society developed. The proper understanding based on hierarchy, changes, acceptance, understanding and believe should be proper. Many proposed idea and understanding are left without the proper empathetic relation. So, the designing of the space should need to cover as much aspect as possible for the better acceptance of the design intervention.

Based on survey of two re-settlements, the time-frame and amount of investment had the higher impact on the residential satisfaction. Even with larger building space, level of investment and time frame of construction has made Shree Namadoling Ekikrit Basti people least satisfied compared to Namuna Basti. The burden of completing first floor might be another factor in it. The role of donor agency on Namadoling is surficial with providing of resources and infrastructure whereas majority responsibility is taken by the foundation in Namuna Basti. Some of the people in Namadoling are still in threat of landslide in North south part and people in the area have not had the facility of parks which has been proposed in master-plan. The long-period of time taken for the construction and challenges of financial contribution and a partial completion of the building are some of the reasons for the least satisfaction of Shree Namadoling Ekikrit Basti over Namuna Ekikrit Basti.

5.2 Recommendation

Based on learning from the research. The resettlement is one of the crucial phases of the society where community experience many interventions and influences together with their basic demand for the ease of that period. The involvement of the donor agencies is often taken with least consideration of the long-term impact of the society. Therefore, restriction on any ways should be well understood before implementing as well as the participation of the active people are often more prioritizing on the decision making. The fair of decision should be in well consideration by the donor agencies. Adaptation of urbanized way of living should be in limitation with societal intake in such a way that all age group, gender and scatter population get equal share and advantage over it.

Selection of the material, time frame, effort and cost of the project are often major satisfaction driving factor and effective consideration of the effective use of it should be incited in resettlement. On legal aspect, the ease of Land ownership (*lalpurja*) hand-over should be in facilitated by the government side together with some subsidies for certain period of time to economically thriving families.

Learning form Past is important for effective operation in future, understanding of the ritual, festival and way of living is important, the changing behavior after the resettlement are better understood with the effective classification of the spaces. Urbanization impact in the understanding of the ethnic society is well organized in the research, therefore, the study helps in other resettlement programs in demand of the time in ethnic societies of Nepal.

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ANNEX

Annex 1: Photographs

Figure 58 After Questionarie Survey, Photograph with Mrs. Maya Tamang and Mr. Gyan Tamang

Figure 60 Youths playing Carrom Board in Namuna Basti

Figure 59 Questionnaire Survey with Mohan Tamang

Annex 2: Questionnaire Survey

Housing Satisfaction

Q.1 Project Name

- Namuna Ekikrit Basti
- Namadoling Ekikrit Basti

Q. 2 Age of Respondent

- < 18 Years
- 18-60 Years
- 60 Years and above

Q.3 Size of Family

- 1-2
- 3-4
- 5-7

Q.4 Religion

- Buddhist
- Hindu

Q.5 Children Below 14 Years

- 0
- 1
- 2
- More than 2

Q.6 Number of Elder People age above 60

- 0
- 1
- 2

Q.7 Availability of Personal Vehicle

- NA
- Owns 2-Wheeler
- Owns 4-Wheeler

Financial Information

Q.1 Earning Member in Family

- 0
- 1
- 2

More than 2

Q.2 Earning Member Type

- Emigrated inside Country
- Involve in Office Works
- Involvement in Business
- Migrated outside Country
- Involvement in Raw-Material Transportation

Q.3 Income of Family per Month

- Less than Rs. 5000
- Rs.5000-Rs.15000
- Rs.15000-Rs.25000
- Rs.25000 Above

Q.4 Major Expenses

- Food
- Education
- Alcohol
- Cooking Gas
- Clothes

Q.5 Level of Investment for Individual Houses

- Few investments from family
- Within family income range
- Beyond Family Income

Environmental Factors

Q.1 Size of Dwelling Unit

1-Strong Dissatisfaction- 5-Strongly Satisfied

Q.2 Interior Space and Layout

1-Strong Dissatisfaction- 5-Strongly Satisfied

Q.3 Lightening and Ventilation

1-Strong Dissatisfaction- 5-Strongly Satisfied

Q.4 Building Quality

1-Strong Dissatisfaction- 5-Strongly Satisfied

Q.5 Earthquake resilient to Previous One

1-Strong Dissatisfaction- 5-Strongly Satisfied

Q.6 Site Selection

1-Strong Dissatisfaction- 5-Strongly Satisfied

Q.7 Layout of the Property

1-Strong Dissatisfaction- 5-Strongly Satisfied

Q.8 Landscaping

1-Strong Dissatisfaction- 5-Strongly Satisfied

Q.9 Animal Husbandry and Sanitary

1-Strong Dissatisfaction- 5-Strongly Satisfied

Q.10 Water Supply and Electricity

1-Strong Dissatisfaction- 5-Strongly Satisfied

Q.11 Waste-water Management

1-Strong Dissatisfaction- 5-Strongly Satisfied

Q.12 Animal Husbandry towards Agricultural Oriented Re-settlement

1-Strong Dissatisfaction- 5-Strongly Satisfied

Q.13 Intervention in Plot addition to Building

- Store Room
- Separate cooking Space
- Other

Social Factors

Q.1 Leisure and Sport facilities

1-Strong Dissatisfaction- 5-Strongly Satisfied

Q.2 Convenience to Livelihood

1-Strong Dissatisfaction- 5-Strongly Satisfied

Q.3 Health Facilities

1-Strong Dissatisfaction- 5-Strongly Satisfied

Q.4 Education Facilities

1-Strong Dissatisfaction- 5-Strongly Satisfied

Q.5 Community Infrastructures

1-Strong Dissatisfaction- 5-Strongly Satisfied

Q.6 Safety of settlement for children

1-Strong Dissatisfaction- 5-Strongly Satisfied

Q.7 Facilities for religious practices

1-Strong Dissatisfaction- 5-Strongly Satisfied

Q.8 Supports life activities

1-Strong Dissatisfaction- 5-Strongly Satisfied

Q.9 Community Development plans

1-Strong Dissatisfaction- 5-Strongly Satisfied

Cultural Aspects

Q.1. Festival Celebration at Present towards Previous

1-Very Few- 5-Same as Before

Q.2. How often Tamang food and dishes are prepared after post-earthquakes?

1-Very Few- 5-Same as Before

Q.3. Acceptance of Rituals by Youth

1-Very Few- 5-Same as Before

Q.4 Most Changed Ritual Practices in Present

- Sonam Losar
- Nepal New Year
- Dashai and Tihar
- Birthday Celebration
- Buddha Jayanti

Project Name	Age of Respondent	Size of Family	Religion	Children Below 14 Years	Number of Elder People age above 60	Availability of Personal Vehicle	Earning Members in Family	Earning Members Type	Income of Family per Month	Major Expenses	Size of Dwelling Unit	Interior Space and Layout	Lightening and Ventilation	Building Quality
Namuna Basti	18 Years- 60 Years	3-4	Buddhist	1	0	NA	1	Emigrated inside Country	Rs.15000-Rs.25000	Food, Education	4	4	5	4
Namuna Basti	18 Years- 60 Years	3-4	Buddhist	1	0	NA	0		Less than Rs. 5000	Education	4	5	4	4
Namuna Basti	60 Years	3-4	Buddhist	1	1	Owns 2-Wheeler	1	Involve in Office Works	Rs.15000-Rs.25000	Cooking Gas	5	3	4	3
Namuna Basti	< 18 Years	3-4	Buddhist	2	0	Owns 2-Wheeler	1	Involvement in Raw-material transportation	Rs.5000- Rs.15000	Food, Education, Alcohol	5	4	5	5
Namuna Basti	18 Years- 60 Years	3-4	Hindu	More than 2	2	Owns 2-Wheeler	2	Involvement in Business	Rs.15000-Rs.25000	Food	4	4	4	5
Namuna Basti	18 Years- 60 Years	3-4	Buddhist	2	0	NA	2	Involvement in Business	Rs.25000 above	Food, Education, Cooking Gas, Clothes	5	4	4	5
Namuna Basti	18 Years- 60 Years	3-4	Buddhist	2	2	Owns 2-Wheeler	1	Involve in Office Works	Rs.15000-Rs.25000	Food	3	3	5	4
Namuna Basti	60 Years	3-4	Buddhist	1	1	NA	1	Emigrated inside Country	Rs.15000-Rs.25000	Education, Cooking Gas	4	4	4	5
Namuna Basti	18 Years- 60 Years	3-4	Buddhist	More than 2	2	Owns 2-Wheeler	2	Involve in Office Works, Migrated outside Country	Rs.25000 above	Food, Education	4	5	4	5
Namuna Basti	18 Years- 60 Years	5-7	Buddhist	2	1	Owns 2-Wheeler	2	Migrated outside Country, Involvement in Raw-material transportation	Rs.25000 above	Food, Education, Cooking Gas	3	3	4	4
Namadoling Basti	18 Years- 60 Years	3-4	Buddhist	1	0	Owns 2-Wheeler	1	Involvement in Raw-material transportation	Rs.15000-Rs.25000	Education	2	2	4	5
Namadoling Basti	60 Years	3-4	Buddhist	0	2	NA	1	Migrated outside Country	Rs.25000 above	Food, Alcohol, Clothes	3	4	5	4
Namadoling Basti	18 Years- 60 Years	5-7	Buddhist	2	2	NA	2	Involve in Office Works, Migrated outside Country	Rs.25000 above	Food, Education	3	2	4	4
Namadoling Basti	< 18 Years	3-4	Buddhist	More than 2	1	NA	1	Involve in Office Works	Rs.15000-Rs.25000	Food, Education	3	2	4	4
Namadoling Basti	18 Years- 60 Years	5-7	Buddhist	2	1	NA	1	Emigrated inside Country	Rs.15000-Rs.25000	Education, Clothes	2	3	5	4
Namadoling Basti	60 Years	5-7	Buddhist	2	2	NA	2	Migrated outside Country, Involvement in Raw-material transportation	Rs.25000 above	Food, Education, Cooking Gas, Clothes	2	3	5	4
Namadoling Basti	60 Years	5-7	Buddhist	0	1	Owns 2-Wheeler	2	Involve in Office Works, Migrated outside Country	Rs.25000 above	Food, Education, Cooking Gas	3	3	4	4
Namadoling Basti	18 Years- 60 Years	3-4	Buddhist	0	0	NA	1	Involvement in Business	Rs.15000-Rs.25000	Food	3	2	4	4

Project Name	Earthquake resilient to Previous one	Level of Investment for Individual House	Site Selection	Layout of the Property	Landscaping	Animal Husbandry and Sanitary	Water Supply and Electricity	Waste-water Management	Animal Husbandry towards Agricultural Oriented Re-settlement	Intervention in Plot addition to Building	Leisure and Sport facilities	Convenience to Livelihood	Health Facilities	Education Facilities	Community Infrastructures
Namuna Basti	4	5	4	3	4	2	4	4	1	Other	4	5	3	4	4
Namuna Basti	5	3	3	5	4	1	4	4	2	Separate cooking space	4	5	3	4	4
Namuna Basti	4	3	5	4	4	5	4	4	3	Store Room	4	4	3	4	3
Namuna Basti	5	5	5	4	5	3	4	4	4	Other	4	4	4	4	4
Namuna Basti	5	3	4	4	4	4	4	3	3	Store Room, Separate cooking space	3	4	3	4	4
Namuna Basti	4	5	5	5	4	3	4	3	4	Store Room	5	4	4	3	4
Namuna Basti	4	5	4	4	3	5	5	4	4	Separate cooking space	4	4	5	5	4
Namuna Basti	5	3	4	4	5	2	5	5	2	Other	3	4	4	4	5
Namuna Basti	4	1	5	5	4	4	4	3	2	Store Room	4	4	5	5	4
Namuna Basti	5	3	3	3	4	1	4	4	2	Store Room, Separate cooking space	4	4	3	3	3
Namadoling Basti	4	5	3	3	4	2	5	4	2	Store Room	5	4	5	4	4
Namadoling Basti	3	5	4	4	4	2	5	5	2	Store Room	4	4	4	3	5
Namadoling Basti	3	3	4	3	3	4	5	4	3	Store Room	4	3	4	4	3
Namadoling Basti	3	5	3	3	4	3	4	3	3	Store Room	4	4	4	4	3
Namadoling Basti	4	5	4	4	4	2	4	5	2	Store Room	3	4	4	5	3
Namadoling Basti	4	5	4	3	2	1	5	5	1	Store Room, Separate cooking space	4	4	5	4	4
Namadoling Basti	4	3	3	2	3	3	4	3	3	Store Room	4	4	4	4	3
Namadoling Basti	3	3	2	2	3	4	4	4	4	Store Room	3	4	4	4	3

Project Name	Safety of settlement for children	Facilities for religious practices	Supports life activities	Community Development plans	Festival Celebration at Present towards Previous	How often Tamang food and dishes are prepared after post-earthquake?	Acceptance of Rituals by youth	Most changed Ritual practices in Present
Namuna Basti	5	4	4	4	3	4	4	Dashai and Tihar, Birthday Celebration
Namuna Basti	5	4	5	4	4	4	5	Dashai and Tihar, Birthday Celebration
Namuna Basti	4	4	4	3	5	5	2	Sonam Losar
Namuna Basti	4	5	4	5	3	3	2	Birthday Celebration
Namuna Basti	4	4	4	5	4	3	2	Nepal Year
Namuna Basti	2	5	4	5	4	4	3	Dashai and Tihar
Namuna Basti	5	3	4	5	3	5	3	Buddha Jayanti
Namuna Basti	4	4	4	4	3	2	1	Sonam Losar, Dashai and Tihar, Birthday Celebration
Namuna Basti	5	4	4	5	5	2	3	Sonam Losar, Nepal Year, Birthday Celebration
Namuna Basti	4	5	4	4	3	5	2	Nepal Year, Birthday Celebration
Namadoling Basti	4	4	4	5	3	2	3	Birthday Celebration
Namadoling Basti	5	4	5	4	4	4	3	Dashai and Tihar
Namadoling Basti	4	4	3	4	4	3	3	Sonam Losar, Buddha Jayanti
Namadoling Basti	3	2	3	3	5	3	4	Nepal Year, Dashai and Tihar
Namadoling Basti	2	4	5	4	4	3	1	Nepal Year, Dashai and Tihar, Birthday Celebration
Namadoling Basti	2	4	4	5	3	2	1	Sonam Losar, Dashai and Tihar
Namadoling Basti	3	2	3	4	2	3	3	Nepal Year, Birthday Celebration, Buddha Jayanti
Namadoling Basti	3	4	4	2	1	2	3	Sonam Losar, Nepal Year

Annex 4: Acceptance Letter

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Date: October 10, 2022

To Whom It May Concern

This is to confirm that the paper titled "*Post-Disaster: Social Cultural Impact in the Resettlements: In case of Giraunchaur, Sindhupalchowk*" submitted by **Rabin Kambang** with Conference ID **12160** has been accepted for presentation at the 12th IOE Graduate Conference being held in October 19 – 22, 2022 at Thapathali Campus, Kathmandu.

Khem Gyanwali, PhD
Convener,
12th IOE Graduate Conference

Annex 5: IOE Graduation Conference

IOE Graduate Conference
[Placeholder for Publication Information]

Post-Disaster: Social Cultural Impact in the Resettlements: In case of Giraunchaur, Sindhupalchowk

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Abstract
After Gorkha Earthquake 2015, Nepal faced rapid housing demand in urban and rural context. In consideration of ease of providing necessary services, integrated settlements have been prioritized for resettlements by Nepal Reconstruction Authority (NRA) and Department of Urban Development and Building Construction (DUDBC). In contrary to the popular belief of resettlement bringing well-being, issues of ignorance towards community identity, social-cultural and economical needs have been observed. The study focuses on two resettlements in close-proximity with similar social-cultural lifestyle in Giraunchour, Sindhupalchowk. Namuna Ekikrit Basti and Shree-Namadoling Ekikrit Basti has been built by Dhurmus-Suntali Foundation and joint effort of CG-Foundation and Nepal Reconstruction Authority (NRA) respectively. Field observation, key-informant interview, questionnaire survey has been done to understand the change in societal way of living in both areas. User-committee faces a challenge in addressing a demand of rapid building construction along with needs of individual people in the community together with the economical challenges. Furthermore, the acceptance of ideologies of donor agencies plays additional impact. Both Basti faced restriction of livestock and has made a serious impact in agricultural chain and financial portion through live-stock. Earlier common courtyard-based living has been turned towards compartment-based housing. The study focuses on modification and adaptation to address living, comparison of satisfaction in two resettlement areas.

Keywords
Resettlement, societal impact, adaptation, Satisfaction, Earthquake

1. Introduction

Global Disasters Statistics shows the disaster hazard raising exponentially in the last decade and larger number of people life losses can be seen by negligence [1]. Nepal is likewise prone to earthquakes, and there have been significant casualties and property losses there, such disaster turns out to be as a tipping point for the transition of the society with the introduction of new material, living style and are even influence by the donor agencies. Globalization and urbanization have impacted individual and is ever growing in rural context as well. The way of living has been influenced by technology, resources and tele-communication. Family income and access to information and resources are bringing the change. Gorkha earthquake 2015 have severely affected 14 districts and 7.5 lakh houses and building were destroyed.One of the worst-affected districts is Sindhupalchowk which lost 3075 people [2].

In Giraunchaur, Sindhupalchowk, Namuna Ekikrit Basti has been one of the promising resettlements in the early phase of resettlement after the earthquake, led by Comedy Couple Artist Dhurmus-Suntali and had been able to attract media attention. On a 5-minute walking distance another resettlement has been build, led with joined effort of local, CG-Foundation and NRA. Both Tamang community resettlement experienced different approach, material, housing typology and donor agencies which can help in understanding the factors affecting the social change and satisfaction of the resettlement.

Integrated settlement or community living has been prioritized by Department of Urban Development and Building division (DUDBC) along with Nepal Reconstruction Authority (NRA) after earthquake, considering the ease of providing the necessary infrastructure like drinking water and electricity along with proper transportation facility. People in resettled

Pages: 1 – 8

housing are contented with shelter issue however, the threat of losing many social ways of living is already experience by individual in the community [3].The build houses are adopted with modern way of living, which were rare previously and are generating many changes in living ways by the functional planning based on cities housing of private and public spaces. The replacement of vernacular building with city influence way of living impacts social-culture on people's sense of place and identity [4]. For a better living environment, designers and planners must have a thorough awareness of social ways of life and their long-term effects on society.

In case of disaster or hazards, the priority of the shelter dominates the people other requirement which may eradicate the identity of the place and community [5]. Previously in context of Bhaktapur where cultural identity had important value, the importance of societal architecture impact had been left in least priority in housing construction [6].According to [7],the mismatch between the built housing and the lifestyle and expectations of the users can partly be explained by the insistence to provide housing after disasters, which prevents the government agencies from perceiving the local culture.

2. Research Objective

The Objective of research are:

• To identify the societal impact on cultural and living through re-settlement.

• Examine the housing satisfaction of the two re-settlements.

3. Understanding Societal Relations

3.1 Resettlement

Resettlement is process of planning, relocating and providing the necessary amenities as based upon the affected population by human action or natural disasters. Such population have consideration for the safety and proper shelter demand over any other aspect. Similar incident has higher tendency to lose the ethnic social-cultural aspects[8]. Even though the resettlement project has better standard of living in rural context, resettlement project fails to meet the expectation of the affected people in socio-cultural needs [9].

3.2 Tamang and its festivals

Tamang are the indigenous people found living from Trishuli river hilly region at west towards Bhutan in east. Ta means "horse" and Mak means "warrior" in Tibetan [10]. They have their own language, culture, dress and social structure and over 100-sub-clans are found. Majority of Tamang follows Buddhist religion. Sonam Losar and Buddha Jayanti are the major festival celebrated by Tamang where Sonam Losar follows Chinese zodiac calendar.

Festival	Purpose, Participants and Setting	Agricultural Stage
Losar	Village-wide celebration of New Year, Households erect flags and entertain Kinsmen.	Manuring of fields, preparation of soil.
Kurim	Households have shamans and lamas perform protective ceremonies	
Ke-lha	Lamas perform Palten Lhamo ceremony, shamans perform clan god worship. Every Household sponsor own ceremony.	Planting of potatoes, maize, etc. Begins.
Yul-lha	Tribal priest performs worship of village god to obtain good harvest.	Woodcuttin g, weeding of maize
Saune-Sankran ti	On eve of Nepali month of Shrawan Households prepare special foods, make offerings to local demons.	Planting of Millet.

Figure 1: Festival Celebration by Tamang

4. Research Methodology

The research is carried out based on objective fulfillment where key-personnel interview, field-based observation and literature review on Tamang has been done for societal understand. Mixed method of residential satisfaction of the both resettled communities is done with scale value range from 1-Strongly Dissatisfied to 5- Strongly Satisfied to test the perception of household of Namuna Ekikrit Basti

and Shree Namadoling Ekikrit Basti using Google Form where sample is taken with 15 percent of number of occupied houses with 10 and 8 respectively. The result obtained is classified based on various social events and observation on changes seen in living lifestyle.

5. Study Area: Giraunchaur

Figure 2: Master-Plan of Giraunchcaur

Two Resettlement of Giraunchaur, Sindhupalchowk, known as Shree-Namadoling Ekikrit Basti and Namuna Basti are the study area, located 4km and 14km from Melamchi town and Bhotechaur away respectively. The 2015 Gorkha Earthquake had a significant impact on both settlements. Before the earthquake, the houses were made up of stone and mud with 3 storied, and scattered clusters in hillside.

Figure 3: Choten at Road Junction and Community Health Post

Shree Namadoling Ekikrit Basti has 62 houses where 8 Buildings are still not inhabited due to in-completionwhereas Namuna Basti have 67 number of houses completed in time span of 6 month. All the houses belong to Tamang, in the integrated both resettlements, where majority of the households are involved in agriculture followed by building raw-material oriented employment and few on business and Government employments. Both the settlement has a site area varying from 5-7 ana of land based on understanding or lottery procedure.

5.1 Shree Namadoling Ekikrit Basti

Figure 4: Shree Namadoling Ekikrit Basti

Shree Namadoling ekikrit basti has been built with the joint effort of Locals, NRA and CG foundation. Technical assistance has been provided by CG foundation with collaboration with Build-up Nepal for interlocking blocks. The modality of the re-building houses conceptualize with skill providing perception. People in the locality were trained to produce the interlocking blocks and the blocks produced where used in the building of the infrastructure.

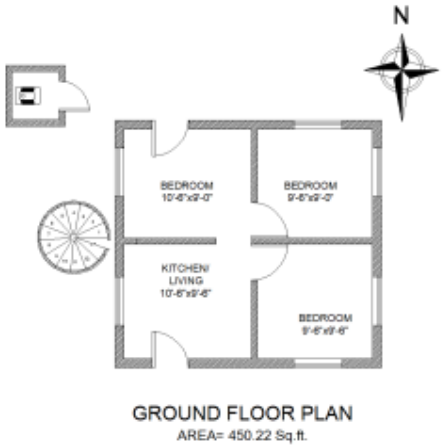

Figure 5: Ground Floor Plan

Cement, transportation of Sand and Aggregate along with exterior paint has been provided by CG Foundation, whereas NRs 4 Lakh has been provided by NRA for buying rebar and building materials and house owner has been responsible for the other expenses which were required. A house with four room (Kitchen-Living and 3 Bedrooms) has been planned and designed which were initially having a

single floor-slope roof later added with flat RCC floor for the future vertical extension. Toilet has been made detached in compound of the property. Lack of addressing of the storage and domestic animal space, the additional temporary shelter has been seen in the site.

5.2 Namuna Ekikrit Basti

Figure 6: Namuna Ekikrit Basti Integrated Settlement

Namuna Ekikrit Basti has been built with joined effort of Locals and Dhurmus-Suntali Foundation, Comedy actor has been able to grab media attention for the integrated resettlement and had received ample amount of fund and support from Government and Nepali peoples.

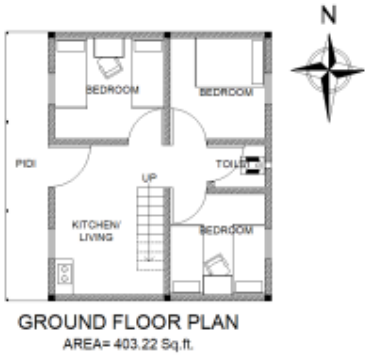

Figure 7: Ground Floor Plan

It has been made with Aarmaha Parmaha approach in time frame of 6 months. House design are based on adopted vernacular forms with 4 rooms and one internal toilet in Ground floor which had not been seen earlier before. Whereas first floor is used as storage. Buildings are made with hollow concrete blocks with 6 RCC columns in corner and mid exterior wall.

Figure 8: Attic used as Store

Facility of store has been provided in Namuna Ekikrit Basti houses in attic. It has been one of the important design adaptations from previous vernacular housing. Because of which there are no need of temporary shelter for storage. Migration based community has been observed in Giraunchaur, therefore, the additional extension might not be a greater concern in future.

Proper black top road is found inside Namuna Basti with the width of 20 feet whereas the connecting road to the location from both Melamchi and Bhotechour is still earthen roads. We can conclude with the community approach its effective on bringing the development. On contrary to the development, youth attraction towards two-wheeler is rising, even the mode of transport is being used for the transportation of agricultural products. Black-top Bituminous roads has caused heat-island effect in Namuna Basti, population in the area has mentioned the rise of the temperature.

6. Discussion and Findings

6.1 Societal Impact

Community have linkage with individuals and its values and norms are bound on one another in intangible ways. Often in designing the understanding of norms and values are difficult to be understood and its impact in any intervention is difficult to predict. Understanding of the space with relation to inhabitant position, respect and limitation with one another, are important in proper understanding [7].Behavior analysis on individual working style can be one of the ways to know the various space relation with the people living.

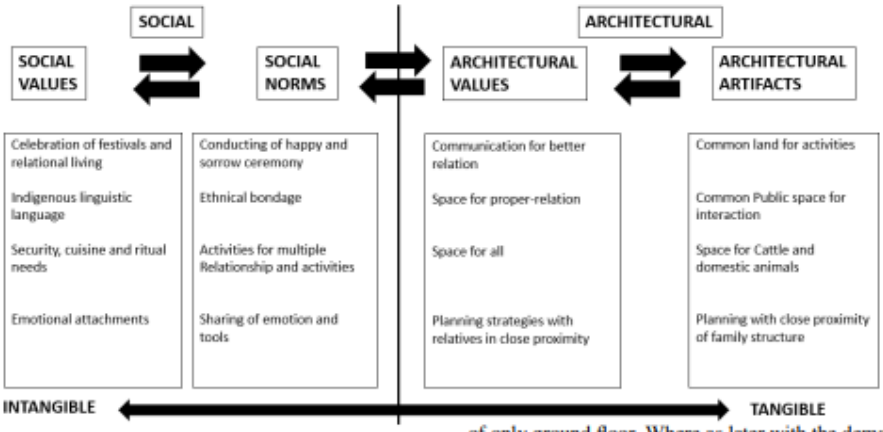

Figure 9: Socio-physical model showing relation for Tamang House

Social Value and norms are intangible aspect with tangible artifacts in architecture. Architecture values understanding the intangible aspects results in accepted physical structure [11]. Linkage of the social values can be done with the help of flow chart initiated by Sanjoy Mazumdar and Shampa Mazumdar. Societal Values, Societal norms, Architectural Values and Architectural Artifacts, linkage is drawn for better understanding of the spaces.

6.1.1 Building Modification and Site Plan

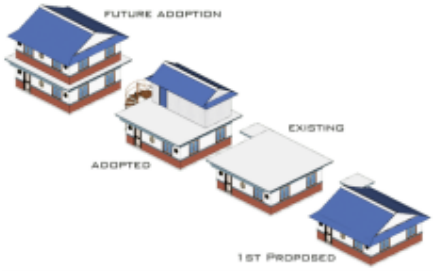

Figure 10: Namadoling Housing Morphology

Namadoling Housing Morphology experienced various prototypes often revising on previous design due to lack of space in the building. The building initial proposed design had slope roof with coverage of only ground floor. Where as later with the demand of community, the first floor reinforced-concrete slab has been introduced with the aim of future addition of space in case of demand by the family structure. Housing morphology can vary upon the house owner wishes in Namadoling Ekikrit Basti. Since initial project is limited with only ground floor with flat RCC slab, it may take years to see its complete phase.

6.1.2 Storage Space and Additional space

Figure 11: Temporary Shelter for Storage

Due to lack of storage space in Namadoling Ekikrit Basti, Temporary shelter has been made in close proximity. The Shelter are used for storage as well as cooking with the use of fire-wood. Such Temporary shelters ruins the aesthetic of the resettlement. The lack of understanding of the demand of the space in rural way of living is its result. Site areas are occupied by such structure.

Figure 12: Fermenting Alcohol

Tamang community are familiar with the consumption of alcohol, buying of alcohol is often expensive and family prepare alcohol on their own. Preparation of alcohol demand higher energy therefore, cost effective alternative of fire-woods are used in preparation of it. In availability of space, it is fermented on back side of the building otherwise is done in front open-space. Earlier, its preferred to be done in private space not often visible directly by-passing people.

6.1.3 Festival Celebration

Celebration of the festival is important even in the community, Losar, Ke-lha, Yul-lha and Saune-Sankranti are celebrated in community with offering of foods, performing cultural ritual and dances. Earlier common ground of family inherited were used for celebration where as now a every people form the whole basti gather in Gumba, limiting the offerings and privacy of individual families.

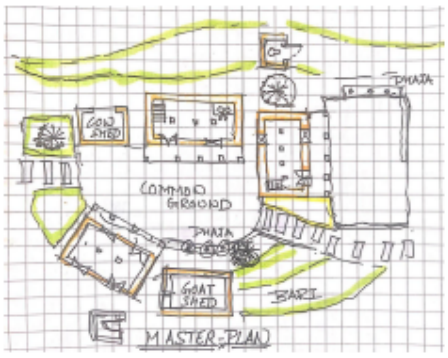

Figure 13: Master-plan of Pre-disaster Cluster

Family members from the distance gathers in such occasion and used to be treated specially earlier, which is not practical in present scenario.

6.1.4 Agricultural and Animal Husbandry

Figure 14: Rice-Grinding Machine

After the restriction of animal in the resettlement, People sell or gifted their livestock, resulting in breakage in agriculture chain. Family relying on imported rice and other foods is ever increasing due to lack of cattle for agriculture and fertilizer. Chemical fertilizer demand has been in high rise after limiting the livestock. Many local-cuisines recipes and authentic taste are found to be missing based on imported products.

Figure 15: Food Chain Linkage

Livestock removal of food chain has introduced chemical fertilizer, agricultural tools and the waste generated are generally not used for domestic fertilizer. The whole chain cycle is interrupted and linear flow can be observed, increasing the expenses of individual. Animal breeding-based earning for family has been interrupted.

6.1.5 Cooking Gas and Cooking Space

One of the major changes has been noticed in cooking. Since the access of fire-wood for cooking is easily available, people are rigid on shifting towards more expensive option of cooking gas. Elderly people have even mentioned that cooking in fire-wood is tastier than cooking in LPG-gas. Adopted portable cooking range are made with modification which uses fire-wood for cooking. Due to the smoke, its not used

Figure 16: Adopted Cooking Range

inside the house, previously, improvised cooking range were used with limited smoke inside and helped in warming space in winter.

6.2 Housing Satisfaction

Social factor, cultural factor, environmental factor, and financial factor are basis of classification for the questionnaire survey. Continuation of Cultural acceptance by youth is major threat mentioned by elder people.

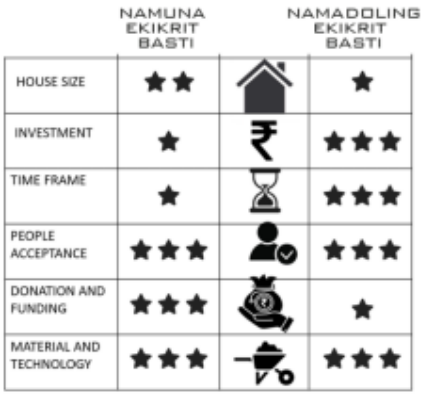

Figure 17: Comparative of Cases

Based on questionnaire survey, People in Namuna Basti found more satisfied with new building compare to Namadoling even with the small size of house. The major factor might be the less amount of investment made by Namuna Basti and limiting the building for further construction. Namadoling people have experience the construction period more than 6 years and still under construction with few buildings still in phase of completion. Burden of completing future extension of the building might be one of the reasons of least satisfaction.

In case of building material used, both the settlement is confident and satisfied. Some of the few people from Namuna Basti preferred RCC slab however admits that their houses are more thermal comfortable than Namadoling Flat slab building. Attic store performs as thermal mass in Namuna Basti Building.

All in all, both resettlements are satisfied with houses that has been build with donor. The level of investment, time-frame, role of donor agencies is some of the factor influencing on satisfaction.

7. Conclusion

Shelter demand after the earthquake has been in major priority for the victims and consideration of social and culture aspect felt on shadow. Tamang community, social needs have been addressed through the urbanized way of living style. The changing way of living have higher dependency towards the market products and people major portion of income are spend on cooking gas and food products. Restriction of livestock has hampered in production of agriculture and one of the major sources of earning based through animal has also been stopped. Even-though with the restriction, way of living is unavoidable without livestock so, the rearing of livestock near farmland has been started and is challenging to look after due to its distance from the resettlement. Lack of consideration of rural social and cultural ways of living is observed in planning of both the settlement.

Based on survey of two re-settlements, the time-frame and amount of investment had the higher impact on the residential satisfaction. Even with larger building space, level of investment and time frame of construction has made Shree Namadoling Ekikrit Basti people least satisfied compared to Namuna Basti. The burden of completing first floor might be another factor in it. The role of donor agency on Namadoling is surficial with providing of resources and infrastructure where as majority responsibility is taken by the foundation in Namuna Basti.

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